

THE EFFECT OF EMOTION ON COGNITION
IN ELEMENTARY AND MIDDLE SCHOOL CLASSROOMS

by

Bhargavi Aluru

A Project Submitted to the Faculty of
The Evergreen State College
In Partial Fulfillment of the Requirements
for the degree
Master in Teaching
2013

This Project for the Master in Teaching Degree

by

Bhargavi Aluru

has been approved for

The Evergreen State College

by

Terry Ford, Ph.D., Member of Faculty

June 2013

ACKNOWLEDGEMENTS

I would like to thank my parents, my brother, my grandmother, and the rest of my family, all of whom have supported me in countless ways. Thank you to my close friends Kyle Chappell, Caleigh Harper, Julia Abrams, and Katie Hohnstein-Van Etten, and colleagues who have given me strength and encouragement in times of need. Finally, I wish to thank my faculty members, especially Terry Ford, for believing in, and supporting me, and Lester Krupp, who inspired and encouraged me.

ABSTRACT

Most current curricula and classroom practices do not account for the relationship between emotion and cognition. There is a dire need for this relationship to be not only acknowledged, but also analyzed to glean insights on how it might assist teachers in their socioeconomic diverse classrooms. Results presented in this review suggest that emotion plays a massive role in students' cognition, in an intra- and inter-personal manner, both positively and negatively. Based on the results in the studies reviewed, implications include creating learning opportunities that will instill enjoyment in students, not ignoring or disregarding negative feelings, and providing students with constructive feedback, not empty praise. Further research is needed with regard to longitudinal studies, and obtaining more diverse sample populations to reflect the diversity present in different regions of the United States of America.

TABLE OF CONTENTS

TITLE PAGE	i
APPROVAL PAGE	ii
ACKNOWLEDGEMENTS	iii
ABSTRACT	iv
CHAPTER 1: INTRODUCTION	1
Introduction	1
Rationale	1
Historical Background	3
Definitions	6
Limitations	8
Statement of Purpose	9
Summary	9
CHAPTER 2: CRITICAL REVIEW OF THE LITERATURE	11
Introduction	11
Positive and Negative Impacts of Emotions on Cognition	12
Teachers' Emotions Correlated to Students' Emotions and Academic Success	31
Emotional Understanding of Self and Others (Peers) Enhances Academic Performance	47
Students' Attitudes about School Correlated to Perceived Self-Confidence and Academic Achievement	60
Socially Oriented Emotional Experiences' Impact on Cognition	64
Emotional Engagement Correlated to Academic Engagement and Competence	73

Summary.	85
CHAPTER 3: CONCLUSION	88
Introduction.	88
Summary of Findings.	90
Classroom Implications	96
Suggestions for Further Research	100
Conclusion	101
REFERENCES	105

CHAPTER 1: INTRODUCTION

Introduction

This critical review focuses on the relationship between emotion and cognition and the relationship's implications on learning in the elementary/middle school classrooms. It presents why current curricula and classroom practices might not be taking this relationship into account, and how the qualitative and quantitative research studies might help in making a shift (grounded in professional literature) to take it into consideration. Most current curricula and classroom practices do not take the relationship between emotion and cognition into account. There is a dire need for this relationship to be not only acknowledged, but also analyzed to glean insights on how it might assist teachers in their racially, culturally, sexually, socioeconomically and ably diverse classrooms.

Although the main focus of this paper is how emotion affects cognition in the elementary/middle school classrooms, it will not leave out other connections with emotion that might help teachers better guide their students' through their learning, in an equitable manner.

Rationale

From 1998 to 2005, San Diego's schools went through a reform based on New York City's District 2 model; this reform pushed for high academic achievement of all students by overhauling the system and increasing the base of instruction across the system (Ravitch, 2010, p. 51). One way people sought to make change happen through this reform was by introducing five hours of

literacy and math, for example (Ravitch, 2010, p. 62). In order to do so, electives and other courses had to be canceled. This change was not very welcomed by students or teachers (Ravitch, 2010, p. 62). Drastic changes have been made to how students learn in the name of increasing academic achievement or test scores. Another example of this are some of the strict and inflexible demands put on students and teachers by the Bush administration's No Child Left Behind (NCLB) federal law. NCLB's accountability plan required "all states [to] establish timelines showing how 100 percent of their students would reach proficiency in reading and mathematics by 2013-2014" (Ravitch, 2010, p. 97).

The issue is not to berate society's desire and need to increase academic achievement of all students. Rather, the problem is that this pressure does not take into account many other aspects of learning and teaching, such as cultural differences in learning styles, socioeconomic status, and it definitely does not consider the impact of emotion on learning, i.e. cognition. There is a need for teachers and education as a whole to take the relationship between emotion and cognition into consideration when writing curricula, setting up classroom structure, etc. As Zambo & Brem (2004) argued, we cannot continue to view emotion through an archaic lens, as if emotion were a means to express our most negative or most positive feelings. Cognition and emotion are connected in a relational way, because emotions help us think on various levels, and cognition helps us understand those very emotions (Zambo & Brem, 2004).

It is important to acknowledge and examine the relationship between emotion and cognition and its impact on how classroom practices are to be

developed. This relationship is not only significant in working with marginalized students but it is also a crucial relationship to acknowledge and analyze when working with students who are not marginalized and are achieving academically as desired by external forces such as the state government. As Arends (1996) asserted “in most cases, the norms of youth culture actually punish those students who want to excel academically” (p. 112). All people, children included, have emotions and those emotions heavily impact their cognition.

Historical Background

Emotion has been studied in terms of cognition since the time of Aristotle (384-322 B.C.) and Epictetus (ca. 50-138) (Cornelius, 1996, p. 115). Aristotle was “the first great systematizer in the field of emotion” (Arnold, 1960, p. 93). However, even though great thinkers engaged in the discussion of the relationship between emotion and cognition, they have, until the 20th century, been studied separately (De Houwer & Hermans, 2010, p. ix). Charles Darwin was the first person to work on the relation of bodily changes and emotion based on factual evidence (Arnold, 1960, p. 100). Magda Arnold’s influential work from the 1960s on is a more contemporary place to start, in regard to research on emotion and cognition (Cornelius, 1996, p. 115). Arnold was a prominent emotions researcher in the 20th century, a time when behaviorism was the mainstream paradigm, and when emotions were viewed as undesired extremes or were discussed through the perspective of psychopathology (Shields & Kappas, 2006, p. 898).

Cornelius (1996, p. 11) conveyed four major theoretical areas of research on emotion in the realm of psychology, all of which overlap another. The Darwinian vein of research is focused on emotion as seen through the lens of evolution, namely natural selection. Psychologists and/or researchers who focus on this aspect of emotion assert that emotions of animals and humans have strong similarities, specifically in functions, and that emotions have adaptive functions. Charles Darwin is credited as the originator of this perspective of emotion. The second theoretical tradition of research on emotion is known as the Jamesian perspective, as it was created by William James. The main focus here for psychologists and/or researchers has been that emotional experiences are rooted in experiences in physical (bodily) changes. The third area is known as the cognitive approach to emotion. Magda Arnold posited that thought leads to emotion, and that emotions are created based on how people appraise situations/events. The fourth emotion-based perspective taken on by psychologists and/or researchers is the social constructivist approach. And, James Averill viewed emotion as a social construction, and as something that serves many social purposes (Cornelius, 1996, p. 12).

Although this paper is a critical review of how emotion affects cognition, it is important to note that all four traditions of emotion research have influenced one another. Even though the Darwinian and Jamesian perspectives are over 100 years old, they , as well as Arnold's theory of appraisals play a significant impact on the cognitive approach to emotion (Cornelius, 1996, p. 12). The

contributions of Magda Arnold also heavily influenced cognition-emotion researchers such as Richard Lazarus.

A great deal of research was done on the relationship between cognition and emotion between the late 1960s and late 1970s. During this boom, Lazarus and his colleagues furthered the research done on the topic of emotion and cognition. Contemporary cognitive theories of emotion, specifically Lazarus' cognitive-motivational-relational theory, state that emotions follow appraisals, as defined by Arnold (Cornelius, 1996, p. 124). Through his theory, Lazarus asserted that emotions help us deal with however we have appraised an observed environment. A crucial aspect to his theory, which differentiates it from Arnold's appraisal theory of emotion, is the idea that appraisals express what he termed "relational meanings", which are situationally-tailored implications for personal welfare that an individual would extrapolate from any given situation (Cornelius, 1996, p. 124). The individual's aims or intentions are just as crucial in creating relational meanings as are what the situation offers to the individual. Lazarus stressed that the former creates the context for the latter to exist. In other words, an individual's reaction to her appraisal of a situation, i.e. aims/intentions, determines what the situation has to offer her (Cornelius, 1996, p. 125). This is the reason for the motivational aspect of his cognitive-motivational-relational theory. According to Lazarus, an individual's motivations steer the course of the effects produced by any given situation she might find herself appraising (Cornelius, 1996, p. 125).

Although a great deal of research has been done on this topic, even with a peer reviewed journal titled *Cognition and Emotion*, not all psychologists and/or researchers agree that the cognitive approach is the leading way to study emotion (Cornelius, 1996, p. 114). In fact, Robert Zajonc offered a hefty challenge to the cognitive approach to emotion (Cornelius, 1996, p. 128); he argued against Lazarus' theory, not Lazarus himself. He posited that cognition and emotion are separate entities, and that cognitive processes do not determine emotion, which stands in direct opposition with Lazarus' theory: that emotion and cognition are interrelated, and that cognition leads to emotion. Zajonc posited that emotions *can* occur either without cognitive activity or before such activity (Cornelius, 1996, p. 128). Another challenge to not only Lazarus' theory, but the study of emotion and cognition as a whole is the work of B.F. Skinner and his learning theory of behaviorism.

Definitions

This paper refers to some key terms that need to be defined. Of the following set of definitions of words/concepts the two most important words are *cognition* and *emotion*, since the paper is based on how emotion affects cognition. Cognition refers to processes such as memory, attention, language, problem-solving, and planning (Pessoa, 2009). Psychologists have been challenged by the need to define emotion (Panksepp, 1998, p. 47). However, most psychologists considered emotion encompasses all "subjective experiences, expressive reactions, physiological reactions, behavior of various kinds, and particular kinds of cognitions" (Cornelius, 1996, p. 10).

As discussed, some prominent cognitive-emotions theorists, such as Magda Arnold and Richard Lazarus, constantly used the word 'appraisal' as part of the cognitive-emotion relationship. Before feeling an emotion, one must *appraise* it (the specific event) for good or ill (Arnold, 1960). One's appraisal process takes into account an individual's experiences and specific intent (Arnold, 1960). She further argued that emotion and appraisal are not the same thing, rather to feel an emotion one must first complete the immediate and nonreflective appraisal step (Arnold, 1960). A reflective judgment or appraisal comes second to a nonreflective and direct appraisal (Arnold, 1960, p. 175). In a learning situation, the student must appraise the present situation, directly and immediately compare/contrast the present learning experience to past learning experiences to gauge whether the present one will or will not match in form and function to ones that came before (Arnold, 1960, p. 173).

Another key concept that must be defined is Richard Lazarus' *cognitive-motivational-relational theory*. As mentioned above in the historical backgrounds section, this theory is focused on cognition, an individual's motivation (one's reaction or appraisal of an event), and relation (which is a specific event-based implications for the wellbeing of the individual based on what the individual takes away from any given situation/event) (Arnold, 1960).

The final term that needs defining is B.F. Skinner's learning theory of behaviorism. This theory posited that knowledge is transmitted to learners by way of preplanned lessons/programs (Miller, 2010). Through this lens, learning is viewed as a change in behavior, which starkly differs from how cognitive-

emotions theorists tend to view learning. Skinner, on the other hand, posited through *behaviorism* that the environment shapes an individual, that master of learning involves repetition, that behavior can be modified and learning can be measured and modified, and that knowledge is transmitted to learners to begin with a blank slate.

Limitations

This critical review has some limitations and boundaries. As mentioned above, emotion is studied through four major lenses, and those areas overlap. Even though this paper will review research on the relationship between cognition and emotion, certain studies that focus on the relationship between emotion and biology, for example, will be examined. Some of the implications of the effects of emotion on cognition are limited to the K-8 grades. Although some research reviewed has larger implications that extend beyond that grade range, the interpretations and assumptions made will be based on how emotion impacts cognition in the elementary/middle school classrooms. In addition, some studies in this review will focus on the relationship between emotion and cognition, but not necessarily in terms of children's emotions and their cognition. In addition, the timeframe for the research reviewed in this paper is from the 20th and 21st centuries.

Statement of Purpose

This paper critically reviews research studies that focus on the relationship between emotion and cognition, in order to glean insights on how to use such

research in classroom practices that take emotion and cognition into account while teaching (and learning).

Summary

Chapter One introduced the aim of the paper, provided a rationale, a historical background, definitions of key terms, limitations, and a statement of purpose. The aim of this study focuses on the relationship between emotion and cognition, and that relationship's impact on academic achievement. More specifically, it is crucial to examine how emotion impacts cognition in the elementary/middle school classrooms by critically reviewing research studies done by psychologists/researchers who have devoted a great deal of time and effort in trying to understand the relationship between emotion and cognition. Of the four major areas of study developed by this research, the explicit relationship between emotion and cognition is of high significance. Limitations include demographics of people sampled in studies, the number of people sampled, and/or the K-8 grade-band of students in certain studies.

Chapter Two provides a critical review of 30 studies based in the field of emotion and cognition. Chapter Two is divided into six subsections: (1) positive and negative impacts of emotions on cognition, (2) teachers' emotions correlated to students' emotions and academic success, (3) emotional understanding of self and others (peers) enhances academic performance, (4) students' attitudes about school correlated to perceived self-confidence and academic achievement, (5) socially oriented emotional experiences' impact on cognition, and (6) emotional engagement correlated to academic engagement and competence.

Each section contains an overview of studies, which includes the demographics of the sample population(s), the summary of findings, and a discussion of strengths and weaknesses of each study.

Chapter Three presents classroom implications for both teaching and learning. It also provides suggestions for further research in the field of emotion and cognition. The classroom implications and suggested practices are based on findings of the 30 studies reviewed in chapter Two.

CHAPTER TWO: CRITICAL REVIEW OF THE LITERATURE

Introduction

Over the past 20-25 years researchers have studied the relation between, and impact of emotion on cognition in the classroom. In general, most of the studies presented in this critical review found a positive correlation between

emotion and cognition, some studies found no correlation. The discrepancies are due in part to *what* factors within emotion and cognition are studied, and how the two words are defined. Although the definitions of these words are discussed in Chapter 1, authors of the studies reviewed in this chapter created their own personal meanings for the words, which, in turn, skew how, and on what basis results are interpreted. Many studies focus solely on the relationship between emotion and cognition in the classroom. Other studies conducted research that focused on the correlation (or lack thereof) between emotion and cognition, however, they added additional variables such as motivation, behavior, and socially oriented emotionality of students.

This chapter provides a critical review of a variety of research-based studies that focus on the correlation, or lack thereof, between emotion and cognition in the classroom. The first section of this chapter reviews studies specifically focused on the positive and negative impacts of emotions on cognition. The second section reviews studies on teachers' emotions correlated to students' emotions and academic success. The third section reviews studies based on how emotional understanding of self and others (peers) enhances academic performance. The fourth section reviews studies on the correlation between students' attitudes about school, and their perceived self-confidence and academic achievement. The fifth section reviews studies on the impact of socially oriented emotional experiences on cognition. The sixth and final section reviews studies on the correlation between emotional engagement in the classroom, and academic engagement and competence.

Positive and Negative Impacts of Emotions on Cognition

The purpose of this section is to review studies on certain positive and negative emotions, and whether these emotions impact cognition positively or negatively. The following nine studies were conducted in America, Germany, and Canada, on students in elementary and secondary grades, with one study performed on college students.

Burgess, Wojslawowicz, Rubin, Rose-Krasnor, and Booth-LaForce (2006) performed a quantitative study on attributions, emotional reactions, and coping strategies of shy/withdrawn and aggressive upper elementary and middle school students, and found coping strategies of avoidance significant. Yamawaki, Tschanz, and Feick (2004) performed a quantitative study and found that the correlation between optimism-defensive pessimism and negative-thought ratio was statistically more significant than with defensive pessimists than optimists. Houlfors, Koestner, Joussemet, Nantel-Viver, and Lekes (2002) performed a quantitative study with upper elementary and middle school students, and found perceived competence was positively correlated to affective autonomy and self-reported interest. Zambo, and Brem (2004) performed a qualitative study with children with learning disabilities and found that emotional reactions parallel cognitive functioning, and the memory of negative experiences in reading promote reactions that can lead to a flight or fight response. Pekrun, Goetz, Titz, and Perry (2002) conducted a quantitative study with secondary German students, and found that academic emotions were significantly correlated to students' motivation, learning strategies, cognitive resources, self-regulation, and

academic achievement. Geotz, Pekrun, Hall, and Haag (2006) performed a quantitative study on secondary students and found that high value for academic achievement leads to increased achievement-related emotionality. Ahmed, van der Werf, Minnaert, and Kuyper (2010) studied intra-individual variability in students' daily experiences as they unfolded in a classroom setting with middle school students, and found that inter-student and intra-student variance was significantly high. Schweinle, Turner, and Meyer (2009) performed a quantitative study on which cognitive, motivational, and affective aspects of experience are most related to the interaction of challenge and skill in the classroom with elementary and middle school students; they found that challenge relates negatively to efficacy, only when skill is low, and that interaction of challenge and skills significantly predicted personal affect.

Burgess, Wojslawowicz, Rubin, Rose-Krasnor, and Booth-LaForce (2006) conducted a quantitative study on emotional reactions, and coping strategies of shy/withdrawn and aggressive boys and girls; this was the experimental group. The researchers created a control group of non-shy/non-withdrawn and non-aggressive boys and girls for sake of comparison. Their study jointly examined social withdrawal, friendship, and social cognitions. They studied 827 5th grade students (406 boys, and 421 girls), and 1210 6th grade students (592 boys, and 618 girls), selected from three public elementary and middle schools in a metropolitan area in the United States of America. Subjects answered questionnaires (asking to rate their best friends in order), and a Revised Class Play. Three groups were created out of the total participant pool: the Aggressive

group of children, the Shy/Withdrawn group, and the Control group (made up of non-aggressive and non-withdrawn children). Parents of students also participated, by providing demographic data certain specific sub-samples of the larger sample. The authors performed ANOVAs in search of between-groups differences/similarities.

The following data depicts associations among attribution style, emotional reactions, and coping strategies for hypothetical/unfamiliar peer conditions. The correlation between the attribution of external blame and the emotion of feeling OK was $-.38$, with $p < .01$; between the same attribution and the emotion of feeling mad was $.48$, with $p < .01$; between the same attribution and the emotion of embarrassment was $-.10$, with no p-value given. The correlation between the copying strategy of avoidance and the emotion of feeling OK was $-.24$, with $p < .01$; between the same coping strategy and the emotion of feeling mad was $.35$, with $p < .01$; between the same copying strategy and the emotion of embarrassment was $-.07$, with no p-value given.

Compared to other studies in this section, some of which present their highest p-values to be $<.001$, having a highest p-value of $<.01$ is not necessarily a strength or flat out weakness. However, all but one finding in this study holds statistical significance. A strength of this study is the authors' near-transparent presentation of how and from where they gathered the sample population.

Yamawaki, Tschanz, and Feick (2004) performed a study on whether defensive pessimists have a high ratio of negative-to-positive academically relevant self-thoughts, as these thoughts are related to high self-esteem

instability. The authors hypothesized that defensive pessimists tend to have a relatively high ratio of negative-to-positive academically relevant self-thoughts. They also hypothesized that, relative to optimists, defensive pessimists tend to be less oriented toward mastery-goals in an academic setting. Participants were chosen from a pool of 500 introductory psychology students who: (a) were third (pessimistic), or upper third (optimistic) of the distribution of scores on the Optimism-Pessimism Questionnaire; (b) reported an overall GPA of 3.0 or higher, and (c) agreed to the statement, "I've generally done pretty well in academic situations in the past". After screening, 47 defensive pessimists and 47 optimists were taken on for the study. The researchers used the following methods of study: the Optimism-Pessimism Questionnaire, Rosenberg's self-esteem scale, the Negative-Thought ratio measure, the Achievement Goals scale.

The following are the means of defensive pessimists (DP), and five dependent variables. The mean for DP and self-esteem instability was 4.68. The mean for DP and negative-thought ratio was 0.40. The mean for DP and avoidance goals was 27.87. The mean for DP and mastery goals was 32.32. The mean for DP and approach goals was 26.83. Defensive pessimists had a mean self-esteem score ($M = 61.58$) significantly lower than that for optimists ($M = 72.68$), with $p < .001$.

The correlation between self-esteem instability (SEI) and avoidance goals was .37, with $p < .01$. The correlation between SEI and mastery goals was -.07, with no p-value given. The correlation between SEI and approach goals was .07, with no p-value given. The correlation between negative-thought ratio (NTR) and

avoidance goals was .43, with $p < .01$. The correlation between NTR and mastery goals was -.01, with no p-value given. The correlation between NTR and approach goals was .11, with no p-value given.

Researchers found that when defensive pessimists were distracted from strategic and systematic activation of negative self-thought, their performance suffered—however, it was stated that the reliability of the defensive pessimism-optimism scale was quite low. This statement portrays a weakness of the study. The fact that not all correlations are stated with corresponding p-values creates another weakness for the study. The fact that this study was performed on college students is yet another weakness, as the focus of my research question is on elementary school children, however, the findings can be somewhat generalized in terms of students experiencing feelings of pessimism and optimism.

Houlihan, Koestner, Joussemet, Nantel-Viver, and Lekes (2002) performed a quantitative study on performance-contingent rewards and their impact on affective autonomy and feelings of competence. The authors hypothesized that such rewards tend to decrease reports of affective autonomy but enhance feelings of competence. One hundred and forty-five (65 boys, and 80 girls) 3rd, 4th, 5th, and 6th graders from Montreal, Canada represent the participant pool for this study. Only children whose parents returned signed permission slips took part in the experiment. Researchers randomly assigned students to the performance-contingent reward group or the no-reward control group. Once taken out of the classroom, researchers introduced participants to the

experimental task which consisted of exercises from Raven's Standard Progressive Matrices. Researchers explained to students in the performance-contingent reward group that they would receive a reward if they performed well; researchers asked students in the control group to perform the task. After the experiment time ended, the experimenter stopped students, reviewed their answers, and told them they "did well" regardless of their actual performance, and students in the performance-contingent group were rewarded with decorative pencils. Students were also given a 3-item questionnaire that used a 6-point scale, which assessed dependent variables: perceived competence, affective autonomy, and interest-enjoyment. Once again, after the task, students in the performance-contingent group were rewarded.

The following are means and standard deviations (SD) of the three variables listed above for the performance-contingent and no-reward groups. For affective autonomy, the mean of student assessments in the rewards group was 4.98, with a SD of 1.18; for the same variable, the mean of student assessments in the no-reward group was 5.36, with a SD of .89. For the variable of enjoyment, the mean of student assessments in the rewards group was 4.66, with a SD of .58; for the same variable, the mean of student assessments in the no-reward group was 4.31, with a SD of .95. For the variable of competence, the mean of student assessments in the rewards group was 4.24, with a SD of .87; for the same variable, the mean of student assessments in the no-rewards group was 4.09, with a SD of .86.

A 2 x 2 x 2 ANOVA—with gender and reward (present/absent) as a between-subject factor, and type of need (affective autonomy/perceived competence) as a within-subject factor—revealed a reward by type of need interaction, $F(1, 141) = 7.23$, with $p < .01$. The authors stated this interaction to be of significance. The authors also ran a 2 x 2 ANOVA with gender and reward as between-subject factors conducted on students' report of enjoyment. They found a main effect for reward, $F(1, 141) = 5.98$, with $p < .05$, which they stated to be significant. According to the authors, this finding reflects the fact that children who received rewards portrayed more enjoyment than those who did not.

Although the participants of this study were from Montreal, Canada, the population size was large, and the age ranges were fairly spot on for the scope of this paper, which create a strength. Another strength of this study is based on the two correlations presented in this paper.

Zambo, and Brem (2004) performed a qualitative study on the relationship between emotion and cognition with children, and how emotional reactions to reading influence students' cognition, mood, and self-schemas. The participants were made up of a group of eleven students in grades five to eleven who were labeled as reading disabled and six of their teachers (who helped clarify and confirm their words). The authors performed structured interviews, and asked the same questions in the same order to all students and teachers. They spent eleven months with the individuals in both formal and informal settings. Research on emotions, cognition, and reading was used to develop interview questions.

The authors' goals were to (a) investigate the emotional reactions to reading that struggling readers encounter, and (b) the influence of emotions on children's cognition, mood, and self-schemas. Researchers created checklists for us by teachers and others based on the themes they came up with. They used the Checklist of Automatic Emotional Reactions Related to Reading, as well as the Checklist of the Influence of Emotion on Cognition, Mood, and Self-Schema Related to Reading and related them both to students' and teachers' interview answers. The results are presented in themes that rose from interview conversations with students and their teachers.

The following are certain emotional reactions to reading with corresponding student and/or teacher interview responses. For example, a student's response of, "...you are sitting there trying to get it out of your brain going a-n-d. But you're so scared the words don't come", is related to the automatic emotional reaction of reading evoking fear reaction, such that when the student is asked to read, their higher level thinking buckles. The authors attributed a teacher's response of, "...now, they just automatically shut their books and say I can't do it", to the emotional reaction of the child perceiving reading as a threat.

The following excerpts from the study show how emotion influences cognition, mood, and self-schemas, as relayed by students and teachers via interview. A child's low self-efficacy, and belief that she/he could never be a competent reader comes through in a student's response of, "Others are born to read but not me. I'm just a dumb kid". The way a child emotionally thinks about

reading impacts how much, or little practice she/he gets with reading, as evidenced by this (teacher) response, “not practicing reading is their way of saving face. Reading is not an enjoyable activity so they are choosing not to do it, and consequently, not getting the practice that they need”.

Although the findings in this study might seem reasonable, this study has some weaknesses. The authors state the number of students and teachers, and the students' grade range, but they do not report on how they were selected, or on their gender, ethnicity, class, age, geographical location, or any other characteristic that might be pertinent to the study. The focal point of critique with this study is that no mention was made as to how entry was gained to the selection of subjects, or what relationship the researchers had prior to the study. In addition, the authors do not comment on triangulation, or member-checking, making this study's credibility questionable. The authors neither present, nor are forthright about their procedures, such that this study's process and product can be confirmed or auditable by an outside party.

Although the study includes students who are of elementary age, the number of participants was significantly lower (11 students, 6 teachers) than the number of participants from the three studies discussed above. The context of this study, impact(s) of emotion on cognition is similar to that of other studies in this section. This study found some qualitative evidence for how emotion *negatively* impacts cognition. A strength of this study is that, although the authors only focus on emotions to reading, and the impact of these emotions on

cognition, the entirety of the study focuses the impact of emotion on cognition, which is a major aspect of my research question.

Pekrun, Goetz, Titz, and Perry (2002) conducted a qualitative and quantitative study on which emotions students experience in academic settings when attending class, studying, and taking tests and exams, how do these emotions affect learning, academic achievement. In other words, the authors sought to answer the question of whether students' emotions influence their academic learning, self-regulation, and achievement. The authors administered an Academic Emotions Questionnaire (AEQ) plus 7 cross-sectional, 3 longitudinal, and 1 diary study. The data presented and discussed below is based on one of the studies, with 230 university students.

This study's authors found the following data, which depicted the correlation between motivation, specifically study interest and effort, and three major learning-related emotions of enjoyment, anxiety and boredom. The correlation between study interest and enjoyment is .62, with $p < .001$. The correlation between study interest and anxiety is -.21, with $p < .01$. The correlation between study interest and boredom is -.63, with $p < .001$. The correlation between effort and enjoyment is .43, with $p < .001$. The correlation between effort and anxiety is -.19, with $p < .01$. The correlation between effort and boredom is -.5, with $p < .001$.

A strength of this study is that four of the six correlational findings presented here have a p-value of $< .001$. This data makes clear that enjoyment and boredom are at near opposite ends, as one might expect, in terms of how

they relate to the motivational aspect of study interest and effort. In addition, the significance of the correlation between study interest and enjoyment leads one to consider ways to create learning experiences that will lead to increased enjoyment, so as to increase study interest, which is an aspect of cognition. The study has two related weaknesses: conditions of gathering the sample population are not explicitly stated, and the study is based on university students.

Geotz, Pekrun, Hall, and Haag (2006) performed a quantitative (correlational) study on how students' emotions experienced in the context of Latin instruction relate to students' cognitions and social factors involving the school and family environment. Their participant pool consisted of 200 (N=121 females) from grades 7 to 10 who were enrolled in a top-track of the German three-track educational system. There were 67 student from grade 7; 57 from grade 8; 38 from grade 9; 38 from grade 10. All the scales used that assessed emotions and their antecedents were specific to Latin instruction, except to general self-esteem. All measures, except general self-esteem, were assessed on the mathematics-specific scales that were developed for the PALMA Project (Project for the Analysis of Learning and Achievement in Mathematics). Responses were measured on a 5-point Likert scale. All scales had a Cronbach's alpha between .70 and .92.

The emotions scales were based on a four-component model assessing the affective, cognitive, motivational, and physiological aspects of academic emotions, and assessed students' emotional experiences when in class, studying at home, and taking tests. Selection of which emotions to assess was based on

Watson and Tellegen's model. The authors chose a set of six subsidiary school subjects (Latin, English, German, mathematics, music, and sports). Emotional experiences in these different subjects were assessed using single-item measures to allow for direct comparison of the intensity of emotional experiences in the various subjects. Data were gathered at the beginning of the school year through a standardized questionnaire. Student participation was on a voluntary basis and they received neither financial rewards nor feedback of results in exchange for their participation.

The following are the correlations between the emotions of enjoyment, pride, anxiety, anger, and boredom, and the main variable of cognition, which the authors broke up into the four sub-variables of general self-esteem, academic self-concept, intrinsic value, and value of achievement. It is important to keep in mind that all measures except general self-esteem are Latin-specific.

The correlation between enjoyment and academic self-concept was .59. The correlation between enjoyment and value of achievement was .42. The correlation between pride and academic self-concept was .54. The correlation between pride and value of achievement was .40. The correlation between anxiety and academic self-concept was -.57. The correlation between anxiety and value of achievement was -.07. The correlation between anger and academic self-concept was -.45. The correlation between anger and value of achievement was -.28. The correlation between boredom and academic self-concept was -.25. The correlation between boredom and value of achievement was -.30. The authors found positive correlations between the emotions of

enjoyment and pride, and the four sub-variables of cognition, whereas, they found negative correlations between the emotions of anxiety, anger, and boredom, and the four sub-variables.

The authors make no mention of how the sample pool was selected for this study. Although there is no transparency in this regard, it cannot be assumed that that means the sample was a convenient sample, a self-selected sample, or that there was selective under-coverage. It should be noted, however, that three of the four authors of this study work at German universities. The fact that 200 German students were chosen might lead one to question the specialized condition of student from Germany who are on the top-track of the three-track educational systems. Finally, since all scales used in this study had a Cronbach's alpha between .70 and .92 is a strength—the scales are moderately to highly reliable.

These findings could potentially be generalized to 7th to 10th grade students in more affluent-than-not schools, in which they are enrolled in all honors, or some other form of top-track classes similar to those of the German students in this study.

Ahmed, van der Werf, Minnaert, and Kuyper (2010) studied intra-individual variability in students' daily experiences as they unfolded in a classroom setting. The authors hypothesized that there would be high within-student variability with regard to emotions. The sample population was made up of 120 7th grade students (52% girls) from 5 randomly chosen classrooms in a secondary school with 10 mathematics classrooms. The mean age of this sample pool was 12.7

years. Students were asked to complete diary entries for the 2-week study period. Each class had four mathematics lessons per week so each student in each class was handed a 4-day lesson packet to fill out for the week. Students received €5 with each week's completed packet.

Students' daily appraisals or judgments, and daily emotions were assessed. Students' appraisals were adapted from Boekaerts' Online Motivation Questionnaire, and students rated items on this questionnaire on a 4-point scale. The authors stated that the Cronbach's alpha reliability scores for competence and value appraisals were .83 and .73, respectively. Daily emotions, on the other hand, were assessed using daily diaries. Participants also rated specific emotions on a 5-point Likert scale, which, the authors stated had a Cronbach's reliability score for all the discrete emotion measures of .59.

The following are intra-individual correlations. The correlation between value appraisal (VA) and competence appraisal (CA) was .28, with $p < .01$. The correlation between anxiety and CA was $-.19$, with $p < .01$. The correlation between anxiety and VA was .03. The correlation between boredom and CA was $-.18$, with $p < .01$. The correlation between boredom and VA was $-.34$, with $p < .01$. The correlation between enjoyment and CA was .30, with $p < .01$. The correlation between enjoyment and VA was .32, with $p < .01$. The correlation between hope and CA was .36, $p < .01$. The correlation between hope and VA was .27, with $p < .01$.

The researchers use the aforementioned data to come to the conclusion that, since competence and hope are highly correlated, a students' sense of

confidence will weigh on how hopeful she/he feels about a specific assignment. On the other hand, if a student does not have confidence, then her/his hopelessness will increase with every given task, and future task to come.

A major strength of this study is the transparency of the reliability, through Cronbach's alpha, of various scales used to assess participant responses. Although this is a strength of the study, not all Cronbach's alpha scores were high enough to award decent or high reliability. For example, the authors stated that the Cronbach's alpha reliability scores for competence and value appraisals were .83 and .73, respectively. These two scores reflect moderate to high reliability of the competence and value appraisals scales. However, they also reported that participants also rated specific emotions on a 5-point Likert scale, which, the authors stated had a Cronbach's reliability score for all the discrete emotion measures of .59. A score of .59 is clearly does not show high or even moderate reliability of the emotion measures.

A weakness of this study is that the researchers do not explain *how* the sample of 120 students was gathered. By not explaining, they leave the idea of sample bias up to the readers' assumptions. Although the sample can be recreated, it can only be done under the circumstances that were made explicit by the researchers. And, as mentioned above, they did not make crucial demographic and selection criteria apparent in their study. Another weakness is that this study is presented as a correlational study; however, in the discussion section of their paper the authors conclude that a low competence appraisal can potentially negatively affect the emotion of hopelessness, or vice versa. This is a

weakness because the study is portrayed as a correlational study, yet the researchers present cause-and-effect conclusions. They do not explicitly state such a relationship, but do allude to it in their conclusion of the relationship between competence appraisal and hopelessness.

Although this study presented data collection and data analysis in a somewhat questionable manner, the findings can be useful to teachers and educators alike if viewed as correlations rather than cause-and-effect relations. That is not to say no study can conclude cause-and-effect relationships between competence and value appraisals and certain emotions found in the classroom. Rather, one cannot take findings from this study and interpret them as cause-and-effect relationships since the authors themselves present the study in a correlational manner.

Schweinle, Turner, and Meyer (2009) performed a quantitative study on which cognitive, motivational, and affective aspects of experience are most related to the interaction of challenge and skill in mathematics classroom. The study tested the flow theory, which states that different levels of skill and challenge can predict affective, cognitive, and motivational aspects of experience, with students in elementary math classes. The researchers hypothesized more variability across situations than within individuals.

The participant pool of six students (Girls = 3) was selected from a larger pool of 42 upper elementary students in each of 7 fifth and sixth grades classrooms. Students came from three predominantly Caucasian elementary schools in a small, middle-class town in the Northeast of The United States of

America. For the sake of attaining a representative sample, teachers of these 42 students were asked to select a high, average, and low achieving student from each sex in their classrooms. It is important to note that studies similar to this one have students who compared answers, which altered the outcome of the expected results. In order to avoid this, a small sample of students from different math classes in different schools was chosen.

Students completed an ESF, which measured four factors: social affect (cooperative, alert, involved, part of the group, open), personal affect (excited, proud, happy, cheerful), efficacy (strong, clear, successful), and importance (important, important to others). This study used an adapted version for this particular age group from Csikszentmihalyi and Larson's ESF. The adapted version contained 12 affective, cognitive, and motivational semantic-differential items, measured on a 9-point Likert scale. A total of 427 ESF forms were completed, one by each student on four days of class during fall, winter, and spring.

The following are F-scores and corresponding p-values for correlations from this study. Between challenge and personal affect the F-score was .12, with p .73, and between challenge and efficacy the F-score was 8.86, with p .003. Between skill and personal affect the F-score was 41.96, with $p < .0001$, and between skill and efficacy the F-score was 68.54, with $p < .0001$. The authors stated the above F-scores to be statistically significant.

A strength of this study is that authors are open and clear about the study's and flow theory's limitations. The authors of this study state the

importance of acknowledging that their analyses are of experiences, and not of individuals. Theoretically, flow theory has mostly been focused on talented teenagers performing within their talented areas, whereas, this study focuses on upper elementary students (who are not teenagers yet), and does not stick with talented students in their areas of talents.

Summary of Section

Burgess, Wojslawowicz, Rubin, Rose-Krasnor, and Booth-LaForce (2006) found coping strategies of avoidance significant. Yamawaki, Tschanz, and Feick (2004) found that the correlation between optimism-defensive pessimism and negative-thought ratio was statistically more significant than with defensive pessimists than optimists. Houlfors, Koestner, Joussemet, Nantel-Viver, and Lokes (2002) found perceived competence was positively correlated to affective autonomy and self-reported interest. Zambo, and Brem (2004) found that emotional reactions parallel cognitive functioning and the memory of negative experiences in reading promote reactions that can lead to a flight or fight response. Pekrun, Goetz, Titz, and Perry (2002) found that academic emotions are significantly correlated to students' motivation, learning strategies, cognitive resources, self-regulation, and academic achievement. Geotz, Pekrun, Hall, and Haag (2006) found that a high value for academic achievement leads to increased achievement-related emotionality. Ahmed, van der Werf, Minnaert, and Kuyper (2010) found that between-student and within-student variance was significantly high. Schweinle, Turner, and Meyer (2009) found that challenge

relates negatively to efficacy, only when skill is low, and that interaction of challenge and skills significantly predicted personal affect.

Both Burgess et al. and Yamawaki et al. focused on the correlations between avoidance and certain negative emotions (mad, embarrassed). Both studies found low (z -score < .50), yet positive and significant correlations between the two previously mentioned elements of study. Three of the nine studies in this section focused specifically on the significant correlations between the emotions of enjoyment, anxiety and boredom, and study interest and effort (Pekrun et al., 2002), academic self-concept and value of achievement (Goetz et al., 2006), and finally with competence appraisals, value appraisals (Ahmed et al., 2010). Even though all three of these studies focused on the emotions of enjoyment, anxiety, and boredom, the results of the findings from all three cannot necessarily be compared and contrasted since the emotions were correlated to different aspects of cognition in each study.

Of the nine studies in this section, six focused their scope on elementary and middle school students in the USA; two focused on high school students in the USA. Three studies had specialized settings or specific elements that went beyond studying students in a classroom: one focused on students with disabilities, one on students in a Latin language classroom, and a third on the categorization of mathematical integrity. And finally, two of the nine studies were based on students in Germany.

Teachers' Emotions Correlated to Students' Emotions and Academic Success

The purpose of this section is to review studies that focus on students' emotions of self and academic success based on their teachers' emotions of them. All but two of the six studies were performed on elementary school children; two study used college students as participants. All studies were conducted in America.

Crossman (2007) performed a qualitative study on college students, and found that participants expected teachers to be objective and fair in matters of assessment, and that positive relations with teachers were described in ways that appeared to influence an individual's sense of self, self-worth and personal confidence. Pianta, Belsky, Vandergrift, Houts, and Morrison (2008) performed a quantitative study on elementary school students, and found the quality of teacher-child interaction was negatively, and non-significantly related to both quantity of exposure to literacy and math. Hamre, and Pianta (2005) performed a quantitative study on pre-school and elementary school students, and found that the functional risk analyzed by means of emotional support was statistically significant. Else-Quest, Hyde, and Hejmadi (2008) performed a study on the emotional content of the mother-child interactions while working challenging mathematics tasks in the home, on elementary school students and their mothers, and found a significant correlation between mother's and child's emotion during tasks. Astleitner (2001) performed a quantitative study on teachers and university students, on whether emotions are important for teachers

and students in daily instruction, and found that answers provided by both teacher and students were indicative of the high importance of emotional processes in instructional settings. Demetriou and Wilson (2009) performed a qualitative study with teachers on the significance of establishing a rapport with students based on affective communication, and found that teachers' responses emphasized the importance of conceptualizing teaching and learning as encompassing both affect and cognition so as to have a balanced and healthy view of teaching, learning, the student and the school.

Crossman (2007) performed a qualitative study on how emotions relate to the way people perceive assessment, and the relationship between the way teachers assess their students, and students' perception of self, self-worth and success. The study also explains the assessment process can be a valuable opportunity for students to communicate their feelings, beliefs, and emotions. This study used the same data and methods as used in a previous and similar study performed by the same researcher. The difference between the present study and the previous study is the research question. The original study's analysis focused on what participant said about they viewed assessment, whereas the present study's analysis focused on the way in which said perceptions were expressed.

Eleven Bachelor of Education students volunteered (female-9, male-2), and were chosen in three different ways. The researcher contacted a senior professor via email asking if students in their classes would be willing to participate in this study. This resulted in only three students volunteering. Next,

the researcher asked these three students to ask their friends/classmates if they would be willing to participate in the study. Lastly, the researcher made classroom visits, and provided students with brief session on the reasons for the study, and asked for volunteers. The data were collected in three different ways as well: semi-structured interview questions, which were videotaped and transcribed; a think-aloud card sorting activity intended to elicit assessment preferences; and, written pieces on issues regarding designing assessments.

The study found that participants linked past experiences as students with current perceptions of assessment. Participants shared stories that reflected emotions of disappointment, anxiety, suspiciousness, and a feeling of failure with regard to the fairness of assessment practices. Although the participants were adults, and Bachelor's in Education students, their responses shined light on the importance of the *kinds* of student-teacher relationships that impact learning as they reflected upon their own experiences as students. Participants expressed their need, as learners, for teachers to be fair and objective when assessing. The study found that some participants favored assessments, such as journals, because they provided opportunities for them to express their feelings and emotions within the context of learning. The researcher identified emotions such as annoyance, anger, shame, suspiciousness, and insecurity from participants' discussion response.

A major weakness of this study is that the sample population is extremely small, with only 11 people. Another weakness of this study is that all participants were adult college students. Although their responses are valid, they must be

taken with a grain of salt when extending them as possible responses given by elementary school children.

Pianta, Belsky, Vandergrift, Houts, and Morrison (2008) performed a quantitative study on how specific school settings altered the early trajectories of children's social and academic functioning. From ten locations throughout the U.S., 791 first, third, and fifth graders were selected for this study, along with 1,364 of their mothers, who completed a home interview when the selected students were 1 month old babies. Of the 791 students, 404 were female, 387 were male, 618 were not poor, and 173 were poor. Focus of the observation was the classroom, with specific participant children and their mothers in the foreground.

Global ratings of classroom observations, including the teacher were made using a set of 7-point rating scales. These ratings included the following classroom-level dimensions: over-control, chaos, positive emotional climate, negative emotional climate, detachment of the teacher, teacher sensitivity, productive use of instruction time, and richness of instructional methods. Time-sampled codes measured setting, activities, teacher behavior, and child engagement. Achievement outcomes of participants were measured using the *Woodcock Johnson Psychoeducational Battery-Revised* with four subsets: letter-word identification (grade 1), broad reading (grades 3 and 5), applied problems, and picture vocabulary.

The correlation between the quality of teacher-child interaction to quantity of exposure to literacy at 1st grade was -.02, with no p value, at 3rd grade was

.00, with no p value, and at 5th grade was -.02, with no p value. The correlation between quality of teacher-child interaction to quantity of exposure to math at 1st grade was -.05 with no p value, at 3rd grade was -.02 with no p value, and at 5th grade was -.04 with no p value. The correlation between emotional quality (according to Grade 5 WJ-R), and fast readers was .90 with no p value. The correlation between emotional quality (according to Grade 5 WJ-R), and normal readers was 3.65 with $p < .05$. The authors found that greater emotional support in 5th grade lead to higher math achievement. And, that basic skills and structured focused instruction in the 1st grade *might* have been judged by observers as less, not more emotionally supportive than classrooms lacking in such an instructional focus. Emotional quality of the classroom setting was found to be a consistent predictor of both reading and math skill growth.

A weakness of this study is that the authors stated statistical significance in findings, some with no p-values. Stating statistical significance without providing p-values is a weakness because there can be no significance without a p-value. A strength of this study is that the authors were explicit about their sample-gathering methods. In addition, the process of choosing the sample expressed that authors sought randomization, at least to some extent. Once the authors choose a specific group of people to whittle down from—mothers shortly after the birth of a child in 10 different locations across the United States of America—the authors conditionally and randomly selected a small sample population from the larger one. This is a strength because they sought to ensure certain percentages of categories of mothers, for the sake of a diverse

population. Since the final sample population was so large (1,364 mothers), the sample-selection process and results are not so specialized that other groups of mothers would not experience at least some of the conditions presented in the findings of the study.

Due to the lack of p-value transparency with correlations found in the study, it is a challenge to assess the significance of said findings, and to further consider any classroom implications that might arise out of these findings.

Hamre, and Pianta (2005) performed a quantitative study on whether children's risk of failure is moderated by instructional and emotional support from teachers. They authors posited that greater emotional support would lead to positive academic experiences and infrequent teacher-student conflict, especially for students who are considered to be 'at risk' in kindergarten.

Participants chosen for this study came directly from a previous study performed by Pianta, Belsky, Vandergrift, Houts, and Morrison (2008), whose study was discussed directly above this one. Of the original sample of 1,364 children, 910 completed necessary data and were included in the present study. Of the 910 students, 49% were female. Majority were White students (N=723), followed by African American (N=96), Hispanic (N=50), and other (N=39). Data was gathered from 827 classrooms, in 747 schools, in 295 public school districts, in 32 states. Educational levels of the children's mothers ranged from 7 to 21 years, with a mean of 14.45 years. The authors also examined the income-to-needs ratio, which measures income compared to the number of people living in the household during the period of the study (54 months); the ratio ranged from

.15 to 33.77, with an average of 3.73. The authors explicitly stated that this range presents a largely non-poverty sample.

Children's assessment was measured with the Woodcock-Johnson Psycho-educational Battery-Revised. At certain points throughout the assessment, several subtests were given out assessing cognition, specifically in terms of long-term memory retrieval (memory of names), short-term memory (memory of sentences), auditory processing (incomplete words), and comprehensive knowledge (picture vocabulary). Student-teacher relationships—the way children functioned relationally was assessed based on the Student-Teacher Relationship Scale, a 28-item rating scale, using a Likert format; it was used to assess teachers' perceptions of students; the conflict scale was used to assess the amount of negative interactions and emotions between the teacher and student. Classroom process—measured using Classroom Observation System for First Grade (COS-1). Global ratings included overcontrol, positive emotional climate, negative emotional climate, effective classroom management, literacy instruction, evaluative feedback, instructional conversation, and encouragement of child's responsibility. The above factors were analyzed and averaged into two major indicators of classroom environment: emotional support and instructional support.

The following are the findings of this study. For classroom process: emotional support was found to have an F-score of 1.29. Based on this finding, authors accepted their null hypothesis and stated that there the variable of emotional support had no significant effect on children's achievement. Analysis of

risk and classroom process found no F-values for main effects, and that functional risk analyzed by means of emotional support produced an F-value of 4.57, with a p-value of $p < .01$ (under moderation, not main effects). And, for teacher-child conflict, it was found that the analysis of functional risk and emotional support yielded an F-value of 3.62 with a p-value of $p < .01$, which the authors stated to be statistically significant.

Since this study used the same sample population as did the study performed by Pianta, Belsky, Vandergrift, Houts, and Morrison (2008), the large final sample of 910 children has the similar strength of large sample size, as Pianta et al.'s study had. Another strength of this study is that the authors were transparent in their findings that the F-value of 1.29 was too low, thus leading them to accept their null hypothesis. Greater emotional support did not, in fact, lead to positive academic experiences, especially for children who are at-risk. This finding is generalizable to the greater population due to (a) large population size, and (b) diversity within the population (as sought by Pianta et al. (2008)). The fact that the study lasted for 54 months (4 years and 6 months) is another strength of the study, as such a length in time gives the study's findings credibility.

Else-Quest, Hyde, and Hejmadi (2008) performed a quantitative study on the emotional content of the mother-child interactions while working challenging mathematics (pre-algebra) tasks in the home. In addition, the authors hypothesized that the link between performance and emotions would differ by gender. Participants were made up of 160 American students who had just

completed 5th grade (78 girls), and their mothers. The mean age of this group was 11.4 years, with a standard deviation of .19. The ethnic distribution was as follows: 146 (92%) were White (not Hispanic), 6 (4%) were Black, 4 (3%) were Native American, and 2 (1%) were Hispanic. This sample population were the second cohort of a longitudinal study, the Wisconsin Study of Families and Work.

Prior to being interviewed, mothers were introduced to what the material they would be helping their child learn. Content knowledge of each mother was assessed, and additional content support was provided by the interviewers. Two interviewers worked with each mother and child pair; one interviewed the child, and the other interviewed the mother, both in the home setting. Both mother and child were administered the Mathematics Homework Task (MHT). Children were instructed to work out pre-algebra problems for 5 minutes without their mothers' assistance. Following this time, children were asked to take a computerized post-test which last 2.5 minutes and consisted of the problems that were the same task and difficulty level as the pre-test problems. Altogether, the following methods were used in this study: a baseline task performed by the children, a mathematics post-test, the mothers' level of mathematic preparation in the form of a written questionnaire, and emotions (during interaction between mother and child). The emotion coding system used by the authors measured and analyzed verbal and nonverbal expressions of emotion with regard to solving mathematical problems, within the context of learning/teaching mathematics.

The following are correlations between the child's emotions of tension, frustration, boredom, positive interest, and joy, and the post-test. The correlation

with the post-test and the emotion of tension was $-.26$, with $p < .001$. The correlation with the post-test and the emotion of frustration was $.11$. The correlation with the post-test and the emotion of boredom was $-.09$. The correlation with the post-test and the emotion of positive interest was $.17$, with $p < .05$. The correlation with the post-test and the emotion of joy was $-.06$.

A strength of this study is that the authors clearly described theoretical underpinnings prior to the discussion of the study. Another strength is that the authors were transparent about the coding process of this study, by stating that coders received 50 hours of training. In addition, each of the 154 videos were coded 6-8 times separately by the coders. And, all videos were independently double-coded, and disagreements were resolved through meetings and coming to a consensus. Even though the authors do not provide a Cronbach's alpha for this coding system, the fact that they were extremely explicit about it is a strength of the study. A weakness is that not all correlational values reported had p-values attached to them, meaning not all values can be considered statistically significant. Another weakness is that the authors were explicit about *how* participants were selected, their geographical location. However, the authors were explicit about the race, gender, and age of the participants, which gives the study strength.

Only the correlations between the post-test and tension, and the post-test and joy have p-values, at $p < .001$ and $p < .05$, respectively. In assessing the statistical significance of these correlations, one has to realize that both correlations are indeed statistically significant. However, the statistical

significance of the correlation between the post-test and joy is not nearly as reassuring as that of the correlation between the post-test and tension.

Astleitner (2001) performed a quantitative study that examined the following questions: are emotions important for teachers and students in daily instruction, what are the most important emotions in instruction from the view of teachers and students, are the instructional strategies proposed within the FEASP-approach really related to the corresponding emotions, are the FEASP-strategies used in daily instruction, is there a relation between the application of the FEASP-strategies and the experience of certain types of emotions during instruction and, what is the quality, in respect to reliability and validity of the scales used in this study.

The sample included 163 Austrian school teachers and 53 Austrian university students. Sixty-seven percent of the school teachers were female, 33 percent male. The teachers' ages ranged from 22 to 59 years, with an average of 40 years. Thirty-four percent worked at primary schools, 18 percent at secondary schools, 25 percent at high schools, and about 6 percent at other schools (e.g., for handicapped students). Teachers were asked to take part in the study when they left school, after public meetings, or during private meetings by research assistants. The student sample included 45 females and 8 males, with an average of 25 years. Thirty-one students were enrolled in a statistics course, and 22 in an instructional design course at a department of educational research.

Both teachers and students had to answer a questionnaire, and the following were the topics of interest: general importance of emotions during instruction, different types of emotions, FEASP strategies, and FEASP emotions. Teachers were given the questionnaire in the middle of the semester, and were to return it within a two week time period. Students, on the other hand, were given the questionnaire at the same time, and were given only 25 minutes to complete it.

The following are percentages showing the teachers' (n= 120) and students' (n=53) importance of different types of emotions within instructional settings (teachers' views will come first, followed by students' views). Teachers ranked anger as the most important emotion, with 41.7%, then fear with 26.7%, then other emotions (sorrow, self-confidence, motivation, cognition, and stress) with 13.3%, then sympathy with 12.5%, then envy with 5%, and pleasure with .08%. The student percentages will not add up to 100% because they were allowed to nominate more than one emotion for each rank. Students ranked motivation as the most important emotion in an instructional setting, with 60.4%, then pleasure with 45.3%, then fear with 41.5%, then self-confidence with 34%, then anger with 24.5%, then stress with 18.9%, then sympathy and cognition with 11.3%, then sorrow with 9.4%, and finally envy with 3.8%. The correlation between emotion-scale items and fear is .85. The correlation between emotion-scale items and envy was .69. The correlation between emotion-scale items and anger was .68. The correlation between emotion-scale items and sympathy was .85. The correlation between emotion-scale items and pleasure was .89.

A major weakness of this study is that the sample population is made up of Australian university teachers and students, and is thus not very generalizable to elementary-aged students in the United States of America. This study's sample population is made up of university students and teacher, in addition to them being from Australia; therefore leads to a weakness in this study for the purposes of answering the question of this paper. Another weakness is that none of the correlations provided by the author have p-values attached to them, which means they cannot be considered statistically significant. Finally, the fact that teachers were given the questionnaire in the middle of the semester, and were to return it within a two week time period, and students were given the questionnaire at the same time, but were given only 25 minutes to complete it brings up the question of time could have impacted the answer/responses provided by students compared to their teachers.

Demetriou and Wilson (2009) performed a qualitative study on the significance of teachers establishing a rapport with students based on affective communication, especially when students are disengaged and disinterested in learning. The study's main focus was to examine the importance of teachers regularly reflecting upon their teaching practices, both in terms of communication of subject knowledge, and emotional and affective experiences had by themselves and their students. The sample population of 11 teachers was pooled from a larger sample of 305 secondary science teachers who received their teaching degrees between 1997 and 2003 from The Faculty of Education at the University of Cambridge. The 11 teachers who were selected were interviewed

about their first three years of teaching. The questionnaire had the following four sub-topics, all of which had specific questions: Your early career years, adjusting to school life, your teaching, and change of career, again.

The following are the qualitative data gathered by the researchers, with regard to communication. Investing time in extra-curricular activities can help teachers open up lines of affective communication, as one male teacher reflected, "I chose a school with a strong extra-curricular life and I never looked back. My involvement in activities outside the classroom enabled me to get to know pupils and staff quickly" (Demetriou & Wilson, 2010, p. 220). Still on the topic of affective communication, another male teacher responded that relationships are crucial, and for the sake of self-confidence one needs positive feedback from students, even if it is implicit. Although most teachers seemed to express, in one way or another, the need to create and maintain clear lines of affective communication with students, some teachers did express appreciation for the gray space between befriending a student and taking disciplinary measures whenever necessary. Finally, another crucial finding from this study is how unmotivated and unpredictable students must be reflected upon if one is to create thoughtful lessons in the future. One teacher noted that, "It is important to find a common denominator on which to establish communication and relationships with difficult or unmotivated students" (Demetriou & Wilson, 2010, p. 223).

This study presents a handful of weaknesses. Primarily, the researchers were not explicit with certain aspects of their procedures. For example, they do

not make any mention of how and where teachers were interviewed, whether it was in the schools/classrooms they taught in, what time of day, and for how long they were interviewed. The researchers only state that they finalized the 11 participants from 305 teachers who received their degree from a particular university, but they fail to mention how they gained access to the selection of subjects. This study also lacks credibility because, the researchers do not clearly describe data gathering procedures and decision-making for what is included and excluded, and data analysis procedures and how coding categories are derived. It is not the case that the researchers performed triangulation and member-checked but the results were inconclusive or contradictory; rather, there is not mention of any mention of triangulation or member-checking. One strength of this study is that researchers clearly describe their theoretical positioning before explaining the study, and in while explain their findings.

Summary of Section

Crossman (2007) found that participants expected teachers to be objective and fair in matters of assessment, and that positive relations with teachers were described in ways that appeared to influence an individual's sense of self, self-worth and personal confidence. Pianta, Belsky, Vandergrift, Houts, and Morrison (2008) found the quality of teacher-child interaction was negatively, and non-significantly related to both quantity of exposure to literacy and math. Hamre, and Pianta (2005) found that the functional risk analyzed by means of emotional support was statistically significant. Else-Quest, Hyde, and Hejmadi (2008) found a significant correlation between mother's and child's emotion

during tasks. Astleitner (2001) found that answers provided by both teacher and students were indicative of the high importance of emotional processes in instructional settings.

The studies in this section presented an array of correlations between teachers' emotions and students' emotions and academic success. Of the six studies in this section, and of all the emotions that were examined, only two studies had one emotion in common—anger. Crossman found anger to come up in responses of participants when discussing the fairness or objectiveness of their teachers' assessments of them as students. Astleitner found students ranked motivation as the most important emotion and anger as the 5th most important emotion in an instructional setting. Pianta et al. found correlations between quality of teacher-child interaction to quantity of exposure to literacy and math, however, they did not present corresponding p-values, which does not provide any significance, only lack thereof. Else-Quest et al. discovered a statistically significant correlation between a mathematical post-test (after working with their mothers) and tension, as well as positive interest. A positive interaction between mother and child during a mathematics lessons led to a significantly low and negative correlation between the post-test and tension. Demetriou and Wilson (2009) found that teachers' responses emphasized the importance of conceptualizing teaching and learning as encompassing both affect and cognition so as to have a balanced and healthy view of teaching, learning, the student and the school.

Of the six studies in this section, three focused their scope on elementary and middle school students. Two of the studies sought direct responses from college students in the United States of America, and another from college students in Austria. The Austrian study also included responses from Austrian teachers of the college students. Only one of the five studies had a sample size less than 30, and two had a very large (~1000) sample size. Three of the five studies were based in the United States of America.

Emotional Understanding of Self and Others (Peers) Enhances Academic Performance

The purpose of this section is to review studies that focus on the impact of emotional understanding of self and others (peers) on academic performance. The following five studies posit that academic performance is influenced by students' ability to understand their own and another's emotionality. Three of the four studies were conducted on elementary-aged or pre-elementary-aged children in; the other study was conducted on college students. All studies took place in America.

Leerkes, Paradise, O'Brien, Calkins, and Lange (2008) performed a quantitative study on how emotion understanding, emotion control, cognitive understanding, and cognitive control are associated with early social and academic success, on preschool-aged children, and found that emotional understanding was significantly related to academic performance and, that neither cognitive understanding nor cognitive control were associated with

measures of academic and social functioning. Savine, Beck, Edwards, Chiew, and Braver (2010) ran a quantitative study on the impact of motivation on cognitive control with a group of university students, and found that incentive motivation is significantly related to enhanced performance. Hinnant and O'Brien (2007) performed a quantitative study whether cognitive and emotional aspects of control are correlated with each other more than they are with aspects of perspective-taking, with pre-school children, and found that cognitive control was positively correlated to affective perspective-taking, and emotion and cognitive control were found not to be significantly correlated to each other. Denham (1986) performed a quantitative study on the inter-relation between affective-perspective taking of children, their prosocial behaviors in response to peer emotions, and the relationship between these variables and children's own emotions, with young children, and found that cognitive perspective-taking was somewhat significantly correlated to affective perspective-taking. Goetz, Pekrun, Hall, & Haag (2006) performed a quantitative study on how students' academic emotions correlate across different academic domains, with high school students, and found that student cognitions were both positively and negatively correlated to specific emotions.

Leerkes, Paradise, O'Brien, Calkins, and Lange (2008) performed a quantitative study on how emotion understanding, emotion control, cognitive understanding, and cognitive control are associated with early social and academic success. The sample population was made up of 141 preschool children, with an average age of 3.5, 51% male, and 49% female. The sample

mirrored the diversity of the surrounding community: 2/3 of the participants were white, 1/4 were African American, and 1/10 were biracial or other. The sample was also economically and educationally heterogeneous. The middle 50% of the sample came from families with annual incomes between \$24,000 and \$72,000, whereas 16% of families reported annual incomes less than \$18,000. Forty percent of the mothers had graduated from college, while 15% had no postsecondary education. Seventy percent of the children were living in two-parent families, while the rest lived in single-parent homes. Participating families were recruited from preschools and child care centers in a small city in the southeastern United States through letters sent home with the children.

The authors performed two laboratory-based assessments for each participant within plus or minus 2 months of the child's 3.5-year birthday. Each assessment lasted approximately 1.5 hours. Children were videotaped while completing tasks assessing emotional and cognitive control and understanding as well as standardized measures of achievement. Children were presented with four felt faces depicting the emotions happy, sad, angry or scared. They were asked to name each emotion, to help the authors gauge the participant's accuracy of verbal emotional labeling. For each emotion, children received a score of 2 if they identified the correct emotion, 1 if they identified an incorrect emotion of the correct valence (sad for angry), and 0 if they identified an emotion of the incorrect valence (happy for sad). Vignettes of emotion-eliciting situations were presented as puppets to the children. They were asked to indicate how the puppet felt by attaching felt faces to them. Children were asked to explain the

reasons for experiencing certain emotions, through the puppets again. For the sake of studying appearance-reality distinction, children were shown two realistic-looking imitation objects: a candle in the shape of an apple and an egg made of wood. Then, the color was modified by placing a sheet of blue tinted plastic in front of each of the objects, and the size was modified by using a large magnifying lens. The child was asked a series of questions about what the object looked like while modified, and what the properties of the object really were. The authors also administered a children's behavior questionnaire, and parents completed an emotion regulation checklist.

For the following correlations, significance level was $p < .05$, unless otherwise stated. The correlation between emotional understanding and cognitive understanding was .50. The correlation between emotional control and cognitive control was .48. The correlation between emotional understanding and cognitive control was .72.

A strength of this study is that the authors explicitly stated if no p-value was given then the findings could *not* be considered statistically significant; not all studies state this clearly. Another strength is that the authors went lengths to mirror this study's sample population to the base-community. However, this can also be seen as a weakness: due to such specifications, and unless the base-community mirrors the population diversity of the United States of America, it would be difficult to generalize and replicate this study and its findings with a different population of preschool-aged children and their parents.

Savine, Beck, Edwards, Chiew, and Braver (2010) ran a quantitative study on the impact of motivation on cognitive control. The study examined effects of positive and negative affect on performance through explicit manipulation of the motivational state during cognitively demanding tasks. Twenty-six adults (mean age= 20.13 years, 12 females) were selected from Washington University. In accordance with the Washington University Medical Center Human Subjects Committee, informed consent was gained in order to run this study. Two students were omitted from the analysis of the study, due to poor accuracy when performing the tasks. All students were native English speakers, right-handed, had corrected-to-normal vision (which was a crucial factor for the task), and were free from psychiatric or neurological disorders. They were reimbursed for participation (\$10/hour or class credit for an introductory psychology class). In addition, they were given another monetary bonus due to the reward incentives present in the study.

The cued task-switching paradigm was made up of visual stimuli presented using PsyScope software. The stimuli were bivalent, meaning they showed pictures of faces with words superimposed on them. These stimuli were used for two different classification tasks: gender judgment for the faces and syllable judgments for the words. Stimulus combinations were created randomly from a bank of 144 faces, 76 two-syllable words, 38 one-syllable words, and 38 three-syllable words. Prior to each target stimulus, participants were asked to maintain their gaze on a fixation cross in the middle of the screen. Next, a cue was given, indicating the participant to perform one of the two above-mentioned

tasks on the subsequent target stimulus. When participants were correct, the stimulus randomly changed either color or size; when they were wrong, the word “Incorrect” appeared in the middle of the screen. Participants performed four initial tasks with no reward to create stable estimates of performance. Following this, participants were told they would do the same tasks with the potential of monetary reward. The performance criteria for monetary reward were based on each participant’s own median reaction time.

Hinnant and O’Brien (2007) performed a quantitative study that examined whether cognitive and emotional aspects of control are correlated with each other more than they are with aspects of perspective-taking. Sixty pre-school children, 32 boys and 28 girls, along with their mothers were the participants of this study. All children were 5 years old ($M=61.0$ months, $SD= 4.59$ months). The racial background of the children was as follows: 70% white, 20% black, and 10% were of other races, as this reflected the racial background of the community. And, family income spanned a wide range.

For control processes, specifically cognitive control was measured using the Children’s Stroop Task (CST). Emotional regulation was measured through mother’s reporting on the Emotion Regulation Checklist (ERC), which included a 24 items scored on a 4-point Likert-type scale. The perspective-taking process, specifically cognitive perspective-taking was measured through a task developed by Taylor that used partly covered up pictures. Affective perspective-taking was measured using a vignette/story task that involved a puppet which was the same sex as the participant, and four different emotions (happy, sad, angry, and

scared). Empathy was measured via an adapted video task, the empathy continuum (EC) scoring system which was developed by Strayer.

The following are descriptive statistics of the study's variables. The mean for cognitive control is 9.98, with a SD of 3.21. The mean for emotional control is 74.42, with a SD of 6.54. The mean for affective perspective-taking is 19.14, with a SD of 4.03. On the empathy continuum scoring system, the mean for empathy is 14.86, with a SD of 8.34.

The following are correlations between child factors, control, perspective taking, and empathy. The correlation between emotional perspective-taking and cognitive perspective-taking is .31, with $p < .05$. The correlation between emotional perspective-taking and cognitive control is .29, with $p < .05$. The correlation between emotional regulation and cognitive control is .11. Based on these quantitative findings, the authors concluded that empathy was not significantly related to either cognitive control or emotion.

A strength of this study lies in the authors' statement of its weakness. The relatively small sample size is a weakness; however, the authors were transparent and clear about this fact. The fact that participants of this study were of the age-range of interest for my research question presents itself as a strength of the study. The authors were also transparent about the lack of multiple measurements for all constructs of the study. In addition, this study's sample population provides the study with some external validity—although skewed, the spread of ethnicity of participants can help generalize the findings of this study to

classrooms that are made up of mostly white students, with some black and other students in the mix. A weakness of this is that the authors were not transparent about the demographics of the participant pool, which will make replicating this study and its findings challenging, if not impossible.

Denham (1986) performed a quantitative study on the inter-relation between affective-perspective taking of children, their prosocial behaviors in response to peer emotions, and the relationship between these variables and children's own emotions. Participants were made up of 27 2- and 3-year-old from two classrooms of a day-care center in a large, predominantly rural town, (11 girls, and 16 boys). Choosing of participants was also judged by income and housing.

These were the types of measurements for each subject: observation of emotions and corresponding responses during free-play, child's responses to emotions of an adults (semi-structured), and measure of affective labeling (naming specific emotions), affective perspective-taking (taking on another's emotions), and cognitive perspective-taking (taking on another's way of thinking). In order to measure affective labeling children were told to examine faces with happy, sad, angry, and afraid expressions. In order to examine affective perspective-taking, children were shown vignettes and given a questionnaire. Cognitive perspective-taking was measured through vignettes. And, emotions exhibited during manipulated and un-manipulated free play were also measured.

For social cognitive predictions, children showed ability to engage in affective labeling of puppet faces, although much variation from child to child remained. Mean of the cognitive perspective-taking score was significantly greater than 2.5, with $p < .05$. For prosocial behavior predictions, non-randomness of the differential responses to the four emotions (happy, sad, angry, hurt) coded is significant, with $p < .001$; a chi-square analysis yielded a Cramer's V of .43, which the authors deemed to be of fairly strong association between particular emotions and particular prosocial responses. Participants also responded to happy peers with certain behaviors more often than expected by chance, with $p < .001$. Participants responded to angry peers with certain behaviors less often than expected by chance, with $p < .001$. For the relationship of social cognitive and social behavioral variables, cognitive perspective-taking was highly related to affective perspective-taking, with $p < .02$. Prevalence of hurt emotions was only marginally related to cognitive perspective-taking, with $p < .10$.

The following were specific correlational findings among social cognitive, situational, and behavioral variables. The correlation between cognitive perspective-taking and percent happy was .34. The correlation between cognitive perspective-taking and percent angry was -.52, with $p < .05$. The correlation between cognitive perspective-taking and rate of emotionality was .08.

The following are the weaknesses of this study. Standard scores to specific reactions to emotions were summed for the observational prosocial aggregate score, with Cronbach's alpha = .65, which shows weakness of

reliability of the score a C's alpha of .65 falls into the "questionable" category (.7-.6). The non-randomness of the differential responses to the four emotions coded was said to be significant, with the chi-square analysis yielding a Cramer's V of .43. Since a Cramer's V of 1 means there is a high/strong relation between two variables, and 0 means there is no relation, a Cramer's V of .43 points to only somewhat of a significant. Cognitive perspective-taking was highly related to affective perspective-taking, with $p < .02$. The authors presented variables to be highly related with a $p < .001$, and $p < .01$, as well as $p < .02$. The probability of x being related to y based *not* on chance ranging from 98%-99.99% could be interpreted as a weakness, specifically in how the authors use the word significant, or the words 'highly related'.

Goetz, Pekrun, Hall, & Haag (2006) performed a quantitative study on how students' emotions experienced during Latin instruction related to their cognitions. The sample population was made up of 200 students, 121 females and 79 males, from grades 7 to 10. Number of students from each grade were : Grade 7—67; Grade 8—57; Grade 9—38; Grade 10—38. These students were enrolled in the top track of the German three-track education system. In German schools, students are separated after grade 4 into three achievement tracks (upper, middle, and lower tracks) according to their level of achievement.

The emotions scales were based on a four-component model assessing the affective, cognitive, motivational, and physiological aspects of academic emotions, and assessed students' emotional experiences when in class, studying at home, and taking tests. Selection of which emotions to assess was based on

Watson and Tellegen's model. The authors chose a set of six subsidiary school subjects (Latin, English, German, mathematics, music, and sports). Emotional experiences in these different subjects were assessed using single-item measures to allow for direct comparison of the intensity of emotional experiences in the various subjects. Data were gathered at the beginning of the school year through a standardized questionnaire. Student participation was on a voluntary basis and they received neither financial rewards nor feedback of results in exchange for their participation.

The following are mean and standard deviation (SD) for the emotions of enjoyment, anxiety, and boredom for students during Latin class. The mean for enjoyment was 2.99, with a SD of 1.03, the mean for anxiety was 2.58, with a SD of 1.12, and the mean for boredom was 2.49, with SD of 1.04.

The following are correlations between students' emotions, and their academic self-concepts. The correlation between enjoyment and academic self-concept was .59. The correlation between pride and academic self-concept is .54. The correlation between anger and academic self-concept was -.45. The correlation between boredom and academic self-concept was -.25.

A strength of this study is that the authors not only provide Cronbach's alpha for the study's summative scales, but the scales represented in the above findings have medium-high to high reliability ratings. The following are Cronbach's alpha ratings for applicable summative scale. All appropriate scales range from .77 to .92, meaning they are all fairly-highly reliable scales. A

weakness of this study is that the people who made up the sample population are from somewhat of a different culture than cultures in the United States of America, as well as they are secondary-aged students. I choose this study because of the research questions posed by the authors, knowing its findings might not be entirely applicable to elementary-aged students in this country. Yet another weakness of this study is that the authors failed to present the correlations with p-values, since a lack of p-values creates a challenge in assessing the significance of the correlations.

Summary of Section

Leerkes, Paradise, O'Brien, Calkins, and Lange (2008) found that emotional understanding was significantly related to academic performance and, that either cognitive understanding or cognitive control were associated with measures of academic and social functioning. Savine, Beck, Edwards, Chiew, and Braver (2010) found that incentive motivation significantly related to enhanced performance. Hinnant and O'Brien (2007) found that cognitive control was positively correlated to affective perspective-taking, and emotion and cognitive control were found not to be significantly correlated to each other. Denham (1986) found that cognitive perspective-taking was somewhat significantly correlated to affective perspective-taking. Goetz, Pekrun, Hall, & Haag (2006) found that student cognitions were both positively and negatively correlated to specific emotions.

Three of the five studies in this section focused their scope directly upon the correlations between emotional perspective-taking and cognitive perspective-taking, and vice versa, as well as between emotional understanding and cognitive understanding, and vice versa. Both Hinnant (2007) and Denham (1986) found significantly positive correlations between emotional/affective perspective-taking and cognitive perspective taking. Leekers (2008) also found a significantly positive correlation between emotional understanding and cognitive understanding. Although emotional/cognitive understanding are not exactly equal to emotional/cognitive perspective-taking, all three of the aforementioned studies indicate that the greater emotion knowledge a student has of oneself and the degree to which she/he can take on the emotional perspective of a peer, the greater her/his cognitive understanding or perspective-taking. Although Goetz (2006) found significant correlations in their study, none of the most relevant ones were found to be significant.

Of the five studies in this section, three were focused on elementary and middle school students, one on high school students, and one on college students. Only one of the studies was performed outside the United States of American, in Germany. Two of the studies had sample sizes less than 30, whereas three of them had greater than 30.

Students' Attitudes about School Correlated to Perceived Self-Confidence and Academic Achievement

The purpose of this section is to review studies that focused on students' attitudes about school, and their correlation to students' perceived self-confidence. These articles also studied how such attitudes influenced academic achievement. Both (two) studies focus on elementary-aged students in America.

Lichtenfeld, Pekrun, Stupnisky, Reiss, and Murayama (2011) performed two quantitative studies on how elementary school students feel (in terms of enjoyment, anxiety, and boredom) about three types of academic settings, and found that the positive correlation between boredom and anxiety might indicate that students of this age think of boredom more as an over-challenging rather than an under-challenging emotion (Study 1), and that enjoyment correlated positively with math achievement, whereas correlations were negative for anxiety and boredom (Study 2). Valeski and Stipek (2001) performed a quantitative study on the factors associated with young children's feelings about school with primary grade students, and found the correlation between perceived competence in math and literacy, and general attitudes toward school was statistically significant.

Lichtenfeld, Pekrun, Stupnisky, Reiss, and Murayama (2011) performed two quantitative studies on how elementary school students feel (in terms of enjoyment, anxiety, and boredom) about three types of academic settings (attending class, doing homework, and taking tests and exams). In the first study, the sample represented a wide range of students in terms of ability and socio-economic background, including 678 second-grade students (345 females) from 30 classrooms and 687 third-grade students (330 females) from 30 classrooms.

Students without achievement data (48) and those who didn't complete the entire survey (128) were excluded from the analysis. The final breakdown of the sample was 594 second graders (mean age = 9.05 years, range 7 to 11) and 595 third graders (mean age = 10.10 years, range 8 to 12). The second study was run in four different elementary schools in Minnesota (USA). The sample consisted of 163 third-grade students (95 females; mean age = 8.69 years, range 7 to 10) from a range of socio-economic backgrounds. Participants were predominantly white Caucasians (161) and only 2 students were African Americans.

Valeski and Stipek (2001) performed a quantitative study on the factors associated with young children's feelings about school. The study was designed to assess the validity of a measure of children's feelings about school. Participants for this study included 225 kindergarteners and 127 1st graders from one of three locations (rural area in the NE, urban area in the NE, and an urban area on the West Coast). Most of the participants' family incomes were below \$15,000. The children were spread out over 233 classrooms and 138 schools. In addition, 170 teachers completed questionnaires for 171 of kindergartens, and for 89 of the 1st graders. Classroom observations were conducted for 163 kindergarteners and 81 1st graders; not all participants were observed in the classroom.

Direct child assessments were conducted using the Feelings about School (FAS) measure and achievement tests, and a Likert-type 5 point scale was used to assess/facilitate children's understanding of their responses. Math-specific academic skills were measured based on items from a revised version of the

Peabody Individual Achievement Test. Academic engagement was measured through items from the Teacher Rating Scale of School Adjustment (TRSSA). In the classroom, observers assessed instruction and the social environment using the Early Childhood Classroom Observation Measure (ECCOM).

For kindergarteners the correlation between perceived competence in math and children's general attitudes toward school was found to be .47, with $p < .001$. The correlation between perceived competence in literacy and children's general attitudes toward school was found to be .42, with $p < .001$. The correlation between teacher rating of engagement and perceived competence in literacy school was found to be -.15, with $p < .10$. The correlation between teacher rating of engagement and children's general attitudes toward school was found to be .14, with $p < .10$. The correlation between teacher rating of engagement and children's feelings about relationship with teacher was found to be .04, with no p value.

For 1st graders the correlation between teacher rating of engagement and perceived competence in math was found to be .30, with $p < .001$. The correlation between teacher rating of engagement and perceived competence in literacy school was .24, with $p < .05$. The correlation between teacher rating of engagement and children's general attitudes toward school was .12, with no p value. The correlation between teacher rating of engagement and children's feelings about relationship with teacher was .09, with no p value.

A strength of this study is that not all, but many p-values are $p < .001$ or less, which means many of their findings are statistically significant, even though they are not high correlations (i.e. .42). Some weaknesses are that the authors did not present a Cronbach's alpha score (to measure reliability) for any of their measurement methods, and some p values are .10 or less. Another point of interest in this study is the fact that all participants came from families that made \$15,000/year or less—this could be viewed as a strength or a weakness, depending on the demographic group the findings are transferred to.

Summary of Section

Lichtenfeld, Pekrun, Stupnisky, Reiss, and Murayama (2011) found that the positive correlation between boredom and anxiety might indicate that students of elementary-school age think of boredom more as an over-challenging rather than an under-challenging emotion (Study 1), and that enjoyment correlated positively with math achievement, whereas correlations were negative for anxiety and boredom (Study 2). Valeski and Stipek (2001) found the correlation between perceived competence in math and literacy, and general attitudes toward school was statistically significant.

Socially Oriented Emotional Experiences' Impact on Cognition

The purpose of this section is to review studies that focus on the impact of socially oriented emotionality of students on cognitive engagement. Of the three studies in this section, the first study used college students, and the other two

studies used middle school-aged students as participants; all studies were conducted in America.

Chang and Chang (2009) performed a quantitative study, examining the relation of positive and negative socially prescribed perfectionism on college students, and found that European Americans had lower starting levels of general negative affect and higher starting levels of general positive affect and temporal satisfaction with life compared to Asian Americans, whereas, Asian American showed to have higher levels of negative self-oriented and socially prescribed perfectionism than European Americans. Linares, Stern, Edwards, Abikoff, and Alvir (2005) performed a quantitative study on the effects of cognitive social-emotional competences on academic learning with elementary school students, and others who were in a control group, and found that students in the in the experiment group were said (by teachers) to be more socially-emotionally more competent than the control group students. Järvenoja and Järvelä (2005) performed a qualitative study on middle school students, and found that socially oriented emotional experiences had their source in micro-level social contacts of classmates and other related persons.

Chang and Chang (2009) performed a quantitative study, examining the relation of positive and negative socially prescribed perfectionism, based on the model of Performance Perfectionism. The authors' purpose was to clarify positive and negative perfectionism in both self-oriented and socially directed terms, with two racially specific populations in the United States of America. One hundred Asian American (42 male, 58 female), and 91 European American (40 male, and

51 females) college students were chosen. Study did not state if they were chosen randomly or not. All participants were undergraduates at the University of Michigan. They were all enrolled in an introductory psychology course and received participation credit to fulfill a requirement for the class.

The study used the Performance Perfection Scale (PPS) to assess students' levels and types of perfectionism. The PPS is a 32-item questionnaire intended to assess perfectionism along multiple dimensions: positive self-oriented performance perfectionism (PSOPP), negative self-oriented performance perfectionism (NSOPP), positive socially prescribed performance perfectionism (PSPPP), negative socially prescribed performance perfectionism (NSPPP). PSOPP and PSPPP represent adaptive forms of perfectionism and contain items that focus on the positive outcomes of high standards. NSOPP and NSPPP represent maladaptive forms of perfectionism and contain items that focus on the negative outcomes of high standards. The participants also completed the Positive and Negative Affect Schedule (PANAS), which is a 20-item measure of positive and negative mood. They completed two versions of the PANAS. In the first, they indicated to what extent they generally experienced each emotion on a scale of 1-5. In the second, they indicated to what extent they experienced each emotion in the present moment, still using the same scale. Participants also took part in the Beck Depression Inventory (BDI), which is a 21-item measure of depressive symptoms. They rated the extent to which they had experienced each symptom in the past week, including that day, on a 4-point scale. Finally, the participants rated themselves on the Temporal Satisfaction

with Life Scale (TSWLS), which is a 15-item measure of life satisfaction in the past and present, and anticipated life satisfaction in the future. In the pretest portion, participants completed the above mentioned measures. They asked students to write for five minutes. Participants wrote based on one of the four priming conditions [PSPPP, NSPPP, SPPP (socially prescribed expectations with neutral valence, and control (no expectations)] assigned randomly.

The following acronyms will be used in describing the findings of this study: PSOPP = Positive self-oriented performance perfectionism; NSOPP = Negative self-oriented performance perfectionism; PSPPP = Positive socially prescribed performance perfectionism; NSPPP = Negative socially prescribed performance perfectionism.

The correlation between PSOPP and PSPPP was found to be 0.56, with $p < .01$, and between PSOPP and NSPPP, -0.38, with $p < .01$. The correlation between NSOPP and PSPPP was found to be -.17, with no p-value given, and between NSOPP and NSPPP, .70, with $p < .01$.

A strength of this study is in the authors' openness to be transparent. However, what is shown through the transparency are, in fact, weaknesses for the study. One particular weakness is that participants were only given 5 minutes to complete what the authors call the "target event", and doing so, they might have inadvertently induced feelings of stress and of being overwhelmed to respond the primer quickly. Another weakness of this study, however pertinent the study's topic is to my research question, the age range (college) of the

participant pool makes the study un-generalizable to my targeted age-range (elementary-aged). A strength of this study is that the authors examined both self-oriented *and* socially-directed performance expectations.

Linares, Stern, Edwards, Abikoff, and Alvir (2005) performed a quantitative study on the effects of cognitive social-emotional competences on academic learning. They also studied whether student and classroom changes would result in improved academic learning. The participants were 119 from 13 classrooms. Of these 119 students, 8% were special education students. Of the 119 students, 57 were from the intervention school, where the UMSP was administered, and 62 were from the comparing school. Students' mean age was 9.58 years. Participants came from predominantly White, working class families from New York City.

The Unique Minds School Program (UMSP) was implemented to help teachers meeting the growing challenges of the socio-emotional needs of students in urban elementary classrooms. The UMSP was a classroom curriculum developed by Stern, based on manuals with grade-specific lesson plans. In the 1st year of this longitudinal study, UMSP was offered as part of regular schooling to 1st, 4th, and 5th graders. The second year, UMSP was offered school-wide, K-5. Intervention integrity of the UMSP was measured using two factors: fidelity (how well the protocol is followed and delivered) and dosage (how much the protocol was followed). The following factors were measured in the study: student ratings of self-efficacy was measured using the Morgan-Jinks Student Efficacy Scale, interviewer ratings of problem solving was measured

through a set of 5 vignettes, and teacher ratings of social-emotional behavior was measured using the Teacher Observation Classroom Adaptation-Revised scale of 31 items (Cronbach's alpha for TOCA-R was found to be .98, with subscale alphas ranging from .86 to .95).

An analysis of time and school interaction was found via the TOC-R to yield $F(2, 185)$, with $p < .01$. On the Attention and Concentration subscale, F -values were $(2, 187)$, with a $p < .01$. On the Social and Emotional Competence subscale, F -values were $(2, 187)$, with a $p < .01$. The Lack of Aggression subscale had the same F values. Students in the UMSP school were described by teachers as more socially-emotionally competent overtime. Compared to students in the comparison (non-UMSP) group, students in the UMSP school showed gains in TOCA-R from baseline to year 1 with a t -value of 185, with a p -value of .05, and year 2 with the same t - and p -values. Specifically, Attention and Concentration, and Emotional Competencies improved for students in the UMSP school from baseline to year 2, with a t -value of 187, and a p -value of .001, and a t -value of 187 and a p -value of .01, respectively. Comparatively, Authority and Compliance deteriorated (i.e. more problems present) for students in the comparing school, from baseline to year 2 with a t -value of 185, and p -value of .001. Comparing school students also lost Lack of Aggression overtime, (i.e. more aggression present).

A strength of the study was that teacher ratings of social-emotional behavior was measured using the Teacher Observation Classroom Adaptation-Revised scale of 31 items (Cronbach's alpha for TOCA-R was found to be .98,

with subscale alphas ranging from .86 to .95; this is a strength because the reliability of the TOCA-R is either between very good and excellent. Another strength was that there was a control and an experimental group. A weakness of this study is its lack of generalizability due to the fact that participants came from predominantly White, working class families from New York City. Findings cannot necessarily be generalized to all working class families in the United States of America, because role race plays will alter the lives and life-outcomes of children and their families.

Järvenoja and Järvelä (2005) performed a qualitative study on the sources of emotional experiences in computer-supported inquiry learning. Participants were Finnish secondary school students ($N = 18$), 7 boys and 11 girls, 12–15 years old. Students worked with computer-supported inquiry projects, as well as being interviewed. Each computer-based inquiry project lasted for 12–24 lessons, and each lesson was 75 minutes. The topics of the literature projects were “Racism” and “Time” the first year, “Science Fiction” the second year, and “Drugs” the last year.

The 18 students were asked to describe their goals, learning strategies, interpretations of the learning environment and self-related beliefs and feelings during semi-structured interviews. The interviews were conducted during and after the actual learning situations in the lessons, about 2–4 times during each learning project. The interviews were always conducted in the middle or right after the lesson. Altogether there were 136 interviews. The interview data were

transcribed, coded according to the principles of content analysis, and analyzed with the help of the nVivo qualitative data analysis program.

The *task-category* included responses in which students' descriptions derive from domain-specific interest or the task itself, e.g., “Drugs are a [socially and personally] very important issue” and “The book was good”. These responses primarily emphasized the meaning of the topic instead of comparing it to personal conceptions of learning, which was emphasized in the *self-category*. The *performance-category* included responses that indicated emotional experiences, which were related to the students' work, progress and performance in the inquiry project. This category included process-oriented answers like “Now it's getting on very well” and “First I feel awful, but then I think it's going to be a good study and it doesn't feel that bad after all”. The *context-category* included responses that referred to the inquiry model and its implementation, the teacher's instruction, working on a specific phase of a task or the classroom environment in general. The *social-category* responses were related to students' emotions that derived from the social and interaction culture of the classroom and the students' role in it. In this category, socially oriented emotions dealt with micro-level social contacts of classmates or other related persons, e.g., “It is nice to know what other students think”. Emotional experiences varied in the different phases of the learning project and between the case students.

The following is a classification of students' personal descriptions of sources of their emotional experiences during the computer-based inquiry projects (students were allowed to select more than one source): 37% attributed

the source to self, 32% to context, 12% to task, 11% to performance, and 8% to social. Based on these, and the above findings, the authors concluded that the results are aligned with the assumption that people bring prior learning experiences and personal assumptions to new learning contexts.

A weakness of this study is the extremely small sample size of 18 students. In addition to this, another weakness is that the sample demographics do not lend themselves to generalizability. Also, the audibility of this study is weak due to the fact that the authors do not explicitly state *how* or *why* that specific sample population was gathered, and why it was such a small number of people. A strength of this study is that the authors state clearly that the interview data was coded according to specific principles of content analysis, and that it was analyzed with nVivo's assistance.

Summary of Section

Chang and Chang (2009) found that European Americans had lower starting levels of general negative affect and higher starting levels of general positive affect and temporal satisfaction with life compared to Asian Americans, whereas, Asian American showed to have higher levels of negative self-oriented and socially prescribed perfectionism than European Americans. Linares, Stern, Edwards, Abikoff, and Alvir (2005) found that students in the in the experiment group were said (by teachers) to be more socially-emotionally more competent than the control group students. Järvenoja and Järvelä (2005) found that socially oriented emotional experiences had their source in micro-level social contacts of classmates and other related persons.

Chang et al.'s (2009) findings point to a significant correlation between positive socially oriented emotional experiences, that of perfectionism for instance, and positive emotions and cognition. This study also discovered an equally significant correlation between negative socially oriented emotional experiences and negative emotions and cognition. In a somewhat contradictory fashion, Järvenoja et al. (2005) discovered that socially-derived emotions were only 8% the source of emotions during cognition. This study's findings, however, must be taken with a grain of salt, and are not easily transferable to other settings, since less than 30 people made up the sample population of this study.

Of the three studies in this section, two were based in the United States of America, whereas one was based in Finland. Both studies from the USA had a sample population greater than 30, whereas the Finnish study had less than 30. Only one of these studies was based on elementary school students, one on high school students, and the other on college students.

Emotional Engagement Correlated to Academic Engagement and Competence

The purpose of this section is to review studies that focus on how emotional engagement and academic engagement/competence are correlated. These five studies found the higher the emotional engagement of a student, the higher her/his academic engagement/competence. All studies were performed on middle school-aged students in America.

Izard, Fine, Schultz, Mostow, Ackerman, and Youngstrom (2001) performed a quantitative study on elementary school students, and found pre-school verbal ability correlated significantly with emotion knowledge, and third grade teachers' ratings of academic competence. Li, Lerner, and Lerner (2010) performed a quantitative study on whether school engagement mediates the influence of personal and ecological factors on upper elementary school students, and found a statistically significant correlation between emotional engagement and academic competence. Hirschfield and Gasper (2011) performed a quantitative study on whether emotional and cognitive engagement each negatively predict school misconduct and general delinquency, in elementary school students, and found a statistically significant correlation between emotional and cognitive engagement. Roeser, Strobel, and Quihuis (2002) performed a quantitative study on whether indicators of early adolescents' social-emotional functioning was associated with their cognitive and behavioral engagement, with middle school students, and found a statistically significant correlation between academic motivation and social-emotional functioning. D'Mello and Graesser (2011) performed a quantitative study on the temporal dynamics of students' cognitive-affective states during deep learning activities, with undergraduate students, and found a significant main effect for affect. DeBellis, and Goldin (2006) performed a qualitative study on whether individuals' mathematical integrity structures can be characterized, and if they are consistent across problem situations, with 19 public school children aged 9 and 10, and found that mathematical integrity structures can be characterized.

Izard, Fine, Schultz, Mostow, Ackerman, and Youngstrom (2001) performed a quantitative study on the early indices of emotion knowledge that predict later social behavior. The authors hypothesized that early emotion knowledge will serve as a predictor of social behavior and academic competence. Participants were from economically disadvantaged families (mean income= \$17,900). The authors collected data on 102 children at age 5 and 72 children at ages 5 and 9. The difference of 30 children was due to attrition. Fifty-one percent of participants were female, 74% African-American, 18% European American, 6% Latin American, and 2% represented other ethnic identities. Examiners went to these children's schools and obtained data from children, their mothers, and their teachers when the children were in the last semester of Head Start (age 5), and then again in the last semester of third grade (age 9).

Authors measured emotion knowledge with emotion recognition task of the 5 year-olds using the Peabody Picture Vocabulary Test-Revised, and mothers' ratings on three Behavioral Styles Questionnaire, as well as an emotion labeling task, both of which used cross-culturally validated facial expressions of interest, joy, surprise, sadness, anger, disgust, contempt, shame, and fear. For an age-appropriate measure of social behavior in third grade, they asked teachers to evaluate children on the Social Skills Rating System.

The following are correlations, means, and standard deviations (SD) between emotional knowledge and social behavior. The mean for emotion knowledge was 0.00, with a SD of 1.7. The correlation between emotion knowledge and verbal ability was .61 with $p < .01$. The mean of academic

competence was 24.6, with a SD of 8.6. The correlation between academic competence and emotion knowledge was .43.

The following are correlations between hyperactivity, and self-control, adaptability and persistence. The correlation between hyperactivity and adaptability was .08, and persistence was .25, with $p < .01$. The correlation between self-control and adaptability was $-.07$, and persistence is $-.25$, with $p < .01$. From this and above findings, the authors concluded that verbal ability and temperament were attributed and contributed to prediction of social behavior that came later on.

Although it made for an interesting sample population, the authors of this study choose a particular group of people to study—economically disadvantaged people with a mean income of \$17,900. This, along with the questionable sample population size of only 72 people creates a weakness for this study. The self-selection of this study's participant pool forms somewhat of a challenge in extrapolating the findings of this study to a more generalized and larger population. In considering the impact of the correlations found in this study, only one correlation is above a .50 point. This begs the question: are the correlations large enough to make an impact?

Li, Lerner, and Lerner (2010) performed a quantitative study on how school engagement mediates the influence of personal and ecological factors on adolescents' perceived academic competence. Fifth grade students were selected from 13 different states that provided regional, rural-urban, and

racial/ethnic diversity. The study was conducted in 57 schools, and four after-school programs. This sample was made up of 1,710 students (48.1% boys, 59.1% girls), and 1,135 of their parents. Sixth grade students were selected from 53 schools, and five after-school programs from 20 states. An additional sample of previously untested sixth-graders was added to the mix, totaling to 1,944 sixth graders. However, only a total of 960 participants who completed surveys are reported upon in the study.

All measures used in this study, excluding that of family income and mothers' education, came from the Student Questionnaire (SQ). For school engagement, all seven engagement items came from the Profiles of Student Life: Attitudes and Behaviors, created by the Search Institute. For two-factor model, emotion and behavior led to chi-square values. For perceived academic competence, the assessment of youth perceived competence in six important life domains was done through the Self-Perception Profile for Children (SPPC), and Cronbach's alpha across the subscales (of the SPCC) ranged from .76 to .90, and was noted as being adequate reliability and validity by the authors.

The correlation between Grade 5 emotional engagement and Grade 5 academic competence was .20, with $p < .01$. The correlation between Grade 5 emotional engagement and Grade 5 educational expectations was .21, with $p < .01$. Emotional engagement in the fifth grade group was correlated to academic competence only through behavioral engagement.

Since the above correlations described above both have p values of $< .01$, it shows a weakness in the study: the probability of the correlational findings

having had occurred due to chance is somewhat high (1%) for studies. Since emotional engagement in the fifth grade group was correlated to academic competence only through behavioral engagement, and not providing a p value leads to one or both of these assumptions: (a) omitting the p value for this particular finding was an oversight and questions the credibility of the finding itself, and/or (b) the p value was so high that providing it would undermine the finding. In seeking out the strength of the correlation between emotional engagement and academic competence, and finding that their correlation (in this study) only exists through another variable—behavioral engagement—*and* having those correlations be fairly low is a sign of weakness with regard to my research question.

A strength of this study is that the Cronbach's alpha across the subscales (of the SPCC) ranged from .76 to .90, and was noted as being adequate reliability and validity by the authors. This shows strength in two ways: authors were forthright with their Cronbach's alpha score for the subscales used in the study, *and* the score was within the range of reliable or highly reliable. Another strength of this study is the extensiveness of the demographics of the sample population.

Hirschfield and Gasper (2011) performed a quantitative study on whether emotional and cognitive engagement each negatively predicted school misconduct and general delinquency. Between the fall of 1992 and spring of 1997, 5th through 8th graders from inner-city Chicago were surveyed from 22 public elementary schools, specifically those who participated in the Comer's

School Development Program evaluation (SDP). Only a portion of the over 11,000 youth who participated in SDP were included in the study. In addition, 4,890 students who participated in two or more consecutive waves of surveying were studied. Emotional engagement was assessed through a six-point Likert response scale. The following elements were examined and measured in the study: school misconduct, general delinquency, emotional engagement, behavioral engagement, cognitive engagement, parental control, parental attachment, peer delinquency, demographics and family circumstances, and “latent” traits.

Emotional engagement and cognitive engagement were found to have a correlation of .058, with $p < .01$. With a correlation of .02 between emotional engagement and school misconduct/delinquency, the authors expressed that such misconduct has no independent influence on emotional engagement. The correlation between school misconduct and emotional engagement was $-.109$, with $p < .01$. And finally, the correlation between school misconduct and cognitive engagement was $-.143$, with $p < .01$.

The sample size of 4,890 students who participated in two or more consecutive waves of surveys were studied provides a strength for this study, since the larger the sample size, the closer the sample mean is to the population. This leads to a sub-strength, that of ease of transferability of findings due to the large sample size and the appropriate age range for my personal inquiry. Another strength of this study is the authors’ transparency of research methods and their process of choosing participants. Although others studies presented in this

section do not explicitly and exactly examine the correlation between emotional engagement and cognitive engagement, as well as the correlation between the two with school misconduct, studies in this section present findings that seem contradictory to those of this study.

Roeser, Strobel, and Quihuis (2002) performed a quantitative study on whether indicators of early adolescents' social-emotional functioning was associated with their cognitive and behavioral engagement in the classroom. A total of 97 (57 girls) sixth ($n=16$), seventh ($n=16$), and eighth ($n=60$) grade students from two middle schools in the San Francisco Bay area were selected for this study. Students identified themselves as Caucasian (85%), Asian-American (12%), African-American (2%), or Latino (1%). Mean age of students was 13.08 years. Researchers administered two questionnaires during school hours. Thirty-six items from Achenbach's youth self-report (YSR) form of the Child Behavior Checklist were used to assess social-emotional functioning, specifically indicators of internalizing and externalizing distress and general self-esteem.

The correlation between sadness and cognitive engagement was $-.11$ with no p value. The correlation between anger and cognitive engagement was $.11$, with no p value. The correlation between helplessness (Dweck's motivational patterns) and self-esteem was $-.99$, with no p value. The correlation between mastery-oriented goals (Dweck's motivational patterns) and self-esteem was $.45$, with no p value. The correlation between multiple (academic) strengths and self-esteem was $.59$, with no p value.

As stated by the authors themselves, they used a sample that was convenient, and it was not large in size, which was a weakness of the study. More often than not, p values were not provided, which leads to two assumptions: (a) either these p values were so high (i.e. .05 or higher) that the authors chose not to include them in the study, and/or (b) it was a glaring oversight. In either case, not providing p values with correlational information undermines the legitimacy of the data presented.

D'Mello and Graesser (2011) performed a quantitative study on the temporal dynamics of students' cognitive-affective states (confusion, frustration, boredom, engagement/flow, delight, and surprise) during deep learning activities. Authors selected 28 undergraduate students from a university who participated for extra credit. A multiple-choice pre-test with AutoTutor on one of three randomly assigned topics in computer literacy—hardware, Internet, and operating systems—was performed. During the tutoring session, participants' faces, their computer screens, and their posture patterns were recorded via video. After the pre-test and tutoring sessions, a pre-test was given out. It assessed deep levels of knowledge (i.e. reasoning), as opposed to recall of shallow facts. Participants made self-judgments, along with observer on their videos; peer judgments were made a week later; and two trained judges who were extensively trained in using AutoTutor. Raters were given a list of seven states to mark definitions next to (boredom, confusion, frustration, delight, surprise, flow, and neutral).

Affect and rater were seen as fixed factors and participants as random factors. A significant main effect for affect was found, with $p < .001$, and a significant affect times rater interaction, with $p < .001$. Compared to the null model, the decay rate was not similar for all affective states, with at least one affective state being different from others.

A strength of this study is that it involved a treatment (pre-test), an observation (testing), and a final treatment (post-test) which creates higher internal validity. A weakness is that the sample population was not mentioned as being randomly gathered.

DeBellis, and Goldin (2006) performed a qualitative study on whether individuals' mathematical integrity structures can be characterized, and if they are consistent across problem situations, with 19 public school children aged 9 and 10, and found that mathematical integrity structures can be characterized. Of 22 children aged 9 to 10 years in four New Jersey public schools who began the study, 19 completed all five interviews. These interviews were conducted across the time frame of two years. Four subjects that differ in their observable levels of affect were selected for longitudinal, in-depth affective analysis. The goal was to infer in detail the development of children's internal representations. Each interview (approximately 45-60 min) consisted of several mathematical tasks, including at one difficult, non-routine problem.

Findings were provided in the form of examples of each aspect of the interviews that were examined. Meta-affect: early in interview # 3, they inferred that 'Londa', aged 10, felt discomfort or unease at the unfamiliarity of the

interview situation. They inferred this from her facial expression and body movements. They concluded that her emotion was 'real time' and straightforward. In another situation, Londa allowed herself to feel the emotion. She had shaped the context herself; the meta-affect was positive and safe.

Mathematical integrity: Jacqueline, after having been show a set of cards, was asked what she predicted might be on the next few cards and why. She was also asked to show her thinking, and if she thought the pattern would keep going. Jacqueline acknowledged insufficiency of understanding, made a change, proposed a new strategy, and tried to use it a total of 10 different times—displaying high perseverance. Observed aspects of mathematical integrity included her identifying error in her thinking and computation, and verbalizing a strong desire to 'get the problem right'. This established an affective posture allowing her to continue working, even when making little mathematical progress.

Mathematical intimacy: Jerome was asked what he is thinking and if he could explain his thinking, regarding a posed mathematical problem. Jerome's behaviors, from which the authors inferred his intimate engagement, included close proximity to the jelly beans when experimenting, cradling his work as if to separate his activity from the clinician, raising his voice, breathing deeply, brushing his hands through his hair, shrugging his shoulders, facial expressions, and silent pauses.

A strength of this study is that the authors base it on specific theoretical underpinnings, on ideas such as aspects of affect as a system of representation, mathematic intimacy, and mathematical integrity. The authors' explicit statement

of Londa's sense of discomfort and unease with the interview creates both a weakness and a strength for this study. It is a weakness because such a statement casts doubt over the validity of Londa's reaction/answers to the interview, and a strength since it shows the authors' level of transparency. A weakness of this study is that the authors are not explicit about how entry was gained to the selection/subjects, or what relationship they had prior the study. Another weakness of this study is the size of the small sample population (19 students) which does not lend itself to easy comparison with similar studies. Finally, the rate of attrition is fairly high—at 14%—but only when considered alongside the number of participants the authors began with. If the study had 100 participants to begin with, for instance, with an attrition rate of 14%, 86 participants would have been left to interview/study. However, this study began with only 22, and at the attrition rate of 14%, left only 19 students to interview/study; this is another weakness for this study and its findings' generalizability.

Summary of Section

Izard, Fine, Schultz, Mostow, Ackerman, and Youngstrom (2001) found pre-school verbal ability correlated significantly with emotion knowledge, and third grade teachers' ratings of academic competence. Li, Lerner, and Lerner (2010) found a statistically significant correlation between emotional engagement and academic competence. Hirschfield and Gasper (2011) found a statistically

significant correlation between emotional and cognitive engagement. Roeser, Strobel, and Quihuis (2002) found a correlation between academic motivation and social-emotional functioning, however, it was not statistically significant. D'Mello and Graesser (2011) found a significant main effect for affect.

Roeser, Strobel, and Quihuis (2002) presented findings that pointed to both very high and very low correlations, albeit lacking significance, between cognitive engagement and three specific emotions (sadness, anger, and helplessness). The lack of p-values creates a barrier to deciphering the significance of the correlations presented in this study, thus making it a challenge to compare contrast with other similar studies and their correlational findings and p-values.

Li et al. (2010) and Hirschfield (2011) both discovered that emotional engagement is positively and significantly correlated to academic or cognitive engagement. Izard et al. (2001) found a significant correlation between emotional engagement through hyperactivity and self-control and academic engagement through adaptability and persistence. Roeser et al. (2002) found correlations between social-emotional functioning and cognitive engagement, however, the researchers of this study did not present p-values, making it impossible to determine significance. DeBellis, and Goldin (2006) found that mathematical integrity structures can be characterized.

Of the four studies in this section, only one had a sample population lower than 30, and all of them were based in the United States of America. Two were

focused on elementary school students, one on middle school students, and one on college students.

Summary

Chapter two presented a critical review of the literature on the correlations between emotion and cognition. Nine studies focused on the relationship(s) between emotion and cognition. Over all, five studies found positive, as well as negative, significant correlations between emotion and cognition. Two of those found significant, and positive, correlations between avoidance (cognition) and certain negative emotions. One of those found a significant correlation between enjoyment and anxiety, and study interest and effort, respectively. Another one of those studies found a significant correlation between value of achievement and academic self-concept. The last of the five studies found a significant correlation between value appraisals and competence appraisals.

Four studies focused on how teachers' emotions correlate to students' emotions and academic success. Two of those studies found that the students' emotion of anger correlated to teachers' emotions, and that the same emotion came up in responses to negative student-teacher interactions. The remaining studies in this section found correlations, however, they lacked statistical significance.

Some studies in this critical review focused on how emotional understanding of self and others (peers) enhances academic performance. Two studies found a significant, and positive correlation between affective perspective-taking and cognitive perspective-taking. In other words, these

studies discovered a positive correlation between emotional understand of others (peers) and cognitive understanding. Another set of studies focused on how students' attitudes about school correlate to perceived self-confidence and academic achievement. One study found enjoyment to be significantly, and positively correlated with math achievement; and anxiety and boredom to be significantly, and negatively correlated with the math achievement. The rest of the studies in this section either found no correlations or correlations that were not statistically significant.

The fifth set of studies focused on how socially oriented emotional experiences impact cognition. One of the studies found a significant, and positive correlation between positive socially oriented emotional experiences and positive emotions and cognition. Another study found contradictory data, with students' responses that placed socially oriented emotions as the last source of emotions that come up during cognition. The final section of this critical review focused on studies that examined how emotional engagement correlated to academic engagement and competence. Two of the studies in this final section found a significant and positive correlation between emotional engagement and academic/cognitive engagement. One study had more specific findings: a significant and positive correlation between emotional engagement, and hyperactivity as well as self-control. This same study also found a significant and positive correlation between academic engagement, and adaptability and persistence.

The following chapter (three) summarizes the contents of chapter one and two: rationale from chapter one, and summary of findings from chapter two. The next chapter also discusses classroom implications, which are interpreted from the findings in chapter two, and also provides suggestions for further research.

CHAPTER THREE: CONCLUSION

Introduction

This critical review examined how emotion affects cognition in the elementary/middle school classrooms by critically reviewing research studies done by psychologists/researchers who have tried to understand the relationship

between emotion and cognition. Although these two elements of learning have been studied extensively by modern day researchers, great thinkers of the past have debated over the relationship between emotion and cognition. The focus of this paper was the aforementioned relationship; however, other elements of learning, such as motivation, were also briefly reviewed.

Chapter 1 introduced the research question: what are the effects of emotion on cognition with elementary-aged children? It also provided a rationale for this literature review. Drastic structural changes have been made to the institution of education for the sake of increasing academic achievement and test scores. Although these are important aspects of students' learning process, one cannot harp on them to the point of invalidating the multitude of aspects that make up this process for the learner. Following this, the importance of the research question was expressed from and for a future teacher, and for the community at large. The relationship between emotion and cognition was not only significant in working with marginalized students but also with students who are not marginalized, yet were achieving academically as desired by external forces such as the state government, for instance. Next, a historical background on the research that has been conducted thus far on this topic was presented, specifically on four overlapping avenues of research on emotion. The Darwinian vein of thought/research, which focused on emotion seen through the evolutionary lens, and the Jamesian perspective which studied how emotional experiences are rooted in physical/bodily changes were discussed. The third major body of research has focused on the cognitive approach to emotion,

spearheaded by Magda Arnold. And finally, the socio-linguist approach to emotion posited by James Averill, which viewed emotion as socially constructed, was discussed.

Chapter 2 detailed thirty qualitative and/or quantitative studies performed on the relationship between emotion and cognition in the context of learning (mostly within the school) with K-12, and college students. The critical literature review that is the essence of chapter 2 was presented in six major themes: positive and negative impacts of emotion on cognition, teachers' emotions correlated to students' emotions and academic success, emotional understanding of self and others (peers) enhances academic performance, students' attitudes about school correlated to perceived self-confidence and academic achievement, socially oriented emotional experiences' impact on cognition, and emotional engagement correlated to academic engagement and progress. Each study's narrative had a general overview of the research question, participant demographics, methods, findings, and a critique, which included strengths and weaknesses of the study.

This chapter summarizes the findings from chapter 2, provides implications for classroom practice, and offers suggestions for further research.

Summary of Findings

This section reviews findings of studies present in chapter 2. It will discuss findings in relation to their relative merit, strengths and weaknesses, and some definitive conclusions about the body of research as a whole. Questions addressed in this section are: what are the major findings for each section in the

previous chapter, which of these findings are stronger than others and why, which of these findings are weaker than others and why, and what are the trends/patterns in the research? This section will be organized into subsections as per chapter 2's themes (these thematic sections were also stated in the introduction section of this chapter).

Positive and Negative Impacts of Emotions on Cognition

Positive and negative impacts of emotion on cognition have been studied by many researchers. Most studies in this section found that emotions were both negatively and positively related to, and impacted cognition. Nine studies focused on the relationship(s) between emotion and cognition. Over all, six studies found positive, as well as negative, significant correlations between emotion and cognition. Burgess et al. (2006) and Yamawaki, Tschanz, and Feick (2004) found significant, and positive, correlations between avoidance (cognition) and certain negative emotions. Pekrun et al. (2002) found a significant correlation between motivation/cognition, specifically study interest and effort, and three major learning-related emotions of enjoyment, anxiety and boredom. Geotz et al. (2006) found a significant and positive correlation between value of achievement and academic self-concept; the greater the emotional value of achievement, the greater one's academic self-concept. Another study found a significant correlation between value appraisals and competence appraisal (Ahmed et al., 2007). And finally, based on responses from interviewees, Zambo & Brem (2004) also discovered a (qualitative) connection between emotion and cognition: a

child's sense of low self-efficacy, with regard to reading, is related to how well or poorly she reads.

The following two studies in this section found similar emotion-cognition correlational results, however, they are somewhat disparate from the above six studies. Houlfor et al. (2002) found perceived competence was positively correlated to affective autonomy and self-reported interest, when performance-contingent rewards were present. Schweinle, Turner, and Meyer (2009) found that challenge relates negatively to efficacy, only when skill is low, and that interaction of challenge and skills significantly predicted personal affect.

A general strength of the studies in this section is that the methods (participants and study methods) were presented in a fairly transparent and clear manner. Another, non-general strength of this section is that the reliability scores, through Cronbach's alpha, were presented, and were shown to be high. A major weakness of the studies that presented both negative and positive correlations between emotion and cognition is that authors stated findings were statistically significant with p-values ranging from $p < .05$ and $p < .001$. This creates a challenge in believing the validity of *all* statistically significant findings presented in this section. Another issue with the methods element of the studies in this section is that the number of participants and the age range was highly varied. A clear pattern in this section that the emotions of enjoyment, hope, anger, anxiety, boredom were persistently studied against various facets of cognition such as, self-efficacy, competence appraisals, intrinsic value, academic self-concept, and value of achievement.

Teachers' Emotions Correlated to Students' Emotions and Academic Success

Although still focused on the correlation/connection between emotion and cognition, all five studies in this section focus on the relation between the teacher and the student. The connecting thread that runs through all the studies in this section is that studies either found a significant correlation between teachers' emotions and students' emotions/academic success. However, the studies vary in the kinds of emotions felt, and the kind of academic success achieved by the student.

Crossman (2007) found a correlation between students' emotion of anger and their teachers' emotions, and Astleitner (2001) discovered a qualitative connection between a students' anger in response to negative student-teacher interactions. Pianta et al. (2008) found a significant and positive correlation between quality of teacher-student interaction and quality of exposure to math and literacy. Else-Quest, Hyde, and Hejmadi (2008) found a significant and negative correlation between students' academic success and the emotion of tension, following a positive interaction between the student and teacher (or mother in this study's case). Hamre and Pianta (2005) found emotional support (from the teacher) leads to positive academic experiences, by means of reducing functional risk.

A general strength of this section is that studies there are specific emotions both teachers and students found present in the interaction between each other. A major weakness of this section is that many of the quantitative

studies do not provide corresponding p-values for correlations, which makes it difficult to know whether findings were statistically significant and/or whether authors chose to leave out p-values due to high numbers (i.e. $p < .05$ or higher).

Emotional Understanding of Self and Others (Peers) Enhances

Academic Performance

All five studies in this section focused on how emotional understanding of self and others (peers) can/does enhance students' academic performance. Hinnant and O'Brien (2007) and Denham (1986) both discovered a significant and positive correlation between affective perspective-taking and cognitive perspective-taking. In a similar vein, Leekers et al. (2008) found that emotion understanding and cognitive understanding were significantly and positively correlated.

In a slightly different sense, Savine et al. (2010) found a correlation between incentive motivation and enhanced (academic) performance. In other words, academic performance was shown to enhance when the student held emotional understanding of self, through incentive motivation. Lastly, Goetz et al. (2006) found that student cognition (during a variety of cognitive subjects/tasks) was positively *and* negatively correlated to specific emotions.

A strength of the findings in this section is that all five studies found positive correlations between emotional understanding of self and others (peers) and enhancement of academic performance; although one study found both positive and negative significant correlations. Of the five studies in this section, three were focused on elementary and middle school students, one on high

school students, and one on college students. Only one of the studies was performed outside the United States of American, in Germany. Two of the studies had sample sizes less than 30, whereas three of them had sizes greater than 30.

Students' Attitudes about School Correlated to Perceived Self-Confidence and Academic Achievement

Only two of the thirty studies reviewed in chapter 2 fit into this specific category. Lichtenfeld et al. (2011) discovered that academic achievement (specifically in math) both positively correlated to the emotion of enjoyment toward school, and negatively to the emotion of boredom toward school. Valeski and Stipek (2001) found the correlation between perceived competence in math and literacy, and general attitudes toward school to be statistically significant. Although this is a very small section, both studies had sample populations that were in the hundreds based in the United States of America.

Socially Oriented Emotional Experiences' Impact on Cognition

All three studies in this section focused on students' emotions that are socially oriented or derived, and their impact on student cognition. Chang and Chang (2009) found that positive socially oriented emotional experiences were positively and significantly correlated to positive emotion/cognition. This study also discovered that negative socially oriented emotional experiences were positively and significantly correlated to negative emotions and cognition. Linares et al. (2005) found that students in the experiment group were said (by teachers) to be more socially-emotionally and more competent than the control group

students. Lastly, Järvenoja and Järvelä (2005) found data that stands in contradiction to that of the other two studies in this section. Järvenoja and Järvelä (2005) discovered that socially-derived emotions are only 8% the source of emotions during cognition, placing other sources of emotion higher with regard to impact on cognition.

Although this section consists only of three studies focused on socially oriented or derived emotions and their impact on student cognition, it is interesting to note that not all three came to the same or even similar conclusions.

Emotional Engagement Correlated to Academic Engagement and Competence

Two of the five studies in this section essentially came to the same conclusions based on their findings. Li et al. (2010) and Hirschfield et al. (2011) both found a significant and positive correlation between emotional engagement and academic/cognitive engagement. In a similar and more specific vein, Izard et al. (2001) discovered that emotional engagement and hyperactivity as well as self-control were significantly correlated; academic engagement and adaptability as well as persistence were also found to be significantly correlated. Roeser (2002) found a correlation between academic motivation and social-emotional functioning, however, it was not statistically significant.

Classroom Implications

The findings of most of the studies presented in the critical review (chapter 2) reveal several pertinent classroom and teaching implications with regard to how emotion impacts cognition, in the K-8 classrooms.

The clear pattern in the first section of chapter 2 was that the emotions of enjoyment, hope, anger, anxiety, and boredom were somewhat consistently present when correlated with various facets of cognition such as, self-efficacy, competence appraisals, intrinsic value, academic self-concept, and value of achievement. Based on this pattern, the classroom implication of being mindful of students' varying emotions during a variety of learning activities follows. This pattern/finding suggests that by being aware of such correlations, teachers should accommodate to students' needs, specifically with regard to their emotional states of mind. For example, knowing that students are apt to express anxiety in relation to academic self-concept, a teacher can move from disregarding students' emotions or invalidating them, to instead work with students to quell their anxiety. Knowing this, a teacher should realize that there is more than likely a reason for students' everyday emotions, and be intent on working with those emotions and her students.

Geotz et al. (2006) found a significant and positive correlation between value of achievement and academic self-concept; the greater the emotional value of achievement, the greater one's academic self-concept. Backed by this finding, a teacher who consistently creates learning environment that encourages growth through perseverance would quite possibly instill and/or nurture her students'

value of achievement, thereby enhancing their academic self-concept. Furthermore, with enhanced academic self-concept, students are more likely to value achievement. In a similar vein, Pekrun et al.'s (2002) finding that the correlation between study interest and enjoyment is significant leads one to consider ways to create learning experiences that will lead to increased enjoyment, so as to increase study interest, which is an aspect of cognition. Instilling a value of achievement in students is connected to any attempts to increase enjoyment of learning for students. How does one instill such personal sentiments in their students? One way to accomplish such a seemingly daunting task is to interact with students and their families in ways that help the teacher realize and understand what her student's needs are, whether or not they are being met, and how to meet them. By tactfully digging into a student's interests and needs, only then can a teacher begin to create points of interest along her student's path of learning, so as to instill enjoyment and a value of achievement.

In the second section, Else-Quest et al. (2008) found a positive interaction between mother and child during a mathematics lessons led to a significantly low and negative correlation between the post-test and the child's sense of tension. Although this study had a fairly small sample size, the findings are clear and seem grounded in common sense enough to extrapolate to one's own teaching practice. This study's finding can be played out in the classroom, with similar results. It essentially implies that, prior to giving out a test or massive assignment of any sort, the teacher-student interaction should remain positive and encouraging, so as to ease student tension. As this finding suggests, however

deceptively simple as this may sound, a teacher must always try (although she may not always succeed) to create a positive interaction with her students so they may have equally positive emotional experiences during their learning—especially during test taking. Although not directly suggested through this study, it is implied that a teacher can take certain steps to relieve her students of feelings such as tension prior to a test. Chang et al.'s (2009) findings (from the fifth section) also imply the need for creating a classroom environment that models and encourages positivity between students and between teacher and students.

From the third section, Hinnant et al. (2007) and Denham (1986) both discovered a significant and positive correlation between affective perspective-taking and cognitive perspective-taking. This finding can be understood well through the lens of compassion. Role-playing activities will help a student gain another's emotional perspective, even if only for a few moments, which might help them become more open to, and aware of how others not only perceive the world, but also how that perception might be different from their own.

Valeski et al. (2001) from section four of chapter 2 found the correlation between perceived competence in math and literacy, and general attitudes toward school to be statistically significant. One could interpret this finding to mean a teacher must provide students with compliments and praises so as to instill a sense of perceived competence in her students. However, taking a different approach to the interpretation of this study's findings will be more beneficial to both students and the teacher. A teacher can help strengthen a

student's attitudes toward school by instilling a true sense of competence during learning (especially through the teaching of math and literacy). By providing students with constructive feedback, and not empty praise, a teacher can begin to instill such a sentiment in her students. Perceived competence has the possibility to grow with every new piece of constructive feedback that is focused on students' work, their accomplishments, and their persistence to keep trying.

From section five, Chang et al. (2009) found that positive socially oriented emotional experiences were positively and significantly correlated to positive emotion/cognition. This study also discovered that negative socially oriented emotional experiences were positively and significantly correlated to negative emotions and cognition. Closely related to findings from, and implications based on studies in section one, this study's findings also point in the direction of a classroom culture that is grounded in positive thinking. The second element of Chang et al.'s findings suggest what could be considered common sense, that negative socially oriented emotional experiences are related to negative cognitive experiences. A teacher cannot create a positive classroom culture by ignoring or disregarding negative emotional and cognitive experiences had by her students. One way to sustain a positive classroom so has to create positive emotional and cognitive experiences, the teacher can create a physical space in her classroom for students to be in, to write, sit quietly, think, or do whatever is reasonable in a classroom, to process their negative emotions. This might help quell certain devastatingly negative emotions that would potentially impact the whole class.

Suggestions for Further Research

Aside from the general weakness of not presenting correlations with their corresponding p-values, I would suggest the creation of a study that examines the relationship of emotion on cognition, specifically during learning tasks in the K-5 classroom setting in *different* regional settings of the United States of America with a large (i.e. 200 or more) sample population. The reason for different regional settings is to access information about emotion and cognition based in culture. None of the studies in this literature review explicitly discussed the cultural implications on the correlations discovered between emotion and cognition.

More research can be done on how teachers' emotions impact students' emotions and academic success. The studies in that section of chapter 2 fairly decently presented the role of only one specific emotion, or a few emotions in the teacher-student relationship, with regard to academic success. None of the studies in this section assessed the impact of teachers' emotions on students' emotions and their academic success as a longitudinal study, or in a variety of subject settings. It would be helpful to observe and analyze differences, if any, between how teachers' emotions impact students' emotions/academic success during math, science, theater, physical education, social studies, literacy, etc. Such a study, or set of studies might help teachers become aware, and understand how exactly to adjust themselves depending on the cognitive task at hand.

With regard to emotional perspective-taking being correlated to cognitive perspective-taking and cognitive understanding, none of the studies in the corresponding section (three) of chapter 2 addressed the issue with a longitudinal study. Such studies would help teachers gain a better sense of how developmentally prepared students are at various elementary-school ages (i.e. 5-11 years old) to emotionally understand self and others (peers), and have that understanding enhance academic performance. Such research would also detract teachers from the tendency to generalize developmental appropriateness in the elementary school stage of students' lives.

Conclusion

Chapter One introduced the research question: what are the effects of emotion on cognition with elementary-aged children? It also provided a rationale for this literature review. Following this, the importance of the research question was expressed from and for a future teacher, and for the community at large. The relationship between emotion and cognition is not only significant in working with marginalized students but also with students who are not marginalized, yet are achieving academically as desired by external forces such as the state government, for instance. Next, a historical background on this topic was presented, specifically on four overlapping themes. It concluded with major definitions and limitations of this literature review.

Chapter Two detailed thirty qualitative and/or quantitative studies performed on the relationship between emotion and cognition in the context of

learning (mostly within the school) with K-12, and college students. The critical literature review that is the essence of chapter 2 was presented in six major themes. Each study's narrative had a general overview of the research question, participant demographics, methods, findings, and a critique, which included strengths and weaknesses of the study.

In the first section titled, "Positive and Negative Impacts of Emotions on Cognition", Burgess et al. (2006), Yamawaki, Tschanz, and Feick (2004), Pekrun et al. (2002), Geotz et al. (2006), Ahmed et al. (2007), and Zambo & Brem (2004) discovered significant and positive, as well as negative correlations between emotion and cognition. Two of the studies in this section found connected yet varied results. Houlfors et al. (2002) found a students' perceived competence was positively correlated to affective autonomy and self-reported interest, while Schweinle, Turner, and Meyer (2009) found that when skill is low, challenge relates negatively to efficacy.

In the second section titled, "Teachers' Emotions Correlated to Students' Emotions and Academic Success", Crossman (2007), Astleitner (2001), Pianta et al. (2008), Else-Quest, Hyde, and Hejmadi (2008), and Hamre and Pianta (2005) focused on the relation between the teacher and the student. The findings in all these studies either found a significant correlation between teachers' emotions and students' emotions/academic success, with the difference being that the studies vary in the kinds of emotions felt, and the kind of academic success achieved by students in their studies.

In the third section titled, “Emotional Understanding of Self and Others (Peers) Enhances Academic Performance”, all five studies focused on how emotional understanding of self and others (peers) can and does enhance students’ academic performance. However, findings of two of the five studies discovered a significant and positive correlation between affective perspective-taking and cognitive perspective-taking (Hinnant and O’Brien (2007) and Denham (1986). And, similarly, Leekers et al. (2008) found that emotional and cognitive understanding were significantly and positively correlated. In the same field, but down a different vein, Savine et al. (2010) found a correlation between incentive motivation and enhanced (academic) performance, and Goetz et al. (2006) found student cognition to be positively and negatively correlated to certain emotions.

The fourth section titled, “Students’ Attitudes about School Correlated to Perceived Self-Confidence and Academic Achievement”, is the smallest section of the entire review in chapter 2. Lichtenfeld et al. (2011) found academic achievement to be positively correlated to the emotional enjoyment of school, while Valeski and Stipek (2001) found statistical significance between perceived competence in math and literacy and general attitudes toward school.

In the fifth section titled, “Socially Oriented Emotional Experiences’ Impact on Cognition”, all three focused on students’ emotions that are socially oriented or derived, and their impact on student cognition. Both Chang and Chang (2009) and Linares et al. (2005) found positive significance between positive socially oriented emotional experiences and their impact on positive emotion/cognition.

Järvenoja and Järvelä (2005) on the other hand found that socially-derived emotions are very small percent of the source of emotions during cognition, placing other sources of emotion higher with regard to impact on cognition.

In the sixth and final section titled, “Emotional Engagement Correlated to Academic Engagement and Competence”, both Li et al. (2010) and Hirschfield et al. (2011) discovered that academic/cognitive engagement and emotional engagement had positive significance between themselves. Similarly, Izard et al. (2001) discovered positive significant correlations between academic engagement and adaptability and persistence. Roeser (2002), on the other hand, found a statistically non-significant correlation between academic motivation and social-emotional functioning.

Chapter Three focused on the summary of findings of each section in Chapter Two. It compared and contrasted similar and contradictory findings. Based on these findings, this chapter also presented classroom and teaching implications. Prior to the conclusion section, the chapter offered suggestions for future research.

REFERENCES

- Ahmed, W., van der Werf, G., Minnaert, A., & Kuyper, H. (2010). Students' daily emotions in the classroom: Intra-individual variability and appraisal correlates. *British Journal of Educational Psychology, 80*(4), 583-597.
- Arends, R. (1996). *Classroom instruction and management*. New York: McGraw-Hill.
- Arnold, M. (1960). *Emotion and personality*. New York: Columbia University Press.
- Astleitner, H. (2001). Designing emotionally sound instruction—An empirical validation of the FEASP-approach. *Journal of Instructional Psychology, 28*(4), 209.
- Burgess, K. B., Wojslawowicz, J. C., Rubin, K. H., Rose-Krasnor, L., & Booth-LaForce Cathryn. (2006). Social information processing and coping strategies of shy/withdrawn and aggressive children: Does friendship matter? *Child Development, 77*(2), 371-383.
- Chang, R. & Chang C. (2009). Effects of socially prescribed expectations on emotions and cognitions in Asian and European Americans. *Cognitive Therapy & Research, 33*, 272-282.
- Crossman, J. (2007). The role of relationships and emotions in student perception of learning and assessment. *Higher Education Research & Development, 26*(3), 313-327.
- Cornelius, R. (1996). *The science of emotion: Research and tradition in the psychology of emotion*. New Jersey: Prentice-Hall Inc.
- D'Mello, S. & Graesser, A. (2011). The half-life of cognitive-affective states during complex learning. *Cognition and Emotion, 25*(7), 1299-1308.
- DeBellis, V. A., & Goldin, G. A. (2006). Affect and meta-affect in mathematical problem solving: A representational perspective. *Educational Studies in Mathematics, 63*(2), 131-147.
- De Houwer, J., & Hermans, D. (2010). *Cognition and emotion: Reviews of current research and theories*. New York: Psychology Press.
- Demetriou, H., & Wilson, E. (2009). Synthesizing affect and cognition in teaching and learning. *Social Psychology of Education: An International Journal, 12*(2), 213-232.

- Denham, S. A. (1986). Social cognition, prosocial behavior, and emotion in preschoolers: Contextual validation. *Child Development, 57*(1), 194–201.
- Else-Quest, N. M., Hyde, J. S., & Hejmadi, A. (2008). Mother and child emotions during mathematics homework. *Mathematical Thinking and Learning: An International Journal, 10*(1), 5-35.
- Goetz, T., Pekrun, R., Hall, N., & Haag, L. (2006). Academic emotions from a social-cognitive perspective: Antecedents and domain specificity of students' affect in the context of Latin instruction. *British Journal of Educational Psychology, 76*(2), 289-308.
- Hamre, B. K., & Pianta, R. C. (2005). Can instructional and emotional support in the first-grade classroom make a difference for children at risk of school failure? *Child Development, 76*(5), 949–967.
- Hinnant, J. B., & O'Brien, M. (2007). Cognitive and emotional control and perspective taking and their relations to empathy in 5-year-old children. *Journal of Genetic Psychology, 168*(3), 301-322.
- Hirschfield, P., & Gasper, J. (2011). The relationship between school engagement and delinquency in late childhood and early adolescence. *Journal of Youth & Adolescence, 40*, 3-22.
- Houliort, N., Koestner, R., Joussemet, M., Nantel-Vivier, A., & Lokes, N. (2002). The impact of performance-contingent rewards on perceived autonomy and competence. *Motivation & Emotion, 26*(4), 279-295.
- Izard, C., Fine, S., Schultz, D., Mostow, A., Ackerman, B., & Youngstrom, E. (2001). Emotion knowledge as a predictor of social behavior and academic competence in children at risk. *Psychological Science (Wiley-Blackwell), 12*(1).
- Järvenoja, H., & Järvelä, S. (2005). How students describe the sources of their motivations and motivational experiences during the learning process: A qualitative approach. *Learning and Instruction, 15*(5), 465-480.
- Leerkes, E., Paradise, M., O'Brien, M., Calkins, S. & Lange, G. (2008) Emotion and cognition processes in preschool children. *Merrill-Palmer Quarterly, 54*(1), 102-124.
- Li, Y., Lerner, J., & Lerner, R. (2010). Personal and ecological assets and academic competence in early adolescence: The mediating role of school engagement. *Journal of Youth & Adolescence, 39*(7), 801–815.
- Lichtenfeld, S., Pekrun, R., Stupnisky, R., Reiss, K., Murayama, K. (2011).

Measuring student's emotions in the early years: The achievement emotions questionnaire—elementary school. *Learning and Individual Differences* 21(2).

Linares, L. O., Rosbruch, N., Stern, M. B., Edwards, M. E., Walker, G., Abikoff, H. B., & Alvir, J. M. J. (2005). Developing cognitive-social-emotional competencies to enhance academic learning. *Psychology in the Schools*, 42(4), 405–417.

Miller, Patricia. (2009). *Theories of developmental psychology*. Worth Publishers.

Panksepp, J. (1998). *Affective neuroscience: The foundations of human and animal emotions*. New York: Oxford University Press.

Pessoa, L. (2009). Cognition and emotion. In *Scholarpedia*. Retrieved from http://www.scholarpedia.org/article/Cognition_and_emotion

Pianta, R. C., Belsky, J., Vandergrift, N., Houts, R., & Morrison, F. J. (2008). Classroom effects on children's achievement trajectories in elementary school. *American Educational Research Journal*, 45(2), 364–397.

Pekrun, R., Goetz, T., Titz, W., & Perry, R. P. (Summer2002). Academic emotions in students' self-regulated learning and achievement: A program of qualitative and quantitative research. *Educational Psychologist*, 37(2), 91-105.

Ravitch, Diane. (2010). *The death and life of the great American school system: How testing and choice are undermining education*. New York: Basic Books.

Roeser, R. W., Strobel, K. R., & Quihuis, G. (2002). Studying early adolescents' academic motivation, social-emotional functioning, and engagement in learning: Variable- and Person-centered approaches. *Anxiety, Stress & Coping*, 15(4), 345.

Savine, A. C., Beck, S. M., Edwards, B. G., Chiew, K. S., & Braver, T. S. (2010). Enhancement of cognitive control by approach and avoidance motivational states. *Cognition & Emotion*, 24(2), 338-356.

Schweinle, A., Turner, J. C., & Meyer, D. K. (2009). Understanding young adolescents' optimal experiences in academic settings. *Journal of Experimental Education*, 77(2), 125-146.

Shields, S. A., & Kappas, A. (2006). Magda B. Arnold's contributions to emotions research. *Cognition & Emotion*, 20(7), 898-901.

- Valeski, T. N., & Stipek, D. J. (2001). Young children's feelings about school. *Child Development, 72*(4), 1198–1213.
- Yamawaki, N., Tschanz, B. T., & Feick, D. L. (2004). Defensive pessimism, self-esteem instability, and goal strivings. *Cognition & Emotion, 18*(2), 233–249.
- Zambo, D., & Brem, S. (2004). Emotion and cognition in students who struggle to read: New insights and ideas. *Reading Psychology an international quarterly, 25*(3), 189-204.
- Zimbardo, P. G., Barnard, J. W., & Berkowitz, L. (1963). The role of anxiety and defensiveness in children's verbal behavior. *Journal of Personality, 31*(1), 79.