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THE LINK BETWEEN EMOTION AND COGNITION IN READING COMPREHENSION
OF UNDERGRADUATE PRE-MEDICAL STUDENTS ENROLLED AT AN HBCU

A Dissertation

by

GAIL D. BREKKE

Submitted to the Office of Graduate Studies of
Prairie View A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

August 2023

Major Subject: Educational Leadership

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August 2023

Major Subject: Educational Leadership

ABSTRACT

The Link Between Emotion and Cognition in Reading Comprehension of Undergraduate Pre-

Medical Students Enrolled at an HBCU

(August 2023)

Gail D. Brekke, A.A., North Harris County College; B.A., University of Houston;

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Chair of Advisory Committee: Dr. Stella Smith

The purpose of this study was to determine whether emotion affects cognition, that is reading comprehension at the college level. This qualitative study used a phenomenological approach to answer the research questions as phenomenology is appropriate to understand and assess the participants' experience with cognition and emotion (Greening, 2019). The theoretical concepts of Constructivism, Control Value Theory of Achievement Emotions, and Emotion Regulation Theory were used as a conceptual framework. Constructivist Theory was appropriate for this research, as it answered the question of learner-centered knowledge acquisition in regard to the learner's cognition (Dewey, 1974; Kant, 1781; Piaget, 1971; Vygotsky, 1987). Both Control Value Theory of Achievement Emotions (Pekrun, 2006) and Emotion Regulation Theory (Clore, 1994; Gross, 1999) discuss the dual impacts of emotions and cognition as they affect each other. The combination of these theories answered the study's research questions. The findings for this study of the link between emotions and cognition in reading comprehension of undergraduate pre-medical students enrolled at an HBCU include: (1) pre-exam positive emotions are related to preparation, (2) pre-exam negative emotions are related to internal stress and distraction, (3) during testing, positive emotions are related to confidence and preparation,

(4) during testing, negative emotions are mainly related to internal anxiety and frustration, (5) cognition description is focused on pre-testing techniques and study skills strategies, (6) personal preference descriptions were insignificant in regards to cognition, (7) vocabulary references were insignificant in regards to cognition, (8) reflection was usually found on pre-exam descriptions, (9) emotional state affects cognition, (10) cognition is described as being affected by emotions, (11) reading material can affect comprehension, (12) positive emotions are linked to adequate comprehension, and (13) negative emotions are linked to inadequate comprehension.

Keywords: cognition, emotion, reading comprehension, reading, higher education, HBCU

DEDICATION

This work, and all that I do, is done

for the Glory of God.

For my father and mother:

Berwyn L. Brekke and Ruth B. Brekke

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I am grateful to my Heavenly Father for guiding me through this journey. Thank you to both my Heavenly Father and my Earthly Father and Mother.

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CHAPTER I

INTRODUCTION

The field of reading is vast and complicated. Reading instruction in the United States started in colonial days, and has continued for over 400 years, to the present day. Most degree programs for teacher certification in the United States include multiple courses involving the teaching of reading, regardless of the subject the future instructor plans to teach (Walsh et al., 2006). Traditional reading tests at the elementary level may include testing for fluency, vocabulary, and comprehension (NAEP, 2020).

As students progress through their educational journeys, comprehension is the main component that is measured in reading tests, which continue through the high school years, especially in standardized and state tests. Reading specialists frequently determine the cause of reading difficulties to be *alexia*, such as dyslexia, second language differences, or low comprehension skills. Dyslexia can be defined as “a disorder of constitutional origin manifested by a difficulty in learning to read, write, or spell, despite conventional instruction, adequate intelligence, and sociocultural opportunity” (Texas Education Agency, 2021, p. 1). At the university level, reading continues to be a part of academic study, and standardized tests, such as the Graduate Record Exam (GRE), the Medical College Admissions Test (MCAT), and the Dental Admissions Test (DAT).

University students have always expected their collegiate career to include studying, testing, and writing. All of these expectations have reading in common. Reading is essential to earning a college degree and therefore, it is assumed that a college student who successfully completed high school, is proficient in reading.

Background of the Study

The study of reading is centuries old. The field itself, similar to other areas of research, enjoys popularity intermittently, in other words, the field of reading theory is currently enjoying a renaissance (Salvatori & Donahue, 2012). As standardized test scores continue to drop nationwide, especially in reading- with the 2012 reading scores on the SAT being the lowest in 40 years, (Peralta, 2012), parents, teachers, and administrators needed to understand why reading scores are comparatively low. The SAT average reading scores continued to fall between 496-497 for the next four years (National Center for Education Statistics, 2022). Exhaustive research continues, but the reading field is so vast, with so many variables involved, that no one simple answer exists to answer the question of declining reading scores.

One aspect of reading research focuses on the link between emotion and cognition. Zambo and Brem (2004) discovered relationships among cognition, mood, and self-schemas. Readers' emotions can serve to raise or lower comprehension of a text. When readers are confronted with a boring text, for instance, their comprehension scores may be lower simply because they are not engaged with the reading. In fact, discomfort with a reading text can trigger a flight or fight response, further impeding comprehension (Zambo & Brem, 2004). The study of emotions and cognition in connection to reading, then, is a valid and needed area of research.

The History of Reading Instruction

In order to fully understand the link between emotions and reading comprehension, one must consider reading assessment, or how comprehension is measured. Reading assessment is part of reading instruction, thus knowing the history of reading instruction is necessary to comprehend reading assessment. The history of reading instruction in the United States is fully chronicled in Chapter II of this dissertation.

Reading instruction in the United States began in the home. Once public schools were established, reading instruction became more formalized and standardized. Reading comprehension was not really assessed in public schools until the American Renaissance between (1830 and 1860). Research into reading disabilities began in the 1880s. The first standardized reading test, the Gray Standardized Reading Oral Paragraphs, appeared in 1910 (Smith 2002). From 1950 to 1965, reading instruction in the United States was heavily influenced by three components: expanding knowledge, the technological revolution, and national concern (Smith, 2002). During the 1980s, qualitative research in the field of reading appeared. Currently, reading research is an extensive field covering a wide variety of topics, and the majority of public schools in the United States teach and assess reading.

Highlights of the Literature Review

The literature regarding the link between emotion and cognition focuses on identifying specific emotions that may impede the reading process. Salvatori and Donahue (2012) outlined the renaissance of reading theory, which started in the 1980s. The shift from studying what the text means to what the reader *thinks* the text means led to intimately studying the reader, resulting in Jolliffe and Harl (2008) recommending that instructors teach their students how to become active readers, instead of passive readers. Zambo and Brem (2004) recognized that external distractors played a crucial role in reading success, emphasizing the vital connection between emotion and cognition. Pekrun (2011) created the Achievement Emotions Questionnaire, (AEQ), which measured student emotion as linked to cognition, especially in reading. Brand (1987) cemented the link between emotion and cognition in regards to writers, with Micciche (2005) noting that emotions were necessary to make changes. Allen (2012) emphasized that reading should be a “*safe*” activity, and Moje and Luke (2009) extended this

idea, breaking down identity into five components and positing that identity matters to literacy, and literacy matters to identity. Most researchers accepted that emotion affected cognition, and their research further empathized this conclusion.

In this chapter, I provide the context for this research study, with a statement of the problem regarding the link between emotion and cognition in reference to reading comprehension, the purpose of the study, and the research questions. The chapter contains a brief overview of the methodology, a definition of key terms, delimitations and limitations of the research, the critical assumptions reached during this study, and the significance of the study.

Statement of the Problem

Reading has been characterized as a talent, a skill, an ability, and a necessity. Reading in the United States has its roots in the country's origins, with reading instruction occurring in the 1600s in colonial America (Smith, 2002). The purpose of reading instruction in America changed over the centuries, from religious to moral to academic, yet the goal has always been the same: to produce proficient readers.

Reading instruction in America did not include remedial reading instruction until the 20th century (Smith, 2002). With the growing acceptance of the idea of reading differences in individuals, the field of reading research also grew exponentially. Currently, over 100,000 research studies regarding reading have been published since 1966 (National Reading Panel, 2000).

Assessments were conducted on a regular basis to determine the success of reading programs in American public schools. Standardized testing in the United States is nothing new. In 1936, for example, many states began using the Iowa test (NEA, 2020). Another tremendous influence occurred in 2001 when the No Child Left Behind Act was passed, and criterion

referenced testing in all 50 states became standard. NCLB was the reauthorization of the Elementary and Secondary Education Act from 1965. Since standardized testing is directly linked to school funding, few schools do not have the option to ignore the enforcement for all grades and students. This high-stakes testing results in more scrutiny of reading scores, with accompanying reading remediation being offered or required for low-scoring students. In 2015, the Every Child Succeeds Act (ESSA), which was the reauthorization of NCLB, was passed with the goal of reducing standardized testing and not linking test results with high-stakes decisions (NEA, 2020).

The standardized tests in public schools highlight the reading rates of public school students. According to Peralta, as reading scores continue to fall, (with accompanying lower comprehension rates), solutions must be found. Increasing numbers of high school students are expecting to enroll in college or university, graduate, and enter the workforce as productive members of society. Not only will lower reading skills result in poor academic skills in higher education, but the reading deficit will continue to haunt the individual in his home and workplace. Impediments to competent reading must be discovered, addressed, and remedied.

In this respect, the study of emotions linked with reading proficiency can yield valuable data that can be used to help increase reading proficiency in individuals. Instructors and administrators may then use this information to improve their reading curriculum. As Pekrun (2006) noted, “to fully explore the richness of emotions experienced in classroom settings, we need field studies, non-experimental approaches, and qualitative data as well” (p. 331). Linking cognition to emotions may yield greater insight into the role that emotions play in connection with reading comprehension.

Purpose of the Study

Establishing a link between cognition and emotion is critical to determining strategies and assessments that will help all readers. Reading comprehension is necessary in academic, professional, and personal settings (Smith, 2002). While standardized testing is helpful in determining which areas of reading are in need of remediation in both individual and classroom environments, more research is needed to determine how emotions can affect reading comprehension (Pekrun, 2006).

Research Questions

The following research questions were used to guide this study:

1. How do university students describe the emotions they experience during academic reading?
2. How do university students describe the cognition they experience during academic reading?
3. How do university students' emotions affect their cognition in academic reading experiences?
4. How do university students' cognition affect their emotions in academic reading?

Brief Overview of the Methodology

For this study, I used the qualitative phenomenological methodology to answer my research questions. Descriptive phenomenology was an appropriate approach to understand and assess the participants' experience with cognition and emotion (Greening, 2019). The four steps of phenomenological research, bracketing, intuiting, analyzing and describing, was helpful in conducting this research.

This study examined the link between emotion and cognition through studying university students who were currently members in good standing in the Texas Undergraduate Medical Academy, a department at a medium-sized, approximately 10,000 enrolled students, Texas public university that is also a Historically Black College or University (HBCU). All the students hope to attend graduate or professional schools after graduating from their current institution. First, a sample of the participants were chosen, using a randomizer to select interviewees. Students were interviewed during the 2022-2023 school year, and data was collected using in-person interviews. Pandemic protocols were followed as needed. Written material regarding the students' background information and institutional data was also used. Data analysis yielded information regarding the participants' emotions and cognition before, during, and after academic reading.

Definition of Terms

For the purpose of this study, the following operational definitions have been formulated.

Student: University students who are currently members in good standing in the Texas Undergraduate Medical Academy (TUMA), a department at a medium-sized, approximately 10,000 enrolled students, Texas public university that is also a Historically Black College or University (HBCU).

Reading Proficiency: A level of reading appropriate for a college-level student, where the student can understand complex texts (ACT, 2006).

Cognition: Knowledge acquisition (Cherukunnath & Singh, 2022).

Emotions: Emotions experienced before, during, and after academic reading (Pekrun, 2006).

Assumptions and Limitations

This study was conducted with certain assumptions and limitations: (1) there is a stigma attached to admitting being a struggling reader, (2) students with learning disabilities would be identified; (3) students would be of college age, (4) students would be classified as current TUMA students in good standing; (5) the study would not focus on race, gender identity, or economic status.

Delimitations included students enrolled at the same university, and participants drawn from TUMA. In addition, the sample size was limited, which may affect the general application of the findings. Limitations include study participants who may not be forthcoming during the initial interview. Follow-up interviews clarified some of the responses.

Significance of the Study

This study is significant due to the declining reading levels across the United States, resulting in a need to improve reading (Peralta, 2012). As more students enter college with expectations of achievement, impediments to this process, such as reading difficulties, will result in lower student success. A clear understanding of impediments to the reading process, such as the emotion and cognition link, is vital to addressing an aspect of the cause of lower reading comprehension (Clore, 1994; Gross, 1999; Pekrun, 2006). Identifying and understanding this phenomenon may result in improved reading comprehension for college students, not just during their university journey but throughout their lives in both home and workplace. In turn, this data may also be helpful for teachers and administrators to adjust their reading curriculum for improved reading proficiency in their students.

Summary of the Chapter

Reading theory has been studied for centuries, with a resurgence of interest in the field starting in the 1980s (Salvatori & Donahue, 2012). Ideas regarding the link between emotion and cognition, especially in regards to reading, yields data proving a solid link between emotion and reading proficiency (Pekrun, 2006). With an increasing number of students enrolling in university, strong reading skills are a necessity for academic success. Currently, 52.5 % of adults lack the basic skills to read a college-level text (National Center for Education Statistics, 2019). Identifying, understanding, and solving reading difficulties linked to emotional states may help these students not only at the collegiate level, but also later in their personal and professional lives. This study examined the link between emotion and reading proficiency in university students in order to understand how to assist them with improving their reading proficiency. Instructors and administrators may then use this information to enhance their reading curriculum.

CHAPTER II

LITERATURE REVIEW

In this chapter, the researcher presents a review of the literature that is foundational for the study of emotions affecting cognition in an academic setting. The chapter begins with a historical overview of American Reading Instruction and Assessment, which is necessary to fully understand the motivations and practices in the field of reading. Linking writing research to reading research is also discussed, as is the literature review linking emotions to reading comprehension. The conceptual framework for a qualitative study based on the theoretical concepts of Constructivism, Control Value Theory, and Emotion Regulation Theory is included. A chapter summary concludes this chapter.

The History of American Reading Instruction and Assessment

This section of the literature review examines the historical background of how and why American reading instruction and assessment evolved due to changes in world events, advances in technology, and increased interest in the field of reading. It is critical to understand the evolution of this subject to fully comprehend the research, theories, and practices that currently exist. The historical section dates from American colonial times, the 1600s, to the current century and is organized chronologically.

Historical

To accurately study the effects of emotions on reading comprehension, one must first study how reading comprehension is measured. This leads to the study of reading assessment. American reading instruction spans approximately 400 years, and the motives, methods, and materials change dramatically over time. The assessment of reading comprehension is not initially considered in American reading instruction.

The earliest American reading instruction occurred during the 17th century. The colonial population-based their instruction on the English method of teaching. Students were taught in small groups, usually in someone's home. Children were taught for religious instruction, with little attention paid to comprehension. Hornbooks were used as a basic primer, and Psalter and Bible readings were introduced to older children. Based on the hornbooks, children were primarily taught using a phonics system.

American public schools were created between the mid-1700s to the mid-1800s, and the motive for reading instruction evolved from religious instruction to moralistic and patriotic instruction (Smith, 2002). World events, such as the American Revolution and the American Enlightenment, played a crucial part in this shift. The motive for reading instruction in the American colonies, and for education in general, grew from primarily religious instruction to a more nationalistic curriculum. Children needed to be educated to become good citizens. The method, however, remained relatively unchanged.

The emphasis in reading instruction was on pronunciation, with lessons revolving around student elocution and recitation. The intended result of this instruction was that students could eventually partake in representative government and unify America. The materials also evolved, and horn books were replaced with Noah Webster's Readers and Primers. In addition, leadership in public schools was created, with principals, administrators, and school boards. The public school leadership set the curriculum and determined what textbooks would be used, with the accompanying power of controlling the finances of the school system.

The American Renaissance period, 1830-1860, influenced the next era of American reading instruction. The motive for reading instruction was to promote an intelligent populace, with the goal of increasing intellectual thought. This time period is the beginning of critical

thinking skills in American reading instruction. As McGuffey Readers were introduced, whole-word instruction was taught. Silent reading was emphasized, as teachers and administrators realized that a majority of reading is done silently (Smith 2002). Students were assessed on comprehension and silent reading. Reading materials also changed, with the addition of graded readers for different levels or abilities of reading students. Less religious and patriotic material was used, and an emphasis on science and history was seen in the educational reading content.

In the 1880s, reading was seen as a cultural asset (Smith 2002). The American Civil War which spanned 1861 to 1865, was over, and Americans no longer were focused on survival. Cultural development was inserted into reading instruction, with literature taking the place of readers. Professional books and supplemental reading materials appeared in the curriculum. Basal Readers also occurred, but religious and patriotic themes largely disappeared. The emphasis on elocution also diminished, and the content of the reading material was more engaging for children. The method also shifted, to include the sentence method and the story method, rather than learning isolated words. An increase in phonics awareness and a greater appreciation for literature was also instituted by school leadership.

The 1880s also introduced the beginning of research on disabilities. Researchers studied the effects of *congenital alexia*, referred to as “word blindness” Smith (2002) noted, “The historical significance of these studies lies in the fact that they called attention to children who were not learning to read and to the possibility of doing something to help them in acquiring this skill” (p. 147). While school leadership did not exclusively provide for struggling readers, provisions was suggested such as extra tutoring or movement between reading levels to assist the student.

In 1901, the National Society for the Study of Education was established. This organization published an annual yearbook, which detailed research studies, innovations, and policies within the American education system. Instrumental in reading research, the NSSE was absorbed by the International Reading Association in 1956, along with the National Association of Remedial Teachers and the International Council for the Improvement of Reading Instruction. The organization changed its name to the International Literacy Association (ILA) in 2014.

From 1910 to 1925, an emphasis on scientific investigation into reading instruction occurred. 1910 began the scientific movement in education, with the first standardized reading test, the Gray Standardized Oral Reading Paragraphs, published in 1915. Other reading tests, mostly silent reading tests, soon followed. “Standardized reading tests evolved between 1910 and 1920. Surveys of reading achievement were made as soon as reading tests were available, and the results of these surveys revealed wide individual differences” (Smith, 2002, p. 349).

The scientific information regarding reading materials resulted in more innovation in reading instruction. The United States’ involvement World War I from 1917-1918 also revealed that many American soldiers could not read sufficiently. This revelation resulted in educator speeches, newspapers, and other educational published materials decrying this deficiency (Smith, 2002). School leadership responded with changes in policy, materials, and methods. There were six important innovations that occurred during this time period.

The first innovation was the transition from oral to silent reading in reading instruction. Smith’s (2002) study found the following:

Colonel” Francis Parker noted: “expression helps thought, and thought is necessary for expression. Applying these ideas to language expression, he distinguished clearly between speech, silent reading, and oral reading. He considered speech and oral reading

to be forms of expression, and he said that ordinary reading (silent reading) was not a form of expression but a matter of attention. (p. 150)

In other words, Parker felt that teaching using only oral reading resulted in poor reading skills. Parker was not the only critic of strictly oral reading instruction. “During the years 1915-1918, Mead, Oberholtzer, Pintner and Gilliland, Schmidt, and Judd, all conducted investigations that indicated the superiority of silent reading over oral reading, both in speed and in comprehension” (Smith, 2002, p.151).

Reading was the last of the academic subjects to become part of the testing movement. One reason was that a standardized group test assessing oral reading was almost impossible to implement. Reading was so vast and complicated, it was difficult to divide the elements that would be tested. Speed and comprehension were finally focused on testing silent reading, in part because they were testable and measurable. Pronunciation, fluency, and intonation were relegated to the background. Smith’s study (2002) reflected this change in assessment:

In 1915, Starch reported a silent reading test that he had devised, and in this report, we find the following analysis: ‘The chief elements in reading are: (1) the comprehension of the matter read, (2) the speed of reading, and (3) the correctness of the pronunciation. The first two are the most important so far as reading is strictly concerned since we learn to read for our own individual use. For this reason, such factors as intonation, expression, pauses, and the like are relatively insignificant. We use silent reading rather than oral reading in practical life. (p. 152)

Around 1921, textbook writers started producing readers mainly based on silent reading. Instead of evaluating students primarily on their oral reading skills, comprehension became the most essential part of reading assessment. Societal changes also explain this critical shift. Unlike

colonial times, reading material in the 1920s was abundant, and more citizens were literate.

Means of communication, such as the telegraph, and travel increased the speed of information, and written language replaced oral language as the primary means of communication. Leadership in the schools changed curriculum, standards, and methods to accommodate the quickly changing world.

1. Remedial reading techniques were created during this time period. Public schools began offering remedial reading. “Remedial Reading” replaced other terms, such as “inferiority in reading”, or “reading deficiency.” Teacher manuals listed possible areas of reading difficulties, with comprehension topping this list.

The Maryland State Department of Education (1924) published an error analysis of the time period, listing frequency of errors (in order):

1. Lack of comprehension due to inadequate vocabulary.
2. Lack of comprehension due to inability to understand difficult sentences.
3. Careless expression of pupils’ answers.
4. Preconceived ideas.
5. Introduction of irrelevant facts and ideas.
6. Overpowering suggestiveness of certain elements.
7. Using words not synonymous, as if they were.
8. Disregard of modifying elements.
9. Failure to follow directions.

(Maryland State Department of Education, *Maryland School Bulletin*, 5(11). Baltimore, 1924)

This 1924 error analysis illustrates the attitudes towards reading difficulties.

While each topic offers a general idea of the issue, each item could easily be expanded to include more specific information. For instance, “failure to follow directions” could result from a large number of factors, such as the student being a non-native speaker, hard of hearing, distracted by outside factors, or unfamiliar with school procedures.

In 1921, Grace Fernald, through UCLA, established the first clinic for remedial instruction, The Clinic School, which was later housed in the university’s psychology department. In addition to the sudden interest in remedial reading, “ability grouping,” grouping students based on reading ability, appeared at this time. School leadership no longer viewed struggling readers as deficient or beyond help; methods and materials were updated to include struggling readers. School administrators had to approve the use of funds for materials that were specifically designed to help struggling readers.

2. Reading Research expanded rapidly during this time period. Smith noted the number of reading studies: “Only 34 studies in reading had been reported in the English language up until 1910. From 1910 to July 1, 1924, a total of 436 accounts of reading studies had been published by investigators in the United States” (p. 175). In addition, the first doctoral dissertations regarding reading appeared in 1917 at the University of Chicago:

Studies of Elementary-School Reading through Standardized Tests by William S. Gray.

Types of Reading Ability as Exhibited through Tests and Laboratory Experiments, by C.T.

Gray.

An Experimental Study of the Psychology of Reading by William Anton Schmidt.

From 1917-1924, 13 more dissertations about reading, reading interests, silent reading, reading speed, content of readers, measurement of reading ability, and sensory factors in regard to reading appeared. Other innovations also evolved.

3. Experience charts also appeared during this time period. This practice involved a student creating a chart about previous experiences before reading. The student would read the chart as part of his reading instruction. Students used their own compositions as reading instruction, which was a novel approach to reading instruction. This practice also linked reading to writing, which continued through modern times. School leadership, such as principals and administrators, had to approve these new methods, and were instrumental in innovative ideas and techniques.
4. Individual instruction was introduced in the classroom. Researchers discovered that children had different reading achievement levels, even though they were in the same classroom. Teachers began changing the classroom to allow for individual progression. The instructor no longer dictated the learning of reading; instead, students were more in control of their reading, which was a novel concept of the time period. Students were able to choose which reading text they wished to read or which reading project they might want to attempt. More latitude was also given to teachers by the administrators, in order to best attend to each student's academic needs.
5. Teacher improvement was a growing concern among administrators, teachers, and parents. More demand for teachers who were trained to work with diagnostic and remedial reading tasks resulted in expanding teacher educational programs to meet the demand for more qualified reading teachers. The subject of reading as an academic field gained momentum.

From 1925-1935, intensive research and application appeared in the field of reading instruction. *The Twenty-Fourth Yearbook of the National Society for the Study of Education*, (the predecessor of the ILA) noted three main objectives for Reading Textbook Instruction:

1. The primary purpose of reading in school is to extend the experience of boys and girls, to stimulate their thinking powers, and to elevate their tastes. The ultimate end of instruction in reading is to enable the reader to participate intelligently in the thought life of the world and appreciatively in its recreational activities.
2. A second objective of reading instruction is to develop solid motives for and permanent interests in reading that will inspire the present and future life of the reader and provide for the wholesome use of leisure time.
3. A third aim of reading instruction, therefore, is to develop the attitudes, habits, and skills that are essential in the various types of reading activities in which children and adults should engage (p.193).

The three main objectives made no mention of testing, but instead emphasized critical thinking skills. A hint of Puritanical ideas was mentioned, such as using time productively. The purpose of reading instruction, then, was to produce productive adults, who were critical thinkers and knowledgeable of the world around them.

Expansion and Intensive Application of Reading Research also appeared at this time. The interest in reading research was reflected in 654 published studies regarding reading from 1924-1935 (Smith, 2002). The most popular topics of these publications were reading interests, reading disability, and readiness for beginning reading. Other topics were vocabulary load in

reading materials, evaluation of reading tests and scales, factors involved in reading achievement, and phonics. Remedial reading also enjoyed increasing interest, with extended developments in remedial reading, including reasons for reading disability: inadequate mental ability, heredity, conditions related to cerebral imbalance, abnormal emotional tendencies, visual and auditory deficiencies, and faulty reading habits (Smith, 2002).

The Reading Readiness concept gained momentum, with John Dewey recommending children not be taught to read until they were eight years old. One additional concept was introduced: the Special Supervisor of Reading in American schools appears (Smith, 2002). This facilitator oversaw individual teachers during their reading instruction time in the classroom. The position evolved into the Reading Specialist of modern schools. This significant development emphasized the importance of reading instruction and assessment, and leadership in the schools acknowledged the validity of reading research with the creation of the reading specialist. Reading was regarded as the most crucial subject in the early elementary graders. As students progressed through the education system, reading classes were becoming more prevalent, and reading instruction gained momentum and respect. Reading differences were no longer viewed as incurable or the result of lowered mental capacity.

World War II occurred during the time period from 1935 to 1950, and reading research was heavily impacted. In 1940, for example, 114 dissertations regarding reading instruction were published. In 1941, only one was published. Reading instruction dissertations are not the only victims of decreased publications. Fewer basal readers are published, and overcrowded classrooms with fewer teachers became the norm during the war years (Smith, 2002). Once again, world events influenced reading instruction and assessment. The importance of education was now reduced, and war was the new priority of the United States and the world.

A second effect of international war was the creation of the idea that reading could contribute to American democracy. During the previous 50 years, reading instruction emphasized literary appreciation and silent reading, but nationalistic sentiments began to appear in public schools' beliefs:

The man or woman who desires to live fully and competently in the world of the nineteen-forties needs to be able to read with both speed and understanding. He must be able to recognize validity, to detect speciousness, to deal sagaciously with propaganda. He uses reading to gather, verify, organize, interpret, and evaluate information" (Los Angeles County Schools document, *The improvement of reading in the secondary school*, 1940).

Public school reading material began to emphasize democracy and education. Investigation of reading materials at this time revealed such titles as, "*Education for Democracy*," and "*Functional Reading in a Democracy*" (Smith, 2002). The purpose of reading instruction, and education, was now re-centered as a method to create wise, thinking American citizens who were able to discern truth from propaganda.

Another effect was a new importance on the social values of reading in American culture. "The title, 'Sociology of Reading,' was used to embrace studies relating to social uses and values of reading, persisted all through the 1940s, indicating an increasing interest in this topic" (Smith, 2002, p. 250). Reading could also be seen as a wholesome activity that good American citizens participated in. The public schools also became better funded and organized during this period, with standardization now a common goal across the United States.

The involvement of Americans in World War II highlighted the problem of American soldiers being unable to read sufficiently. Teaching the troops to read sufficiently was done in a

relatively short amount of time, and the idea soon followed that the same concept could be applied to high school and college students. In addition, in 1943, American publishers created the, *Council on Books in Wartime* and donated over 122 million books to the American armed forces, starting an enduring trend of reading for pleasure (Appelbaum, 2014). These American soldiers would eventually return home, and armed with a love and reading and the G.I. Bill, entered colleges and universities in great numbers. Reading courses began appearing at the higher levels of education, and publications regarding this topic, such as the NEA's *Reading Instruction in Secondary Schools (n.d.)*, and *Reading in High School and College* (1949) started appearing. Teaching American soldiers successfully in remedial reading validated the process for older students in American education.

This also resulted in reading instruction becoming more rigidly standardized, yet another detriment to reading appeared at this time. "Reading suffered its first substantial threat from mass communication in this period. During the years 1938-1950, the radio replaced the lamp for reading on the living room table of practically all homes in America (Smith, 2002, p. 252).

Unlike reading, which required at least a rudimentary education, listening to the radio required no specific skill. The only material required was a single radio, which held the power to disseminate an almost infinite amount of information, versus a book, which only held a finite amount of data. At the same time, additional volumes would have to be purchased.

Reading instruction methodology began to evolve with the idea that teaching reading to children should take all aspects of the student into account. Reading was becoming more child-centered, and a shift in reading instruction and assessment occurred as the teacher was becoming regarded more as a facilitator and less as an instructor. By involving other aspects of a student's personality, Dr. Russell also realized that reading instruction was multi-faceted, and a very broad

field of research. This paved the way for other fields of study to become involved in the study of reading.

Reading comprehension became increasingly popular in regard to reading research during this period. No longer simply referring to a text's meaning or a student's impression of the text, reading comprehension became an exercise in logic and critical thinking skills. Researchers began defining comprehension in terms of various skill subsets:

There was a beginning attempt to break down the general term comprehension, and attention was called to different kinds of meaning-getting processes. Durrell's analysis of comprehension skills included 'simple comprehension,' 'higher mental processes,' and 'critical thinking.' It was during this period that we first encountered the term critical reading, which Betts defined as 'evaluating relevancy and adequacy (Smith, 2002, pp. 271-272).

Comprehension now involved more than simply restating an idea or a quote from a passage. Students were expected to apply knowledge and gain information from inference and other clues within the reading passage.

The study of reading differences also expanded, with Smith noting, "Evidence of the increased interest in reading disability during the 15 years from 1935 to 1950 is found in three sources: summaries of investigations, articles in educational journals, and new professional nooks dealing exclusively with this subject" (p. 280). The effect of this increased attention to reading differences resulted in the National Society for the Study of Education (2002) declaring:

The need is urgent at present [1948] for increased service on the part of colleges and universities to teachers in the field. This need arises out of the lack of adequate

preparation in reading at the preservice level and out of a growing recognition of the importance of a broader understanding of reading problems ” (p. 286).

The ideas revolving around reading differences were more sympathetic in nature, and less accusatory towards the struggling reader. From 1950-1965, the field of reading instruction was heavily influenced by expanding knowledge, the technological revolution, and national concern (Smith, 2002). The increased interest in reading theory by non-reading professionals resulted in educators examining their own methods more closely in order to explain the research, psychology and philosophy of reading instruction.

Reading instruction began to be seen as more than just reading words on a page. Students were expected to use critical thinking skills, which were divided into various subskills, such as inference, skimming, or scanning. “Some fundamental advances have been made recently in regard to reading skills in the area of comprehension. In this area, we find a heavy emphasis on higher thinking skills and critical reading- not just listed as terms but as detailed and explicit subskills. Teaching specific word meanings is considered to be an integral part of the comprehension block of reading skills at this time [1965] (Smith, 2002, p. 334). Reading comprehension was considered a critical skill in reading, yet it was, and still is, the largest and most complicated aspect of reading.

Reading instruction changes were not just limited to the elementary schools. College reading courses increased, and reading research expanded to include all ages. Reading centers were open to everyone including the US military servicemen, businesses, and industry (Smith 2002, p. 347). Smith (2002) notes that, reading instruction was seen as an individualized experience:

The concept is primarily concerned with reading as it meshes with and promotes child development in many different aspects- physical, mental, social, emotional, linguistic, interest in reading, his attitude toward reading, and his personal self-esteem in being able to read. The growing interest in dynamic psychology has called attention to the importance of motivation and levels of aspiration in learning activities (p. 350).

This idea resulted in other fields of research becoming involved in the study of reading instruction and assessment. Adequate reading skills had to take emotions into account. Schools were expected to teach far beyond students reading out loud from the printed page. “The rest of what the school calls teaching reading is actually teaching thinking with and in response to what is found on the page” (Smith, 2002, p. 357).

Aspects of reading had finally achieved significant recognition, with comprehension being the largest and most important of all reading skills. Researchers continued to study how emotions could affect comprehension (Smith, 2002):

Psychological studies contributed much to the field of reading during this period [the 1960s]. Among the new topics psychological in nature were studies having to do with such topics as personality factors, emotions, self-concept, concept-formation, transfer, reinforcement- all as they were related to reading ” (p. 376).

Leadership in public education also had to consider this aspect of education, and new viewpoints regarding policy, funding, and instruction were introduced.

Researchers in fields other than reading began to research specific areas of the reading field. Smith (2002) noted:

Certain topics investigated previously to some extent, now were given a great deal of attention and probed to greater depths than in the past. Among such studies were

intelligence, especially concerned with psychological factors involved in or related to reading; perception, now dealing with development and functions; interest, now often directed towards needs, differences in locale, and different social groups; vocabulary, now frequently concerned with experience and meanings; and interpretation, now exploring determinants, factors, processes, and relationships. (p.377).

Reading research thus began to take both internal and external factors into account when studying student reading and comprehension. Researchers included reading specialists, psychologists, linguists, and other related specialists. The field of reading research became progressively more prominent, more scientific, and more prolific than in any other time period. Reading comprehension and emotions began to be scientifically linked.

Reading research also recognized that the teaching of reading was not the sole propriety of teachers, and recommended “that colleges offer a course, or in-service training, in reading instruction specifically designed for principals, supervisors, and cooperating teachers” (Austin, 1961, p. 145). School leaders were now active participants in the study, assessment, and implementation of reading policies and programs in the schools, from elementary schools to universities.

As participants in the field of reading research surged, more areas of study became involved in the field. The impact of this conglomeration would have a lasting effect. Stahl (2002) notes the shift in views about reading and writing:

Along the way, we confronted fundamental shifts in our views of reading and writing and began to create a variety of serious curricular alternatives to the conventional wisdom of the 1970s. Just beyond the horizon lay even more unfamiliar and rockier territory- the conceptual revolutions in cognition, sociolinguistics, and philosophy- which would have

such far-reaching consequences for reading curriculum and pedagogy of the 1980s and 1990s (p. 429).

As the American school populations increased, the research of reading exponentially also grew. Stahl also noted a provable discovery. “Finally, [in the mid-1980s] we began to see reading and writing as inherently intertwined, each supporting the other” (Stahl, 2002, p. 447). This critical idea opened the door to research reading and writing in conjunction with each other, instead of relegating separate studies to each. Reading and writing are still often taught in the schools as one subject.

Whole language reading instruction took center stage during the latter half of the 20th century. “Even so, it is fair to conclude that by the early 1990s, the whole language had become the conventional wisdom, the standard against which all else was referenced” (Stahl, 2002, p. 451). Its popularity was relatively short-lived, and by the 1990s, whole-language reading instruction began to disappear (Stahl, 2002). Generations of parents, teachers, and administrators have long argued about which method of reading instruction was “best.” Still, any teacher knows that the true answer is the best method is whatever suits the student best. School leadership also had to decide which method was to be implemented in the public schools under their control, but the controversy slowly died out before the new millennium.

At this point in the history of reading instruction and assessment, accepted reading research grew to include qualitative research (Stahl, 2002):

Prior to the 1980s, qualitative research in any form had little visibility with the reading research community...But all that changed in the 1980s and early 1990s. Qualitative research, more generally, along with more specific lines of inquiry taking a critical perspective on literacy as a social and pedagogical phenomenon, became more widely

accepted as part of the mainstream archival literature. Treatises pointing out the shortcomings of traditional forms of quantitative inquiry, especially experimental research, appeared frequently in educational research journals. In terms of curriculum and pedagogy, it is important to remind ourselves that much of the research that undergirds whole language comes from this more qualitative, more interpretive, more critical tradition. (p.459-460).

Given the extensive number of factors that impact reading comprehension, it is small wonder that qualitative research gained popularity as an appropriate methodology for reading research. Relegating reading research to only quantitative studies, such as using questionnaires with Likert responses, is a disservice not only to reading research, but to scientific research in general. The unique process of an individual's reading process often will require open-ended interviews, and participants may not even recognize some of their own reading strategies! Furthermore, having struggling readers read and answer lengthy surveys is a contradiction in method and logic. Finally, the Matthew Effect will frequently skew reading assessment responses, so qualitative research will yield data that quantitative research cannot.

With all of the changes in reading instruction and assessment, the position of educational leadership is critical: "From its beginnings, one of the great hopes of education research (and those who conduct it) is that policymakers will take research seriously when they establish policy initiatives at a local, state, or national level" (Stahl, 2002, p. 462). Reading research has more purpose than simply testing a theory or verifying a hypothesis. According to Stahl (2002), the research itself should influence educational policy. "In the early days of the current Bush administration, the goal of 'evidence-based practice' was made even more explicit, with the phrase 'scientifically based reading research' appearing more than 110 times in the Reading First

portion of the No Child Left Behind Act of 2001 reauthorizing Title I” (Stahl, 2002, p. 463).

From the classroom teacher to the federal government, reading research has expanded to include all levels of education.

One danger regarding reading research involves the myriad collection of teachers, researchers, administrators, policymakers, parents, students, and various other entities. With so many diverse voices and opinions, the journey from research to policy can be a treacherous one (Stahl, 2002):

When research moves into the policy arena, one of two outcomes is most likely. If the research is widely accepted by members of the profession from which it comes, widespread acceptance and implementation usually follows. This often occurs in medical, pharmaceutical, or agricultural research. Suppose widespread consensus on what the research says about practice is not reached. In that case, research-based policy initiatives are likely to sharpen and deepen the schisms that already exist. The entire enterprise is likely to be regarded as a war among factions within the field. The latter scenario appears to characterize the reading field. (p.464-465).

One famous example of controversial reading policy involved whole language versus phonics instruction. In the 1990s, the American public school system embraced whole language as a preferred method of teaching reading, but expectations for research placed the burden on teachers (Stahl, 2002):

Whole language gives the teachers more freedom and power to set curriculum, while phonics-first programs are determined at a higher level- the state, administrators, etc.

Whole language couldn’t offer assurances that students would perform well on state tests,

but because the evidence of growth was left up to the teachers, whole language lost its foothold in American schools (p.467).

Reading research can influence policy, and reading instruction frequently swings from one method, like phonics, to another like whole language, not so much because the decision is based on the benefit to the students, but on scientifically measurable results that guarantee a higher passing rate on state testing, which is directly linked to funding of the public schools.

Salvatori and Donahue's work in 2012, *What is College English? Stories about Reading: Appearance, Disappearance, Morphing, and Revival* also noted that the subject of reading was enjoying a renaissance of interest in the field. According to the authors, the resurgence of interest in reading was first noticed in the 1980s, and the excitement regarding the subject yielded a wealth of recent literature and research. During the 1980s, the traditional study of what texts meant shifted from a predetermined answer to what readers thought they meant (Salvatori and Donahue, 2012). In other words, the emphasis in the field of reading realigned the reader as the center of attention, not a secondary afterthought. Once researchers understood that concept, the research shifted to focusing primarily on students' perceptions of their readings and how they viewed themselves as readers. The authors extended this idea to theorize that researchers could now study how students' perceptions could be affected by their emotional responses to reading.

Linking Writing Research to Reading Research

The subjects of reading and writing are currently taught in tandem with each other, as most educators agree the two fields are strongly related. Most reading assessments, for instance, employ some sorting assessment, while most writing assessments rely on what the student has read. Reading assessments may ask students to restate the main idea, write a short paragraph, or

summarize a passage. Writing assessments usually involve reading on a particular subject, then writing a response to a question related to the reading. It is possible to test only reading or only writing, but it is not commonly implemented.

Alice Brand (1987) focused on emotions and the writing process, noting that both emotional and cognitive data must be considered when teaching students to write. The researcher empathized that writing students benefitted from acknowledging their emotional signals, such as when to start or stop writing. These same emotional signals could benefit reading students, as they could examine their emotional responses to the act of reading (Brand, 1987). Writers are affected emotionally by audience, topic, and time restrictions. The same could be said for readers. Micciche (2005) took that concept a step further, realizing that emotions were necessary to make changes. A struggling reader can recognize emotionally when to stop reading and reassess his difficulties. Ignoring emotions during a cognitive process can distance a reader from the text, hindering comprehension (Micciche, 2005).

Allen (2012) recognized the obstacles that struggling readers face and encouraged teachers to make reading safe for their students. Emphasizing active readers, as opposed to passive readers, as readers that understand themselves emotionally, reflective writing exercises help students identify their own reading personas. Moje and Luke (2009) extended this idea further, studying researchers' identification and its effects on their views of literacy. The authors separated identity into five components: difference, sense of self, mind, narrative, and position. They posit that not only does identity matter to literacy, but literacy also affects identity. Both concepts work in conjunction with each other, and are strongly linked.

Linking Reading to Emotions

Jolliffe and Harl (2008) pointed out that fewer people, especially college students, are reading. Their research delved into how college students perceived their transition from high school to college as readers. They studied first-year college students' perceptions of their reading habits using surveys and interviews. The authors discovered that students hurried through academic reading just to complete an assignment and their interest levels peaked when they read books of their own choosing, similar to the Matthew Effect. Jolliffe and Harl (2008) recommended that instructors teach their students how to draw explicit connections necessary for active reading, offer a relevant and engaging curriculum, and incorporate more technology into reading activities.

Zambo and Brem (2004) echoed the idea that emotion and cognition affect one another, especially in struggling readers. They discovered the impact of emotions on cognition, mood, and self-schemas. The writers stated that emotions influenced cognition by providing the energy to drive all thinking and reasoning. Students with reading differences may react with a fight or flight response, often leading to frustration. Lower reading proficiency, then, can easily be linked to a sense of frustration. Wenger (2011) also agreed that focusing on students' emotions can create engagement with a text for students who might otherwise be struggling. Teachers who are knowledgeable about their students' reading experiences can use that knowledge to open texts to them, creating a positive interaction with reading, instead of a negative one.

Pekrun et. Al (2011) described achievement emotions, including affective, cognitive, motivational, and psychological, when linked with other emotions, such as hope, pride, or shame, the resultant emotions can then be associated with success or failure. If students feel they are out of control in terms of reading, that sensation can trigger a fight or flight response,

verifying Zambo and Brem's conclusions. This phenomenon was also observed in L2, second language learners, and readers, as Abdolrezapour (2012) noted: using emotionalized dynamic assessment (EDA) in conjunction with reading tasks resulted in a higher level of performance than students who read without the application of EDA. The researcher claimed that reading comprehension improved when emotions were taken into consideration. This improved comprehension could then carry over to other academic areas as well.

The Matthew Effect

It is prudent to offer a summary of the Matthew Effect in this work, as it applies to the research, and verifies that qualitative research is appropriate. The Matthew Effect, first noticed by Merton (1968), observed that individual learners' differences can affect their comprehension. Named for a Biblical passage in the Book of Matthew- "For to everyone who has, more will be given, and he will have abundance; but from him who does not have, even what he has will be taken away" (Matthew 25:29), the theory posits that learners who start with a more significant advantage will learn at a faster and more efficient rate than those who start a task with a lesser advantage. This idea is applied to both internal and external factors, including interest level, motivation, and the testing environment. Because the Matthew Effect can account for inaccurate results in traditional standardized reading comprehension tests, a qualitative study may reveal a more in-depth understanding of learners' emotions and motivations.

Conceptual Framework for this Study

Research in the field of reading has become more extensive in the last 50 years. The field of reading research is vast and diverse, so assembling a theoretical framework can be challenging. Relatively little research has been conducted regarding the effect of emotions on cognitive ability, so the research is usually more recent. The conceptual framework for this study included

Constructivist Theory (Dewey, 1974; Kant, 1781; Piaget, 1971; Vygotsky, 1987), Control Value Theory of Achievement Emotions (CVT) (Pekrun, 2006), and Emotion Regulation Theory (Clore, 1995 & Gross, 1999). Constructivist Theory verifies learner-centered knowledge acquisition, Control Value Theory of Achievement Emotions provides research regarding the regulation of emotions in an academic setting, and Emotion Regulation Theory confirms the idea that learners generate emotions, and emotions can be regulated.

Constructivist Theory

Constructivist Theory basically states that learners build or construct knowledge, instead of passively just memorizing information. Constructivist Theory had its start with Immanuel Kant in the *Critique of Pure Reason* (1781). Kant posited that humans have prior cognitive structures, which enable humans to “construct” their environment and be active learners. Jean Piaget next realized that learners create schemas as they encounter new ideas, resulting in knowledge construction. Vygotsky echoed these ideas. John Dewey also agreed with the concept of independent reasoning within learners. Dewey emphasized that students learning through actual world activities would have higher levels of knowledge.

Constructivist Theory was used for this study, as it postulates that the active process of learning requires a change in the learner. Reading comprehension requires active thought on behalf of the reader, and emotions can affect the comprehension process. Readers actively process the information they encounter through reading, but emotions may hinder this process of the acquisition of knowledge. Constructivism also emphasizes active learning, versus passive learning, which is critical to the study of reading comprehension.

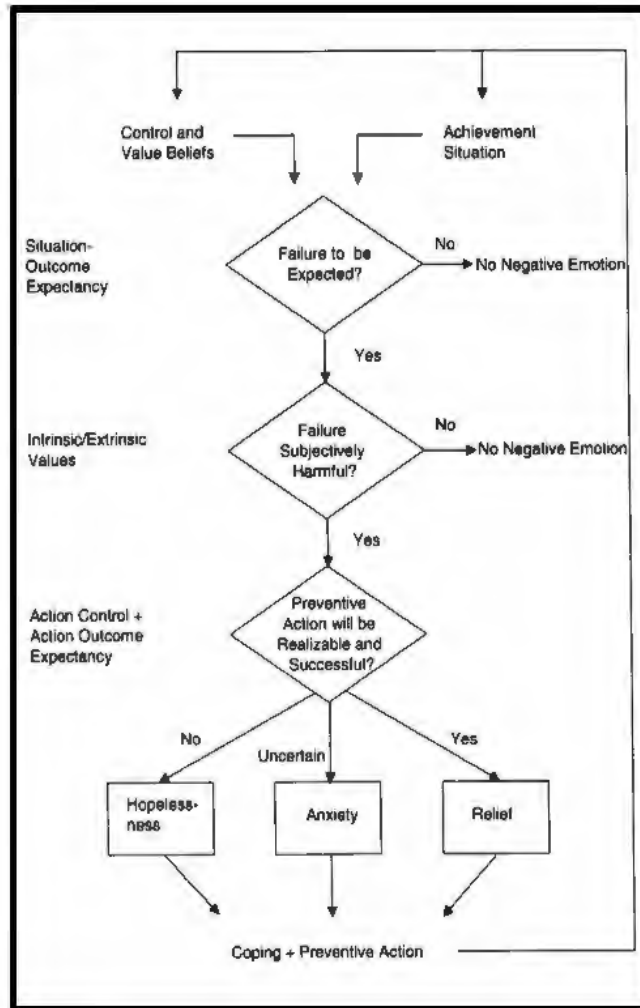
Control Value Theory of Achievement Emotions

This theory links the effects of emotions in academic settings. Pekrun (2006) believed that emotions are comprised of a set of subsystems, including affective, cognitive, motivational, expressive, and peripheral. Control Value Theory (CVT) uses the idea of subjective control to explain how emotions can affect student outcomes. Pekrun further defined goals as “performance approach goals” and “performance avoidance goals,” in reference to positive and negative outcomes (p. 326). Pekrun commented that “achievement emotions affect the cognitive, motivational, and regulatory processes mediating learning and achievement, as well as psychological, well-being, happiness, and life satisfaction” (p. 326). CVT asserts that emotions affect learning and comprehension while learning also influences students’ emotions (see Figure 2.1). Pekrun (2006) concluded:

To date, it is quite unclear whether the results of laboratory-based mood studies can be transferred to the real-life, context-bound, and occasionally very intense achievement emotions experienced by students in academic settings. There is a clear need to complement laboratory experiments with field experiments, as well as non-experimental field studies, in research on achievement emotions (p. 331).

This dissertation will attempt to add to the scant body of knowledge in regard to CVT.

Figure 2.1 Sequence of control appraisals, value appraisals, and negative achievement emotions (Pekrun, 2006).

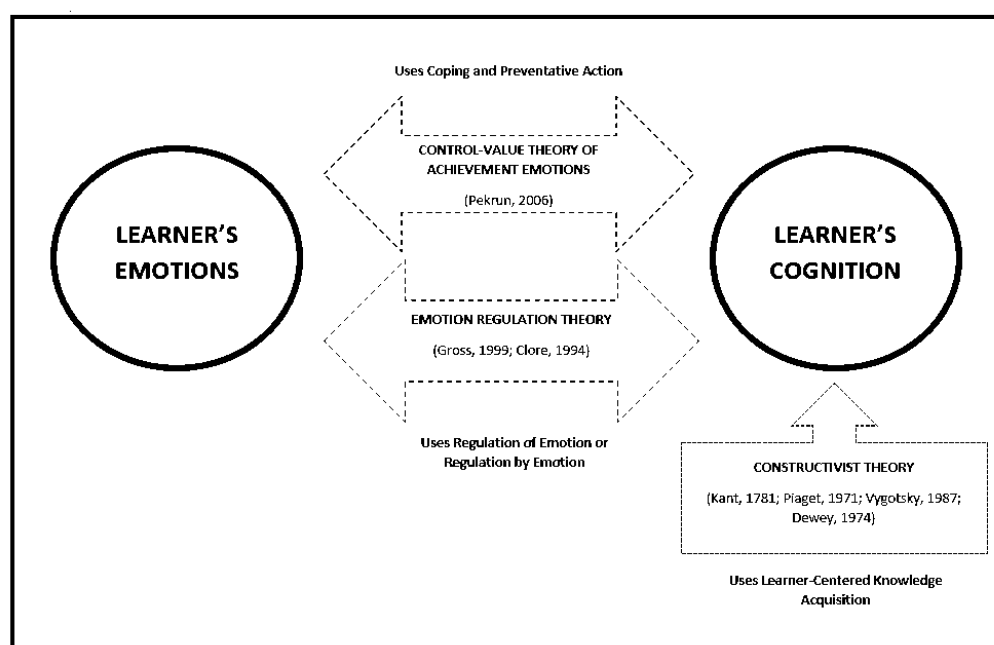


Emotion Regulation Theory

Gross (1999), in his paper, *Emotion Regulation: Past, Present, and Future*, discussed the adaptive value of emotions. Emotions can be regulated, especially in an academic setting. Gross further showed the differences between regulation *of* emotion versus regulation *by* emotion. Clore echoed the idea that emotions would change cognitive style to meet the need of the academic situation (1994). This dissertation hopes to better understand the link between emotions and comprehension, leading to students using emotion to improve comprehension.

Gross noted that cognitive change involves the learner evaluating the situation and altering its emotional impact, while response modulation is the action of altering emotions as they arise. Situations themselves do not generate emotions. It is the participant's reaction to a situation that results in emotions, and it is this aspect of the study that is the focus of this dissertation. Of interest to the researcher is the idea that emotions can be regulated, though emotions are frequently generated subconsciously.

Figure 2.2 Conceptual Framework for the Study of CT, CVT, and ERT



Summary of the Chapter

In this chapter, the researcher presented a review of literature related to this study to understand the link between emotions and cognitive ability. The review included an overview of the conceptual framework, research design, and significance of this qualitative study based on the theoretical concepts of Constructionist Theory, Control Value Theory of Achievement Emotions (CVT), and Emotions Regulations Theory. As Pekrun (2006) noted, more research is needed, especially field research, to validate the link between emotion and comprehension

further. Without additional research, the effects of emotion on cognitive ability will continue to affect students, researchers, and readers, thereby making the learning process more difficult. Additional studies are also needed to justify policy change at the administrative and leadership levels of American education. As reading scores continue to fall in America, any research that can improve reading comprehension, is genuinely needed and appreciated. In addition, this field of study is relatively new to American reading research so that additional research can verify previous findings.

Emotion and cognition affect each other. Reading can be considered as either part of emotion or cognition, depending on the reader's response to reading, that is, an emotional interaction with the work or a cognitive processing response to the written text. As Moje and Luke (2009) and Micciche (2005) noted, emotion and cognition affect each other, and, in turn, affect reading proficiency.

In Chapter III, the researcher presents the design and. The specific areas of focus include research method and design, a description of the population and sample, data collection instrument and procedures, and data analysis procedures. The chapter concludes with a timeline of research activity and a summary of the chapter.

CHAPTER III

DESIGN AND METHODOLOGY

In Chapter III, the researcher presents the design and methodology used to study the effects of emotions on reading comprehension. The research method and design, the description of the population and sample, the data collection instrument and procedures, and the data analysis procedures are all included in this chapter. A timeline of the research and a synopsis of the information concludes the chapter. As discussed in Chapter I, it is essential to understand the effects emotions and cognition have on each other, so that readers, students, instructors, administrators, and parents can understand and possibly improve the reading process. Improving reading skills will affect readers academically, personally, and professionally (Smith, 2002). The purpose of this study, then, was to establish a link between cognition and emotion in order to understand strategies and assessments that will help all readers. While standardized testing is helpful in determining which areas of reading are in need of remediation in both individual and classroom environments, more research is needed to determine how emotions can affect reading comprehension (Pekrun, 2006).

The following questions were used to address this purpose and frame the study:

1. How do university students describe the emotions they experience during academic reading?
2. How do university students describe the cognition they experience during academic reading?
3. How do university students' emotions affect their cognition in academic reading experiences?
4. How do university students' cognition affect their emotions in academic reading?

The following section of this chapter provides detailed information regarding the research method and design.

Research Method and Design

Qualitative research is an invaluable research method when studying how cognition and emotions influence readers. This study asked university students to describe their emotions at specific times. A qualitative study is designed to yield “rich” data, which will have greater detail regarding student emotions, and provide a more complete picture of the phenomena studied (Maxwell, 2012). Qualitative research can reveal changing attitudes and allows a much more flexible approach than quantitative research, which is advantageous when discovering the emotional reactions of the participants.

This qualitative study provides multiple sources of data, including observation of the participants, recorded interviews, written documents of the interaction between the participants and researcher, and reviews of the transcribed interviews by the participants. Qualitative research was more appropriate for this study. Qualitative research has some drawbacks: this research used only 10 participants; limited time was available to gather the information efficiently; the study could not easily be replicated.

Since the field of reading is vast and complicated, qualitative research was used for this study as a means to explore complex human phenomena. Since the research explored emotions and cognition, a qualitative study allowed for a deeper understanding of the participants’ emotions and viewpoints. The phenomenological approach is appropriate for this research, as it reveals the “essence” of the phenomena, including “those features that make it what it is, rather than something else” (Morrow, 2015, p. 643).

The Phenomenological Approach

Phenomenology can be used to explore people's perceptions and emotions.

“Phenomenology can be defined as an approach to research that seeks to describe the essence of a phenomenon by exploring it from the perspective of those who have experienced it. The goal of phenomenology is to describe the meaning of this experience—both in terms of what was experienced and how it was experienced” (Neubauer et al., 2019, p. 91). Phenomenology can be used to explore what and how a student views his reading experience. Since reading, specifically, silent reading, is a personal and private act, researchers need to understand the perspectives and emotions of the reader, which requires an approach that is flexible, yields “rich” data, and offers diverse and comprehensive data. Husserl noted that scientific study should be focused on how an individual's consciousness perceived phenomena, with equal value on subjective and objective experiences (1938). Giorgi views phenomenology as narrowing down the data until a clear picture is revealed (Giorgi, 1994). First-person interactions are necessary for this approach, which yields “a concise yet all-encompassing description of the phenomena under study, validated by the participants who created it” (Morrow, 2015, p. 643).

The Matthew Effect, first noticed by Merton (1968), observes that individual learners' differences can affect their comprehension. Named for a Biblical passage in the Book of Matthew- “For to everyone who has, more will be given, and he will have abundance; but from him who does not have, even what he has will be taken away” (Holy Bible, NIV, 2011, Matthew 25:29) the theory posits that learners who start with a more significant advantage will learn at a faster and more efficient rate than those who start a task with a lesser advantage. This idea is applied to both internal and external factors, including interest level and motivation, and the testing environment. Because the Matthew Effect can account for inaccurate results in

traditional standardized reading comprehension tests, a qualitative study may reveal a more in-depth understanding of learners' emotions and motivations. The phenomenological approach will reveal whether the Matthew Effect influences the participants' perspectives.

Research design

Qualitative design relies on observation and enquiry; qualitative research “explores the meaning of human experiences and creates the possibilities of change through raised awareness and purposeful action. Qualitative research focuses on life experiences; they are more about the “why” and “how” rather than the “how many”, or “how often” (Taylor, B., Francis, K., 2013, p. 212). Data can be collected in diverse ways, such as questionnaires, interviews, case studies, and life stories. This study utilized a qualitative research design, with a phenomenological approach. Using this research design allowed the researcher to conduct in-depth interviews with greater insight into the participants' emotions and cognition regarding reading. In-depth interviews allowed for open-ended questions and responses, with much richer data yield. Reading is a large and complex field, and qualitative design encouraged longer and more complex answers.

Colaizzi's descriptive phenomenological method involves a seven-step process. This process allowed for open-ended questions and responses. A significant step is Step 7, which encourages the participant to review the researcher's findings, and verify the accuracy of the data. The Colaizzi Process is also invaluable in that it outlines a systematic and logical approach to the phenomenological method.

Figure 3.1. Steps in Colaizzi's descriptive phenomenological method (Morrow, 2015, p. 644)

This study was limited in that participation was limited to current TUMA students in good standing. Student participation was voluntary. Additional information regarding their reading instruction experience, reading habits, and reading expectations is included to provide further information on their cognitive and emotional perceptions.

Description of the Population and Sample

Prairie View A&M University is a public land grant university located in Prairie View, Texas. It is a land grant university, founded in 1987, and is also a historically Black university (HBU). The student population is approximately 9,000 students. As of 2019, PVAMU consisted of a high minority student population: 86% Black, 8% Hispanic, 1 % Asian, 1% White, and 4% Other (PVAMU.com, 2022). The average undergraduate student age was 21 years old. The

university also had approximately 9,000 students enrolled. It is located in a rural area of Waller County, approximately 40 miles northwest of Houston, Texas.

The Texas Undergraduate Medical Academy (TUMA) was founded in 2004 at PVAMU. The TUMA represents a partnership between PVAMU and Texas A&M Health Science Center College of Medicine (TUMA, 2022). The TUMA mission statement states, “The mission of the Texas Undergraduate Medical Academy (TUMA) is consistent with the overall mission of Prairie View A&M University and the Texas A&M University System. The TUMA is dedicated to excellence in teaching, research, service, and professional development. The TUMA emphasizes the integration of leadership development and pre-medical science education, without sacrificing concern and compassion for the community” (TUMA, 2022). The TUMA is housed on the campus of PVAMU, and includes 11 faculty and staff members, and approximately 100 undergraduate students. Admission requirements for the TUMA include academic achievement, minimum standardized scores on the SAT or ACT, community service, and a desire to attend graduate, medical, dental, veterinary, or pharmacy school. The target population for this study was TUMA students who were junior or senior-level students in good standing with the TUMA and who were attempting to take the Medical College Admission Test (MCAT) within the next two years.

The MCAT is a standardized, multiple-choice, computer-based test designed to assess potential medical students in a variety of subjects: Biology, Chemistry, Psychology, and Critical Analysis and Reasoning Skills (CARS) (AAMC, 2022). The CARS section of the exam consists of 53 questions distributed among nine reading passages, with five to seven questions per passage. The student is allotted 90 minutes to complete this section of the MCAT, which is approximately 10 minutes per passage and questions. With a score range between 118-132,

the mean for the CARS section is 124.6, with a standard deviation of 2.9 (AAMC, 2018). The 49th percentile rank is 124.

The population studied planned to take the MCAT exam during their undergraduate years. Success on the CARS section is critical for their admission to medical school. High-risk test-taking requires a focused mind, attention to detail, and the ability to read and comprehend under pressure with time constraints in a testing environment. Purposive sampling, selecting participants based on specific characteristics, was used to determine the sample for this study. Students who were eligible to participate in this study were TUMA students who were currently enrolled at PVAMU and were planning on taking the MCAT exam within the next two years. Invitations to participate in the study were sent to prospective participants via email. Ten qualified participants were selected in the order they applied. Additional participants were waitlisted in the event one of the 10 could not participate.

To recruit participants for this study, an invitation regarding the study was sent via electronic mail to TUMA students. Student emails were available through the TUMA. Interested students responded to the invitation, and through purposive sampling, the researcher selected participants for the study.

The sample size for this study was capped at 10 participants. Potential participants were first contacted through email, which contained the criteria needed to participate in the study. A subsequent invitation was sent via email to qualified participants. The participants were also asked for their preferred day and time for the interview. Data for the study was obtained through semi-structured interviews with TUMA junior or senior-level students attempting the MCAT within the next two years. Upon agreeing to participate in the study, the students signed consent forms (Appendix B). The consent form included a description of the study, how the study would

be used, and how confidentiality would be respected. The researcher's responsibility was to protect the participants' identities. To accomplish this, pseudonyms were used to preserve anonymity. Any information containing identifying information was edited appropriately to safeguard the confidentiality of the participants.

Data Collection Instruments

This section includes information regarding the data collection instruments: the interview protocol and participant documents. The role of the researcher is also described.

Interview Protocol

An interview protocol (see Appendix C) was utilized for the interviews with the participants. Qualitative interviews with open-ended questions and answers were used, as "students learning has both cognitive and affective components. Students themselves are multidimensional beings with varying identities" (Perl & Noldon, 2000, p. 46). A qualitative study is was therefore appropriate for this research.

The first part of the interview served as an introduction of the researcher, who discussed the goals and objectives of the study. In the second part of the interview, the researcher asked questions that were relevant to the research. The research questions were derived from Pekrun's Achievement Emotions Questionnaire (AEQ), which was used to determine the effects of emotions on cognition (Pekrun, 2006). The AEQ allowed for open-ended responses from the participants. The instrument was tested with colleagues of Prairie View A&M University to ensure its technical adequacy.

Documents

A Microsoft spreadsheet listing the participants' names, emails, and class rank was used to create a pool of potential participants. The document was obtained from the TUMA at PVAMU.

All information was kept confidential.

Role of the Researcher

Biases were possible during this study, and the researcher attempted to minimize all biases she brought to the study. In this section, the researcher presented her relationship to the topic and the participants in the study.

Relationship to the Topic

I began teaching reading at the college level in 1987, and I have taught reading at all levels of public education, from Pre-K to university level. In addition, I am a reading specialist, and certified teacher in the state of Texas (TEA ID#: 1249709). I have also taught future teachers for all levels and subjects, including reading, at the University of Houston-Downtown, and Sam Houston State University. My extensive background in the field of reading was invaluable in conducting this research. This study was designed to examine the effects of emotions on cognition, specifically reading comprehension, in order to further the field of research in reading theory.

As this study required reflection and objectivity of the researcher, it was vital for me to accept the reading diversity of the participants. Students read in a variety of ways, and I had to avoid the temptation to classify their reading styles in traditional categories, such as "active" and "passive." In addition, I needed to narrow my research to emotions and cognition, and the roles they played in reading comprehension.

Relationship to the Participants

As the English faculty member of the TUMA, I mainly had indirect contact with the participants. Most of the TUMA students did not prepare their personal statements for their medical school applications until their junior or senior year, which is when I might encounter them. I am also the instructor for the Community Emergency Response Team (CERT) for the TUMA, a national organization that trains pre-first responders for emergency situations. This training was conducted once a semester for twenty-four hours, but had no bearing on this research project.

Data Collection Procedures

This section provides information about the data collection procedures for the study, including the required approvals and processes the researcher used to collect the data using the data collection instruments.

Research Approvals

An application to conduct the study was submitted to the Institutional Review Board (IRB) at Prairie View A&M University for approval of human subject's research before the study began. The application was submitted and approved on March 27, 2023.

A research study packet was sent to selected participants with an Informed Consent Form (Appendix B). The packet was emailed, and a paper copy was also available. The Informed Consent Form was used to gain final approval and confirm acceptance of participation in the study.

Once the completed study packet was returned and processed, the researcher contacted participants to schedule the initial interview. Interviews were the primary method of data collection. The researcher used open-ended interviews (see Appendix C) and interviewed each

participant in two parts. The researcher also used the Colaizzi Process to return the fundamental structure statement to the individual participant to ensure it accurately captured their experiences.

The first part of the interview was conducted via email. Participants' grade levels, academic standing, and intent to take the MCAT within the next two years were verified. The second part of the interview focused on the participant's experiences with reading connected with emotions (Pekrun, 2006). Interviews were conducted on the PVAMU campus since many participants lived in the university dormitories. Where possible, the second interviews were conducted face-to-face, using Zoom to transcribe the interview, and notes were used to capture nonverbal elements. Additionally, "interviewers should consider the capture of nonverbal language as another element of interviewer context, though the importance of nonverbal language will vary from project to project. In the face-to-face mode, nonverbal language and cues, including dress, body language, mannerisms, and so on, can be very rich" (Opdenakker, 2006, p. 111). Oltman noted these aspects "can give the interviewer a lot of extra information that can be added to the verbal answer of the interviewee" (2016, p. 6).

Some interviews were also digitally recorded via Zoom with automated transcriptions, and transcriptions were accessed through the Zoom software, and also verified manually by the researcher and the participant. Participants were reminded that they could stop the interview or the recording at any time. The interview protocol (Appendix C) was used to guide the interview and keep the focus on the research questions. The researcher also probed beyond the participant's answers to gain clarity or additional details. The researcher took notes during the interviews, noting distinct body language, hesitations, emphasis, and emotional cues. The interviews lasted, on average, approximately 30 minutes.

Follow-up emails were sent to participants to verify information, ask questions, and allow the participant to check their interview transcript. Participant checking of the transcript was used to avoid errors, and enabled the participant to review the findings. Morrow noted,

The final step in Colaizzi's method, returning the results to the participants, is a controversial one, criticized by Giorgi (2006) who stated that the researcher and participant inevitably have different perspectives— the researcher from a phenomenological perspective and the participant from the 'natural attitude' (our everyday taken-for-granted perception of the world). This echoes a broader debate in qualitative research as to the value of "respondent validation" or "member checking". We would certainly agree that any notion that participants can rubber-stamp an analysis as "correct" is untenable. Nevertheless, given the aims of descriptive phenomenology, it is not unreasonable to expect that they should be able to recognize their own experience in the fundamental structure (p.645).

Participants were asked if they wished to add any additional information to the interviews, and were sent a thank-you note from the researcher after their emails were received.

During the interviews, the researcher took notes on a laptop computer. After each interview, the researcher then wrote down any insights and general impressions she noticed. These reflective remarks were used during data analysis to identify themes, consolidate ideas, and summarize impressions that could later streamline the coding process. This process facilitated analysis and also stimulated the researcher to find patterns and themes (Nhamo, 2013). After the interviews, transcriptions were prepared and checked for accuracy, and saved on a flash drive for later use. The original data was password protected, and all material was kept in a locked drawer.

Data Analysis Procedures

This section of the chapter provides details of the data analysis process, including descriptive statistics, coding procedures, quality measures, and the use of technology to analyze data.

Descriptive Statistics

Frequency distributions were used for quantitative variables to determine the percentages of categorical variables of the participants. Background information included student classification, gender, date of future MCAT test, and date of graduation. This information was used to determine range, mean, and frequency distribution.

Coding Procedure

Once all of the interviews were completed, the information was separated into folders, and common themes and patterns emerged. The interviews provided a complete verbal record, and was the preferred method of note-taking, as it facilitated analysis (Nhamo, 2013). The field notes of non-verbal cues supplemented the database and supplemented the verbal data. The transcripts were analyzed and open-coded, as well as coded based on the conceptual framework.

Open Coding

The researcher reviewed the interviews, and separated portions of them based on identifiable themes and patterns. Using the Colaizzi Process, the researcher identified significant statements, formulated meanings, and then clustered themes (Morrow, 2015). After determining the initial codes, the researcher reviewed the interviews, and discovered emerging patterns and themes. The interviews were coded using Microsoft Excel software and Atlas.ti software. Direct quotes were organized under the appropriate classification. Once the primary themes and patterns were identified and coded, the researcher began the second phase of data analysis.

Coding Based on Conceptual Framework

In order to analyze the interview data, the researcher used the conceptual framework of Constructivist Theory (Dewey, 1974; Kant, 1781; Piaget, 1971; Vygotsky, 1987), Control Value Theory of Achievement Emotions (Pekrun, 2006), and Emotion Regulation Theory (Clore, 1994; Gross, 1999). The combination of Constructivist Theory, Control Value Theory of Achievement Emotions, and Emotion Regulation Theory were very appropriate for studying the effects of cognition on emotion, and the impact of emotion on cognition, as it pertains to reading comprehension. Constructivist Theory states that learners construct their knowledge, and do not passively memorize information. This idea is critical when discussing reading comprehension. Control Value Theory links the effects of emotions in academic settings, which is relevant to reading comprehension in a test setting, such as the MCAT. Emotion Regulation Theory shows that emotions can be regulated in an academic environment, with emphasis on the differences between the regulation of emotion versus regulation by emotion. Situations do not cause emotions. It is the reader's reaction to the condition that results in emotions.

Table 3.2 *A priori coding based on the Research Study Conceptual Framework*

Constructivist Theory	Control Value Theory of Achievement Emotions	Emotion Regulation Theory
Knowledge built on prior knowledge- scaffolding	Subjective control	Regulation of emotion
Active engagement	Performance approach goals	Regulation by emotion
Construct environment	Performance avoidance goals	Altering emotions as they arise
Create schemas	Expected failure	Altering the situation's emotional impact
Independent Reasoning	Expected success	

Constructivist Theory

Constructivist Theory basically states that learners build or construct knowledge, instead of passively just memorizing information. Constructivist Theory has its start with Kant (1781) in

the Critique of Pure Reason. Kant posited that humans had prior cognitive structures, which enabled them to ‘construct’ their environment and be active learners. Jean Piaget next realized that learners create schemas they encounter new ideas, resulting in knowledge construction. Vygotsky echoed these ideas. John Dewey also with the concept of independent reasoning within learners. Dewey emphasized that students learning through actual world activities would have higher levels of knowledge (Behling & Hart, 2008).

Constructivist Theory was used for this study, as it postulates that the active process of learning requires a change in the learner. Reading comprehension requires active thought on behalf of the reader, and emotions can affect the comprehension process. Readers actively process the information they encounter through reading, but emotions may hinder this process of the acquisition of knowledge. Constructivism also emphasizes active learning, versus passive learning, which is critical to the study of reading comprehension.

Control Value Theory of Achievement Emotions

This theory links the effects of emotions in academic settings. Pekrun (2006) believed that emotions are comprised of a set of subsystems, including affective, cognitive, motivational, expressive, and peripheral. Control Value Theory (CVT) uses the idea of subjective control to explain how emotions can affect student outcomes. Pekrun further defined goals as “performance approach goals” and “performance avoidance goals,” in reference to positive and negative outcomes (p. 325). Pekrun commented that “achievement emotions affect the cognitive, motivational, and regulatory processes mediating learning and achievement, as well as psychological, well-being, happiness, and life satisfaction” (p. 326). CVT asserts that emotions affect learning and comprehension, while learning also influences students’ emotions (see Figure 2.1). Pekrun concluded, “To date, it is quite unclear whether the results of laboratory-based

mood studies can be transferred to the real-life, context-bound, and occasionally very intense achievement emotions experienced by students in academic settings. There is a clear need to complement laboratory experiments with field experiments, as well as non-experimental field studies, in research on achievement emotions” (p. 331). This dissertation attempted to add to the scant body of knowledge in regard to CVT.

Emotion Regulation Theory

Gross (1999), in his paper, “Emotion Regulation: Past, Present, and Future,” discussed the adaptive value of emotions. Emotions can be regulated, especially in an academic setting. Gross further showed the differences between regulation of emotion versus regulation by emotion. Clore (1994) echoed the idea that “Emotions are said to tailor cognitive style to situational demands” (p. 287). This dissertation hoped to explore the link between emotions and comprehension, leading to students using emotion to improve comprehension. Gross noted that cognitive change involves the learner evaluating the situation and altering its emotional impact, while response modulation is the action of altering emotions as they arise. Situations themselves do not generate emotions. It is the participant’s reaction to a situation that results in emotions, and it is this aspect of the study that was the focus of this dissertation. Of interest to the researcher was the idea that emotions can be regulated, though emotions are frequently generated subconsciously.

Quality Measures

The criteria used by the researcher for quality measures included credibility, transferability, dependability, and confirmability (Guba & Lincoln, 1982). Credibility was established through persistent observation, whereas both typical and atypical observations were acknowledged, and through triangulation, where the interview data was triangulated with other

sources of data, including research, notes, and respondent validation. Transferability was achieved through thick description, providing extensive information about the context and the assumptions central to the research. The researcher achieved dependability through the description of changes and the effects those changes might have had on the study. Confirmability was achieved through the researcher documenting the procedures used to recheck the data, and noting any contradictory occurrences (Guba & Lincoln, 1982).

Use of Technology

Technological tools were used to collect and analyze the data. Electronic mail was used to contact the participants initially. Zoom software was used to record and transcribe the interviews. Microsoft Excel software and Atlas.ti software were used to code the transcripts. Field notes were transcribed and saved to a flash drive and stored in a locked drawer.

Calendar of Research Activities

In this section of the chapter, the researcher presents the calendar of research activities related to the study. A timeline for these activities is listed in Table 3.

Table 3.3

Timeline of Research Activities

Month	Research Activity
November 2022	Dissertation Proposal Meeting and Submit IRB
March 2023	Data Collection
April 2023	Data Collection
April 2023	Data Analysis
May 2023	Complete Chapters Four and Five
July 2023	Dissertation Defense Meeting
May 2024	Graduation

The proposal defense was held in December 2022. The IRB was approved in March 2023. The researcher collected data from March 2023 through April 2023. Data analysis was conducted in April 2023. The dissertation defense meeting was held in July 2023.

Summary of the Chapter

This chapter provided information regarding the methodology and design used for this study. The qualitative study used a phenomenological perspective to address the research questions, as phenomenology can be used to explore people's perceptions and emotions. "Phenomenology can be defined as an approach to research that seeks to describe the essence of a phenomenon by exploring it from the perspective of those who have experienced it. The goal of phenomenology is to describe the meaning of this experience—both in terms of what was experienced and how it was experienced" (Neubauer et al., 2019, p. 91). This study utilized a qualitative research design, with a phenomenological approach. Using this research design allowed the researcher to have greater insight into the participants' emotions and cognition in regard to reading. In-depth interviews allowed for open-ended questions and responses, with much richer data yield. Since reading is a large and complex field, a qualitative approach may have encouraged more detailed and comprehensive responses.

The participants were junior and senior-level university students who were members of the Texas Undergraduate Medical Academy (TUMA) in good standing, preparing to attempt the Medical College Admission Test (MCAT) within the next two years. Purposive sampling was used to acquire the sample size of 10 participants. The researcher conducted two-part interviews with the participants. The introductory interview was via email, and the substantive interview was conducted virtually, utilizing Zoom software. Interviews were then Zoom transcribed and data analyzed two ways using open coding and a priori codes developed from the conceptual

framework of Constructivist Theory, Control Value Theory of Achievement Emotions, and Emotion Regulation Theory. Emerging themes were organized, and quotes were used to identify each conclusion. The results are discussed in the next chapter.

CHAPTER IV

RESULTS

In this chapter, the researcher reveals the data analysis and findings from her research. Ten participants volunteered to take part in interviews, and the resultant transcripts were coded using ATLAS.ti to discover the emergent themes. They were classified using open coding and the theoretical framework in this study. The emergent themes led to the findings discussed in this chapter.

As noted in Chapter I, establishing a link between cognition and emotion is critical to determining strategies and assessments that will help all readers. Reading comprehension is necessary in academic, professional, and personal settings (Smith, 2002). While standardized testing is helpful in determining which areas of reading are in need of remediation in both individual and classroom environments, more research is needed to determine how emotions can affect reading comprehension (Pekrun, 2006).

The following research questions were used to guide this study:

1. How do university students describe the emotions they experience during academic reading?
2. How do university students describe the cognition they experience during academic reading?
3. How do university students' emotions affect their cognition in academic reading experience?
4. How do university students' cognition affect their emotions in academic reading?

This chapter consists of four sections. The first section describes the implementation of the research study. Profiles of the participants and their institutions, accompanied by descriptive statistics, are presented in the second section. The third section presents the findings and the data analysis, organized by research question thematically using open coding, that is inductive analysis and based on the theoretical framework. A summary of the chapter concludes Chapter IV.

Implementation of the Research Study

Qualitative research is an invaluable research method when studying how cognition and emotions influence readers. The research design asked university students to describe their emotions at specific times. A qualitative study may yield rich data, which may have greater detail regarding student emotions, and provide a more complete picture of the phenomena studied (Maxwell, 2012). This design used guided interviews for multi-case, oral insights and emotions of the participants. Qualitative research can reveal changing attitudes and allows a much more flexible approach than quantitative research, which is advantageous when discovering the emotional reactions of the participants. In addition, this qualitative study provided different sources of data, recorded interviews, written documents of the interaction between the participants and researcher, and reviews of the transcribed interviews by the participants.

The selection criteria for the study participants included senior-level students in good standing with TUMA who were attempting to take the Medical College Admission Test (MCAT) within the next two years. The 10 participants were selected using purposive sampling and snowballing techniques. Each participant was interviewed using both introductory and substantive interviews, resulting in a two-part interview process. The interviews were transcribed

and analyzed in two ways: using open coding using inductive analysis of the interview and using a priori codes derived from the conceptual framework of Constructivist Theory, Control Value Theory of Achievement Emotions, and Emotion Regulation Theory. Using ATLAS.ti software resulted in the discovery of emergent themes supported by participant quotes. The quotes were vital to ensuring that the resultant findings were supported through the participants' insights.

A synopsis of the implementation of the research was provided in this section of the chapter. The next section provides descriptive statistics in relation to the participants of this study.

Descriptive Statistics of the Participants

The population studied will be taking the Medical College Admission Test (MCAT) exam during their undergraduate years. Success on the CARS section is critical for their admission to medical school. High-risk test-taking requires a focused mind, attention to detail, and the ability to read and comprehend under pressure with time constraints in a testing environment. Purposive sampling, (selecting participants based on specific characteristics) , was used to determine the participants for this study. Students who were eligible to participate in this study were Texas Undergraduate Medical Academy (TUMA) students who were currently enrolled at PVAMU and were planning on taking the MCAT exam within the next two years. Invitations to participate in the study were sent out to prospective participants via email. Ten qualified participants were selected in the order they applied. Additional participants were waitlisted, in the event one of the 10 could not participate.

Participant Profiles

The study participant population consisted of 10 students—nine of the participants identified as female, and one participant identified as male. Five of the participants were classified as university juniors, and five were classified as university seniors. Their grade point averages ranged from 3.38 to 4.0, with an average of 3.86, or 90-92% equivalent. Four of the participants earned a 4.0 GPA at the time of the study.

The participants were all enrolled full-time at PVAMU, with 10-19 hours attempted, with an average of 15.4 hours currently enrolled during the Spring 2023 semester. Six of the participants were planning to take the MCAT in 2023, and four were planning to take the MCAT in 2024. The 10 participants had taken a total of 44 practice MCATs, with an average of 4.4 practice MCATs completed. Eight of the participants planned to graduate with a bachelor's degree in 2024, and two planned to graduate with a bachelor's degree in 2025. Seven of the participants were expected to earn a Bachelor of Science in Biology. The remaining three participants were planning to earn a Bachelor of Science in Chemistry. All 10 participants planned to attend medical school after graduating from PVAMU.

At the time of this study, the Texas Undergraduate Medical Academy was comprised of 62 students, seven of whom identified as male. The combined total of junior and senior students was 47, of which three identified as male. Two of the males declined to participate in this study, so only one male was available. The participants of this study, therefore, consisted of nine females and one male.

Karen Newsome is a junior female who currently earned a 4.0 GPA at PVAMU. She earned 15 credits for the Spring 2023 semester. She plans to attempt the MCAT in January 2024,

and completed six practice MCATs. She plans to graduate in May 2024, with a BS in Chemistry, and then attend medical school.

Felix Pena is a male junior who currently earned a 3.8 GPA at PVAMU. He earned 19 credits for the Spring 2023 semester. He plans to attempt the MCAT in August 2023, and completed two practice MCATs. He plans to graduate in May 2024 with a BS in Biology, and then attend medical school.

Terry Upton is a female senior who currently earned a 4.0 GPA at PVAMU. She earned 15 credits for the Spring 2023 semester. She plans to attempt the MCAT in August 2023, and completed five practice MCATs. She plans to graduate in May 2024 with a BS in Chemistry, and then attend medical school.

Kelly Iota is a female junior who currently earned a 3.68 GPA at PVAMU. She earned 16 credits for the Spring 2023 semester. She plans to attempt the MCAT in January 2024, and completed five practice MCATs. She plans to graduate in May 2024 with a BS in Biology, and then attend medical school.

Unity Charm is a female senior who earned a 3.96 GPA at PVAMU. She earned 13 credits for the Spring 2023 semester. She plans to attempt the MCAT in August 2023, and completed 10 practice MCATs. She plans to graduate in May 2024 with a BS in Chemistry, and then attend medical school.

Nancy Charles is a female junior who earned a 4.0 GPA at PVAMU. She earned 16 credits for the Spring 2023 semester. She plans to attempt the MCAT in January 2024, and completed one practice MCAT. She plans to graduate in May 2025 with a BS in Biology, and then attend medical school.

Blair Smith is a female senior who has earned a 3.38 GPA at PVAMU. She earned 18 credits for the Spring 2023 semester. She plans to attempt the MCAT in August 2023, and completed two practice MCAT's. She plans to graduate in May 2024 with a MS in Biology, and then attend medical school.

Diane Zott is a female senior who earned a 4.0 GPA at PVAMU. She earned 17 credits for the Spring 2023 semester. She plans to attempt the MCAT in August 2023, and completed four practice MCATs. She plans to graduate in May 2024 with a BS in Biology, and then attend medical school.

Mary Jones is a female senior who earned a 3.9 GPA at PVAMU. She has earned 10 credits for the Spring 2023 semester. She plans to attempt the MCAT in June 2023, and completed four practice MCATs. She plans to graduate in May 2024 with a BS in Biology, and then attend medical school.

Table 4.1

Research Study Participant Demographic Information

Name	Sex	Class	GPA	2023 credits	Date of MCAT	Practice MCAT's	Graduation date	Degree
Karen Newsome	F	Junior	4.0	15	Jan 2024	5	May 2025	Biology
Lori Unger	F	junior	3.92	15	January 2024	6	May 2024	Chemistry
Felix Pena	M	junior	3.8	19	August 2023	2	May 2024	Biology
Terry Upton	F	senior	4.0	15	August 2023	5	May 2024	Chemistry
Kelly Iota	F	Junior	3.68	16	January 2024	5	May 2024	Biology
Unity Charm	F	senior	3.96	13	August 2023	10	May 2024	Chemistry
Nancy Charles	F	Junior	4.0	16	January 2024	1	May 2025	Biology
Blair Smith	F	senior	3.38	18	August 2023	2	May 2024	Biology

Diane Zott	F	senior	4.0	17	August 2023	4	May 2024	Biology
Mary Jones	F	senior	3.9	10	June 2023	4	May 2024	Biology

Institutional Profile

Prairie View A&M University is a public land grant university located in Prairie View, Texas. Founded in 1987, it is also a historically Black university (HBU). The student population is approximately 9,000 students. As of 2019, PVAMU consisted of a high minority student population: 86% Black, 8% Hispanic, 1 % Asian, 1% White, and 4% Other (PVAMU.com, 2022). The average undergraduate student age was 21 years old. The university also has approximately 900 graduate students enrolled. It is located in a rural area of Waller County, about 40 miles northwest of Houston, Texas.

The Texas Undergraduate Medical Academy (TUMA) was founded in 2004 at PVAMU. The TUMA represents a partnership between PVAMU and Texas A&M Health Science Center College of Medicine (TUMA, 2022). The TUMA mission statement states, “The mission of the Texas Undergraduate Medical Academy (TUMA) is consistent with the overall mission of Prairie View A&M University and the Texas A&M University System. The TUMA is dedicated to excellence in teaching, research, service and professional development. The TUMA emphasizes the integration of leadership development and pre-medical science education, without sacrificing concern and compassion for the community” (TUMA, 2022). The TUMA is housed on the campus of PVAMU, and includes 11 faculty and staff members, and approximately 100 undergraduate students. Admission requirements for the TUMA include academic achievement, minimum standardized scores on the SAT or ACT, community service, and a desire to attend graduate, medical, dental, veterinary, or pharmacy school. The target

population for this study was TUMA students who were junior or senior-level students in good standing with the TUMA and were attempting to take the Medical College Admission Test (MCAT) within the next two years.

Findings Based on Coding Procedure

In this section, the procedures for coding are reviewed, and the findings related to each research question are presented.

Open Coding Procedure

After transcriptions of the interviews were completed, the researcher then separated the content by questions. After reading and rereading the data, patterns, and themes began to emerge, and the participants' responses were then further classified by themes found in the earlier literature research, resulting in the initial codes. The researcher then reviewed the recordings again while following the transcribed data, and further noted emerging themes. ATLAS.ti was used to code the transcripts, and the quotations were then organized under the appropriate theme. Once the themes and patterns were organized, the researcher moved to the next step of data analysis.

Conceptual Framework Coding Procedure

To analyze and interpret the transcribed data, the researcher used the conceptual framework of Constructivist Theory (Dewey, 1974; Kant, 1781; Piaget, 1971; Vygotsky, 1987), Control Value Theory of Achievement Emotions (CVT) (Pekrun, 2006), and Emotion Regulation Theory (Clore, 1995; Gross, 1999). Constructivist Theory verifies learner-centered knowledge acquisition; , Control Value Theory of Achievement Emotions provides research regarding the regulation of emotions in an academic setting, and Emotion Regulation Theory confirms the idea that learners generate emotions, and emotions can be regulated. The unique

combination of these theories ensured that the participants' prior knowledge and experiences would be considered when researching the area of reading and emotions. Constructivist Theory was used to account for the learner-centered knowledge acquisition, which is relevant when discussing reading comprehension. Emotion Regulation Theory was used to account for the emotions the participants may generate and regulate, which is also verified through Emotion Regulation Theory. Acknowledging that the participants can create and regulate their emotions in regard to reading is vital to linking the effect that emotions and cognition may have on knowledge acquisition. This data analysis process generated themes and findings regarding the link between emotion and cognition in comprehension.

Data Analysis for Research Question # 1

The first research question asked how university students described the emotions they experienced during academic reading. Interview question 3 provided information regarding the participants' emotions before an exam, while interview question 5 asked students to describe their emotions during an exam. Interview question 4 asked whether emotions ever affected the participants' reading comprehension. Interview question 9 asked about distractions during a testing situation, and interview question 13 asked for any other information the participant wanted to provide.

Once the interviews were transcribed, they were coded using ATLAS.ti software, and themes and findings emerged. Four results were revealed, including (1) pre-exam positive emotions are related to preparation, (2) pre-exam negative emotions are related to internal stress and distraction, (3) during testing, positive emotions are related to confidence and preparation, and (4) during testing, negative emotions are mainly related to internal anxiety and frustration. Table 4.2 shows the relationship among coding, emergent themes, and the findings for research

question # 2. The remainder of this section provides an analysis of the participants' viewpoints regarding emotion based on these findings.

The findings revealed that participants regarded descriptions of their emotions as they related to pre-exam academic experiences as positive or negative. In total, there were 36 positive emotion references mentioned, and 41 negative emotion references. The most popular emergent themes for the positive category dealt with motivation and confidence, with such terms as “relaxed,” “confident,” and “interested.” The pre-exam negative emotions' themes included feelings of stress, distraction, and frustration. The themes of stress were mentioned 13 times, with distraction mentioned 11 times, and frustration was mentioned seven times. In response to questions regarding during testing, positive emotions were mentioned 12 times, and negative emotions were mentioned 11 times.

Table 4.2

Findings for Research Question # 1

Findings	Emergent Themes	Codes
Finding #1: pre-exam <u>positive</u> emotions are related to preparation	a. Confidence Codes: 3 Quotations: 9	ERT: relaxed (2) ERT: comfortable (3) CVT: confident (4)
	b. Motivation Codes: 5 Quotations: 18	ERT: excited (5) ERT: motivated (5) ERT: interested (6) CVT: studied (1) CVT: prepared (1)
	c. Organized Code: 1 Quotation: 1	ERT: organized (1)
	d. Happiness Code: 1 Quotations: 4	ERT: happy (4)
	e. Connected Codes: 1 Quotations: 4	ERT: connection (4)
Finding #2: pre-exam <u>negative</u> emotions are	a. Stress Codes: 3	ERT: stressed (8) ERT: anxious (3)

related to internal stress and distraction	Quotations: 13	ERT: pressure (2)
	b. Frustration Codes: 2 Quotations: 7	ERT: frustration (3) ERT: overwhelmed (4)
	c. Negative feelings Codes: 3 Quotations: 5	ERT: bad mood (1) ERT: sad (1) ERT: down (3)
	d. Distracted Codes: 3 Quotations: 11	ERT: distracted (4) ERT: not focused (5) ERT: not in right zone/ headspace (2)
	e. Tired Codes: 1 Quotations: 5	ERT: tired (5)
Finding #3: During testing, <u>positive</u> emotions are related to confidence and preparation	a. Positive emotions Codes: 4 Quotations: 10	ERT: relaxed (2) ERT: interested (2) ERT: happy (3) CVT: motivated (3)
	b. Metacognition Codes: 1 Quotations: 2	ERT: the right knowledge base, know yourself (2)
Finding # 4: During testing, <u>negative</u> emotions are mainly related to internal anxiety and frustration	a. Stress Codes: 3 Quotations: 12	ERT: stressed (1) ERT: anxiety (9) ERT: rushed (2)
	b. Frustration Codes: 2 Quotations: 8	ERT: frustration (4) ERT: overwhelmed (3) ERT: freaked out (1)
	c. Distracted Codes: 1 Quotations: 1	ERT: distracted (1)

Note: The initialisms in the Codes column represent the most closely related theory from the researcher's perspective. ERT means Emotion Regulation Theory, and CVT stands for Control Value Theory of Achievement Emotions.

The students' responses regarding their emotions during academic reading were revealing, with 48 "positive" emotions (such as feeling relaxed, happy, or interested) and 62 "negative" emotions (such as feeling stressed, anxious, or overwhelmed). The participants are all high achievers, as evidenced by their confidence that they would attend medical school, and their preparation for a testing situation heavily influenced their emotions. They seemed actually to

enjoy testing situations, if they were prepared. Blair Smith stated, “I really enjoy reading my biology books.” Karen Newsome noted, “When I prep for an exam, I first feel overwhelmed initially, and then once I start reading it, I start to feel more relaxed, and when I’m done, I feel confident.” The participants recognized and accepted the challenge of academic reading, which results resulted in feelings of confidence and preparedness. Mary Jones further noted, “I have been feeling really excited to kind of push myself past what I’m comfortable with. So, I’m like, my mindset is okay. I want to be better; I want to better prepare myself for an exam...I really do enjoy preparing for exams. I enjoy studying for exams.”

The negative emotions involving reading described students who felt unprepared, with the accompanying feelings of stress and frustration. Few students mentioned not comprehending academic material. The emotions were more related to the large amount of material they were expected to absorb, and the short amount of time to do so. Nancy Charles stated, “If I study when I’m stressed or overwhelmed, I can’t retain the information that day.” Mary Jones echoed that sentiment: “Whenever I am down inside, it is so, so hard actually to comprehend. If I’m down or too excited in the polar extremes, I am not successful with my retention or comprehension.” As Moje and Luke (2009) and Micciche (2005) noted, emotion and cognition affect each other, and, in turn, affect reading proficiency.

An encouraging insight involved the participants acknowledging obstacles, and usually working through them. For instance, if they realized they were experiencing negative emotions that were impacting their comprehension, they would take a break, reread the material, implement a reading strategy, or try to emotionally relax. Blair Smith stated, “I use annotating if I’m really trying to stay focused, so a long test, I annotate and highlight. If it’s a short test, I do skimming and check back on my work.” The participants all mentioned reading strategies that

were tailored to fit their specific learning styles, and they seemed comfortable with their reading practices. The participants saw themselves as generally prepared and capable of graduating from medical school. The remainder of this chapter includes the analysis as related to the findings for research question # 1.

Finding # 1- Pre-exam Positive Emotions are Related to Preparation

Half of the positive emotions expressed dealt with (a) motivation. One-quarter of the responses were classified under (b) confidence, with the remaining themes categorized as (c) organization, (d) happiness, and (e) connectedness—the theme of confidence related to participants’ emotional state, especially regarding comfort and confidence. The theme of motivation revealed participants’ emotions that included interest, excitement, motivation, and preparedness. The organization was mentioned positively once, happiness was mentioned four times, and the connection was mentioned once. Each theme is further described below.

Confidence. The first theme to emerge from this research involved the emotions related to confidence. Terms classified under this theme included “relaxed,” “comfortable,” and “confident.” Karen Newsome mentioned, “Once I start reading it, I start to feel more relaxed, and when I’m done, I feel confident.” Terry Upton echoed this idea, noting, “I feel very confident when I am preparing to take a test.” When the participants were in a positive mood, they approached reading differently than if they were experiencing negative emotions. For these participants, emotions affected comprehension through confidence, or being prepared to read. The responses from the participants suggested that before they even picked up a book, the emotions they experienced affected their comprehension. Terry Upton also realized, “If I am very excited or happy, then I understand what I am reading much better.”

Motivation. A second pre-exam positive emotion mentioned was motivation. This emergent theme included such phrases as “excited,” “motivated,” and “interested.” Students appeared highly motivated during pre-exam activities, and viewed preparing for exams more positively than actually taking exams. (Pre-exam positive emotions were mentioned 36 times, versus positive emotions being mentioned 12 times during a testing situation.) Unity Charm noticed, “I am interested, so I am excited to learn about the topic. My reading speed improves in I am interested.” Mary Jones also mentioned, “I have been really excited” when reading before an exam. The participants were motivated to read and prepare for an exam, realizing their hard work would result in more confidence during a testing situation. The earned confidence, in turn, resulted in better comprehension of the reading material.

Organized. Mary Jones specifically mentioned organized: “I make it kind of visually appealing organized for my brain, and then I make my flash cards, and afterwards I kind of reviewed the flash cards as time goes on.” The participants discussed their reading strategies before a testing situation, mentioning flashcards, annotation, rereading, and summarizing, all aspects of the organization. Feeling organized was expressed as a feeling of preparedness. The majority of the participants appeared to be very organized in reference to their reading and study habits.

Happiness. Happiness was directly related to feelings of confidence and preparedness. Felix Pena realized, “I love to read books.” Terry Upton also understood, “My comprehension can make me feel good.” Nancy Charles inferred that her comprehension increased when she was in “her zone.” For the participants, an upbeat, happy attitude helped increase motivation, comprehension, and a feeling of competency, which could result in them successfully reading and understanding what they were reading. Pekrun (2006) commented that “achievement

emotions affect the cognitive, motivational, and regulatory processes mediating learning and achievement, as well as psychological, well-being, happiness, and life satisfaction” (p. 326).

Connected. When students can relate to the material they are reading, they might refer to this emotion as “connected.” Felix Pena stated, “I feel like I do have a connection emotionally” when he relates to a book he is reading. Mary Jones stated:

The more material relates to me as a person, the more I am keen to understand what is going on. So, if I was reading an article about science and the struggles of pre-med students, I’ll probably be more like, yeah, like, kind of like in tune or interested to find out what are the struggles so I relate to it, versus if I was reading something about a Roman leader, and his frustrations as a leader and then, you know, they’re just complexities that he only understands. So we’re two different worlds. If I have a connection with it, my comprehension tends to go up, and if I feel completely not connected with it, not so good.

Mary Jones used such terms as ‘relates,’ “in tune,” and “connection” to show how connectedness influenced her comprehension. This theme suggests that if readers felt a connection to the material they were reading, then comprehension would most likely increase.

Finding # 2- Pre-exam Negative Emotions are Related to Internal Stress and Distraction

Stress was the most common emotion expressed by the participants regarding pre-exam negative emotions, with 31 % of the responses relating to stress. Distraction accounted for 28% of the responses, with frustration being mentioned 17 % of the time. Both tired and negative feelings were mentioned five times, equaling 12 % of each of the responses. Pre-exam, negative emotions were expressed 62 times, in contrast to positive emotions being expressed 48 times. Students were more likely to identify their weaknesses than their strengths, but they were also

more likely to suggest remedies for their perceived weaknesses. Pekrun (2006) defined these emotions as “negative activating,” referencing the effects negative emotions may have on academic outcomes (p. 325).

Stress. Participants used the word “stressed” eight times to express their emotions during pre-exam reading. Diane Zott stated, “I feel stressed.” Kelly Iota realized, “If I am stressed or upset, I can’t focus.” Nancy Charles echoed this sentiment: “If I study when I’m stressed or overwhelmed, I can’t retain the information that day.” Felix Pena mentioned anxiety: “If it’s close to the exam, I feel anxious, and I feel like reading could sometimes be like one of the first things to go.” Many of the participants felt test anxiety before the exam, defined as “extreme levels of stress, nervousness, and apprehension during testing that drastically hinders [students’] ability to perform well” (Salend, 2012, p. 23). Blair Smith felt “pressurized.”

Frustration. Feelings of being frustrated and overwhelmed during test preparation was mentioned by five of the participants. Karen Newsome acknowledged she “first feels overwhelmed initially” when reading before an exam, but she also revealed that as she read and relaxed, her confidence level increased. Nancy Charles echoed this emotion- “It can seem overwhelming, but I gain confidence.” If she began reading when she was already experiencing frustration, however, she noted, “If I study when I’m stressed or overwhelmed, I can’t retain the information that day.” The participants indicated that a significant difference, then, was whether the student encountered the material first and felt overwhelmed but eventually gained confidence, cognition affecting emotion, or they were already overwhelmed before approaching reading, emotion affecting cognition.

Negative Feelings. Participants expressed negative feelings using such words and phrases as “bad mood,” “sad,” and “down.” Diane Zott noted, “If I say that during the day I had

like a really bad day, I'm just in a really bad mood, I tend not to be able to focus...it feels like an unproductive reading session." Mary Jones also mentioned, "Whenever I am down inside, it is so hard to actually comprehend." Both of these participants had negative feelings before reading, and the emotion, in turn, appeared to affect cognition. Reading can also change a negative feeling into a positive feeling, as Nancy Charles commented, "I will be down, and I will read a rom com book, and it will make me happy." She later continued, "Emotion affects reading because if I feel down and stressed and unmotivated, then I will not comprehend the information as much as if I was in my zone." Participants' pre-reading negative feelings affected their cognition.

Distracted. This section deals with internal distractions, not external distractions. Feeling distracted accounted for 28% of the responses, with frequently used words and phrases such as "distracted," "not focused," and "not in the right zone/head space." Felix Pena realized that "Your comprehension will go down if you're tired or distracted." Kelly Iota echoed this idea by revealing, "If I am stressed or upset, I can't focus on what I'm reading, and then I can't study when I'm like that." The internal feeling of distraction led to lower comprehension; as Lori Unger said, "You do have to be in the right place to read and thoroughly enjoy." Unity Charm phrased internal distraction as, "I know I am not in the mindset to read."

Tired. Participants noted feelings of tiredness when preparing for an exam. Felix Pena stated, "Your comprehension will go down if you're tired or distracted." Lori Unger noted, "It's just like if I get tired or something, or might have to like take a break." Nancy Charles observed, "I also can't study when I'm hungry or tired." Unity Charm said, "Sometimes I am just tired and not in the mood to read." Some of the participants described physical tiredness. Others described emotional tiredness. If participants linked the word "tired" to another emotion, such as being

distracted or not in the mood to read, it is more likely they were referring to mental tiredness. If the word was linked with another word, such as “hungry,” a physical feeling, then the word is more likely to be referring to a physical state, rather than an emotional one.

Finding # 3- During Testing, Positive Emotions are Related to Confidence and Preparation

Positive emotions in this section used such words as “relaxed,” “happy,” and “motivated.”

Interestingly, the participants had such positive feelings during an exam, given that some students dreaded testing. Participants tended to consider this question longer and were reflective in their responses, sometimes hesitating, gazing at the ceiling or to the side, or speaking more slowly when responding. Some felt it was also essential to use metacognition, to “know yourself” when testing.

Positive Emotions. Mary Jones stated, “If it’s something I’m interested in, it’s really good, I’m really excited. I’m happy if it’s something I’m interested in, if I’ve read it, and I’m ready to gain.” Her interest in the material led to confidence, and she was happy and ready to comprehend the material. Terry Upton mentioned, “I’m very relaxed, and I do very well. I do them all of the time, so I am used to it.” Terry’s preparation resulted in her feeling confident during the testing situation, resulting in a feeling of relaxation. Pekrun (2006) referred to this theme as “positive activating” (p. 325).

Metacognition. Metacognition, the awareness of how one’s thought processes are working, was evident in two of the participants’ responses. Felix Pena said, “If I don’t have, like, the right knowledge base, so if I came to the test unprepared, I’m probably not going to put as much energy into what I read.” Felix realized he may not have the background information needed to fully comprehend a reading, so he may not pay as much attention as he should. He recognized he may sabotage his own learning. Unity Charm also acknowledged the part

metacognition played in her reading activity, saying, “You have to know yourself and how you feel about tests...I have to think about it deeper, and then that helps with comprehension.” Both participants recognized their metacognitive processes and the role they may play during testing situations.

Finding # 4- During Testing, Negative Emotions are Related Primarily to Internal Anxiety and Frustration

Participants mentioned feelings of stress, frustration, and distractedness in this section.

“Anxiety” was the most commonly used word to describe negative emotions during testing situations, utilized 43% of the time. Testing situations frequently induced stress and anxiety, and participants were mainly concerned with insufficient time or knowledge in regard to the exam.

Stress. Feelings related to stress accounted for over half, 57%, of the responses of emotions experienced during a testing situation. “Anxiety” was the most commonly used word in this area, with “stressed” and “rushed” also used. Kelly Iota stated, “I feel anxious when I have to read during an exam, because I have to understand the material. I feel stressed and kind of freaked out.” Unity Charm also noticed, “The questions on exams cause me anxiety. My emotion is anxious, and time makes it 10 times worse. During exams, I feel anxious about the reading sections.” Both participants experienced their cognition affecting their emotions. They encountered the material first, and then had an emotional reaction to it. Karen Newsome simply stated, “I feel rushed.”

Frustration. The term “frustration” was used 50% of the time to describe emotions experienced during testing situations. Mary Jones would “take a breather” when she was feeling “lost and frustrated about what’s going on.” She further noted, “If it is not clicking, then frustration sets in.” Kelly Iota would feel “freaked out,” and Nancy Charles mentioned, “I tend to

feel overwhelmed.” She described feelings of frustration during testing situations, which were usually related to both the testing situation and the testing material.

Distracted. Feeling distracted can result from encountering distractions, such as timers, noises, or internal thoughts. Karen Newsome noted feeling distracted when “there is a timer in my line of vision.” Most of the participants, when asked about negative emotions, noted the distraction, but not the emotion of distractedness. The distraction seemed to cause more feelings of stress or frustration than actual feelings of distraction.

Emotion Regulation Theory. The researcher analyzed the interviews, explicitly looking for themes related to the theoretical framework of this study. The first research question, “How do university students describe the emotions they experience during academic reading?” yielded responses that directly related to Emotion Regulation Theory. In Table 4.3, the a priori coding is categorized into the prevailing themes, along with the number of times each theme was found in the transcribed interviews.

Table 4.3

A priori coding based on Emotion Regulation Theory

Theory	Coding
Emotion Regulation Theory	ERT: regulation of/by emotion (19)
Codes: (3):	ERT: altering emotions (7)
Quotations: 39	ERT: altering the situation’s emotional impact (13)

Note: the initialisms in the Coding column denote the theory most closely associated with the code from the researcher’s perspective. ERT stands for Emotion Regulation Theory.

Situations themselves do not generate emotion; it is the participant’s reaction to a condition that results in emotions, and it is this aspect of the study that is the focus of this dissertation. Of interest to the researcher was the idea that emotions can be regulated, though emotions are frequently generated subconsciously. Using Emotion Regulation Theory allowed

the researcher to categorize elicited responses regarding emotions into three areas, which then allowed the participants' answers to be more thoroughly understood. The themes for ERT-regulation of/by emotion, altering emotions, and altering the situation's emotional impact-brought an increased understanding to the researcher regarding the emotions experienced by the participants during academic reading. The three themes of ERT were noted throughout the interviews: regulation of/by emotion (49%) and altering the situation's emotional impact (33 %) were the most prevalent.

Regulation of/by emotion. In this study, the researcher was interested in conscious regulation of/by emotion. Gross (1999) noted that conscious regulation involves “a continuum of processes that vary in the degree to which they are controlled, effortful, and conscious” (p. 558). After testing, Karen Newsome stated, “I feel fine. I feel confident, and more relaxed.” She was regulating her emotions after completing an exam, consciously experiencing feelings of relief and confidence. Nancy Charles mentioned that timed reading “makes me nervous because I tend to feel overwhelmed, and if it's timed, I don't feel as confident.” Nancy's encounter with timed testing resulted in her experiencing emotions of feeling overwhelmed and underconfident. It was not the timed test that caused her to feel these emotions; rather it was her reaction to the situation that resulted in her experiencing these emotions.

Altering the situation's emotional impact. Karen Newsome, when reading before an exam, stated, “I first feel overwhelmed initially, and then once I start reading it, I start to feel more relaxed, and when I'm done, I feel confident.” This quote illustrates the progression of emotions as Karen reads. She started out overwhelmed, but as she read, she felt more relaxed. When she was done with her task, she felt confident. The impact of the situation started out overwhelming, yet she successfully altered the situation's emotional impact.

Mary Jones also changed the situation's emotional impact, imparting, "Then frustration begins to set in. But I'm learning to pace myself. And then, like, maybe just sit down. Take a breather, and then come back to it." Mary recognized her frustration and used strategies to calm herself down. The emotional impact of the situation changed from frustration to calmness. Gross (1999) noted that emotion regulation involves "decreasing and increasing negative and positive emotions" (p. 558). Both Karen and Mary decreased the negative emotions and increased the positive emotions—their response modulation resulted in a more positive outcome.

This section of the chapter discussed the findings for research question # 1: (1) pre-exam position emotions are related to preparation, (2) pre-exam negative emotions are related to internal stress and distraction, (3) during testing, positive emotions are related to confidence and preparation, and (4) during testing, negative emotions are related to mostly internal anxiety and frustration. The following section presents the findings for research question # 2 and the theoretical frameworks of Constructivist Theory, Control Value Theory, and Emotion Regulation Theory.

Data Analysis for Research Question # 2

The second research question explored how university students described the cognition they experienced during academic reading. Interview questions 2 and 3 provided information regarding how students described their cognitive processes before a testing situation. Interview questions 7 and 8 asked what reading strategies participants used and their feelings regarding concentration during a testing situation. Interview question 9 asked explicitly about distractions during a testing exam.

Once the interviews were transcribed, they were coded using ATLAS.ti, and emerging themes and findings were discovered. Four results were revealed, including (1) cognition

description was primarily focused on pre-testing techniques and study skills strategies, (2) personal preference descriptions were insignificant in regards to cognition, (3) vocabulary references were negligible in regards to cognition, and (84) Reflection was usually found on pre-exam descriptions. Table 4.4 shows the relationship among coding, emergent themes, and the findings for research question # 2. The remainder of this section provides an analysis of the participants' viewpoints regarding cognition based on these findings.

The findings revealed that participants widely regarded the description of their cognitive experiences to involve pre-testing techniques and study skills strategies, with 76 % of the responses falling into this classification. Personal preference accounted for four percent of the responses, and vocabulary was mentioned one time, for just one percent of the responses. Reflection accounted for 19 % of the time. The researcher felt it was essential to include the categories of personal preference and vocabulary, as the literature frequently mentioned these items. The research showed, however, that the participants rarely considered these areas when discussing their cognition. In addition, the researcher's experience in public education also influenced the decision to include these smaller categories, as these categories are frequently emphasized in grades K-12 in the Texas public education system. The remainder of this section includes an analysis of the interviews as they relate to research question # 2.

Table 4.4

Findings for Research Question # 2

Findings	Emergent Themes	Codes
Finding # 5: Cognition description is focused on pre-testing techniques and study skills strategies	a. Preview Codes: 3 Quotations: 8	CT: skim, first, preview (5) CVT: practical, bold (2) ERT: overwhelming (1)
	b. Reread Codes: 1 Quotations: 4	CT: reread (4)

	c. Review Codes: 2 Quotations: 12	CT: reiterate, flashcards (6) CVT: review, reinforce, (6)
	d. Active Concentration Codes: 3 Quotations: 22	CT: in tune (1) CVT: attention, interest (6) ERT: deeper, focus, concentration, overwhelm (15)
	e. Summarize Codes: 2 Quotations: 7	CT: summarize, highlight (5) CVT: write down, digest (2)
	f. Annotate Codes: 1 Quotations: 1	ERT: annotate (1)
	g. Preparedness Codes: 1 Quotations: 1	ERT: unprepared (1)
Finding # 6: Personal Preference descriptions were insignificant in regard to cognition	a. Personal Preference Codes: 2 Quotations: 3	CVT: like (1) ERT: appealing, organized (2)
Finding # 7: Vocabulary references were insignificant in regard to cognition	a. Vocabulary Codes: 1 Quotations: 1	CVT: vocabulary (1)
Finding # 8: Reflection was usually found in pre-exam descriptions	a. Evaluating Codes: 3 Quotations: 14	CT: predict (1) CVT: comprehension, analyze effectively, absorb, (8) ERT: confident, comfortable, emotion (5)

Note: The initialisms in the Codes column represent the most closely related theory from the researcher's perspective. CT means Constructivist Theory, CVT means Control Value Theory of Achievement Emotions, and ERT means Emotion Regulation Theory.

Finding # 5: Cognition Description is Focused on Pre-testing Techniques and Study Skills

Strategies

Participants often mentioned terms such as “preview, reread, review, and annotate” when describing their interaction with academic materials. Constructivist Theory was prevalent in their responses, as the themes of activating prior knowledge, scaffolding, and active engagement were evident in their descriptions. Constructivist Theory is appropriate in this regard, as it answers the

question of learner-centered knowledge acquisition in relation to learner's cognition (Dewey, 1974; Kant, 1781; Piaget, 1971; Vygotsky, 1987).

Students would often skim new material and relate the information to their prior knowledge. As Mary Jones mentioned, "If I was reading an article about science and the struggles of pre-med medical students, I'll probably be more like, yeah, like, kind of in tune or interested to find out what their struggles are, and if they're like mine. Like, did they do what I did, and did it work for them." Mary was comparing her prior experiences/knowledge to others with similar experiences and determining whether her strategy was used successfully or whether a better strategy existed. Her previous knowledge interested her in the current reading, and she applied her past experiences to a possible new strategy. Unity Charm mentioned, "I try to relate the material back to something I know." Lori Unger knew to use her prior knowledge for comprehension, as she noted, "To comprehend stuff, I have to make references to things I do know." Straker and Kelman (2015) noted, "Pre-reading will help activate your prior knowledge. That means it will help you remember what you already know about the topic. If the topic is new to you, it will help you begin building a solid foundation for your learning and understanding of the topic" (p. 57).

Scaffolding is also seen in Mary Jones' response, as she describes her approach to reading new material:

I think it's done with rhetorical analysis. Okay, put on the side what you think the author's saying, and things like that. But for the MCAT, you really don't have time to annotate. I get the general picture, pick up the elements, get the argument and the overall theme, and then make a structure in my mind that I think answers the question.

Ms. Jones was building on her knowledge, creating a scaffold where ideas build on one another. She was building her knowledge as she encountered new information. Her use of a “structure” in her mind was an organizing and comprehending thought process, as she absorbed complex material and organized it mentally. Jean Piaget (1971) realized that learners create “schemas” as they encounter new ideas, resulting in knowledge construction.

Unity Charm also made use of scaffolding, as she commented, “For most exams, I can remember the questions and Google it afterward.” Unity encountered unfamiliar material, stored it in her memory, researched it later, and thus built her knowledge based on prior information she encountered. Kelly Iota also realizes the importance of prior knowledge and scaffolding, as she mentions, “If I don’t have prior knowledge or context of the material, like some of the MCAT reading stuff, if I don’t have context, like I haven’t heard of it before, I just don’t understand it so well.” Kelly’s lack of prior knowledge and inability to scaffold information result in lower comprehension.

Summarizing and highlighting was also frequently mentioned. Unity Charm stated, “If you can write a summary, then you get it.” Nancy Charles noted, “I also summarize my notes.” Unity Charm also realized she may be overusing highlighters, as she said, “I write a little summary beside the paragraph, and I love highlighting. I need to not highlight so much.”

Control Value Theory links the effects of emotions in academic settings. Themes found in Control Value Theory (CVT) include the idea of subjective control, expected failures or successes, and setting performance goals. Pekrun (2006) believed that emotions were comprised of a set of subsystems, including affective, cognitive, motivational, expressive, and peripheral. For instance, if a student recognized he was not as proficient in a subject as he should be, he may choose to review the material again, creating performance goals while expecting success from

reviewing the material. Reviewing and reinforcing academic knowledge establishes an expectation of success. Control Value Theory was also evident in the participants' responses, as terms relating to review and reinforcement were commonly used. Felix Pena said, "My test prep is like an exam review." Kelly Iota also recognized her use of Control Value Theory, noting, "I try to reinforce things I don't understand."

Terms related to interest and attention were also noted as they refer to CVT. Unity Charm mentioned, "When I'm preparing for an exam if it's interesting, I will remember it." Diane Zott noticed,

Reading boring material, it doesn't spark my interest, so I forget it. My mind instantly thinks it's not important, so I don't really need to worry about it. So I can just kind of like not putting all my effort in it compared to something interesting. Reading interesting material, pretty much when I read those, it will make me more engaged with what I'm reading, and want to pretty much learn more and make sure I'm actually understanding what I am reading.

Diane recognized the role that interest played in her comprehension and cognition if she found the material interesting, her engagement with the material resulted in a higher understanding/comprehension of the information.

Emotion Regulation Theory is evident in the theme of Active Concentration. Karen Newsome summed up her observation by saying, "I first feel overwhelmed initially, and then once I start reading it, I start to feel more relaxed, and when I'm done, I feel confident." Mary Jones stated, "I have been feeling really excited to kind of push myself past what I'm comfortable with. So I'm like, my mindset is okay." Kelly Iota said, "If I am stressed or upset, I

can't focus on what I'm reading, and then I, I can't study when I'm like that." Lori Unger realized,

So, if you're feeling a certain way, this affects your reading, what emotion would do, when not in the right head space, it can definitely affect your reading cause you're not gonna really feel comfortable like if you're not thinking about it. If you're thinking about other things, are you trying to read? If you're not going to comprehend it, you're gonna have to like, keep on reading to because you're not going to comprehend it. You're not going to comprehend it. You're gonna have, like key for your reason to keep reading it because you're not really comprehending what you're reading, like, you have to be in the right place to read and thoroughly understand, especially if it's not like leisurely reading and it's actually like you're trying to study the material. And it's not something that you just like really you enjoy. And you're gonna have to really focus.

These participants understood that their emotions are affecting their active concentration. The regulation of/emotions plays a vital part in their concentration.

Finding# 6: Personal Preference Descriptions were Insignificant in Regard to Cognition

Personal Preference did not play a key role in participants' descriptions of cognition. It is essential to note this finding, as the researcher expected more data regarding personal preferences. Mary Jones, when she created notes, mentioned, "I make it kind of visually appealing, and organized for my brain." Her personal preference for summarizing her notes was part of her study process, but the notes were only part of her activity. She went on to describe reviewing her flashcards. No further mention of the notes was made. Nancy Charles mentioned, "I like smart books. You read one paragraph at a time, and then answer a question. I use it for medical terminology, genetics, and o-chem." When asked about distractions, the participants

listed their dislikes, such as noise, tapping, timers, and windows, but never directly stated their preferences, such as a quiet room or no timer.

Finding # 7: Vocabulary References were Insignificant in Regard to Cognition

One participant, Kelly Iota, mentioned vocabulary during her pre-exam activities: “I also do vocab stuff to make sure I’m strong in those.” In Texas, most curriculum involves vocabulary study. Vocabulary did not seem to play a crucial part in participants’ descriptions of cognition. Joshi noted,

There is a close relationship between vocabulary and comprehension; hence, individuals with poor vocabulary have difficulty understanding written text. Further, students with poor vocabulary knowledge read less and acquire fewer new words, while students with better vocabulary knowledge read more and improve their comprehension (p. 209).

A few reasons for the lack of mentioning vocabulary could include that the students were comfortable with their vocabulary knowledge, that students did not consider vocabulary as part of cognition or comprehension, or that students did not separate vocabulary when preparing for an exam or during an exam.

Finding # 8: Reflection was Usually Found in Pre-exam Descriptions

Both Control Value Theory and Emotion Regulation Theory were evident in this finding. With CVT, words and phrases such as “analyze effectively” and “absorb” were mentioned. Mary Jones stated, “Just looking for ways to analyze effectively has been acceptable, and that’s just because I really enjoy preparing for exams. I pay attention and really absorb the material.” Kelly Iota said, “The second reading, I make sure I understand stuff.” Both participants checked their knowledge through reflection and used subjective control to encourage expected success.

Emotion Regulation Theory was also evident, as Karen Newsome stated, “I first feel overwhelmed initially, and then once I start reading it, I start to feel more relaxed. When I’m done, I feel confident.” Altering emotions is a central theme of ERT. Mary Jones noted, “I push myself past what I’m comfortable with. So, I’m like, my mindset is okay.” Ms. Jones is altering the situation’s emotional impact, another component of ERT.

Constructivist Theory states that learners build or construct knowledge, instead of passively just memorizing information. Constructivist Theory had its start with Kant (1781) in the Critique of Pure Reason. Kant posited that humans have prior cognitive structures, which enable humans to “construct” their environment and be active learners. Piaget next realized that learners create “schemas” as they encounter new ideas, resulting in knowledge construction. Vygotsky echoed these ideas. Dewey also agreed with the concept of independent reasoning within learners. Dewey emphasized that students learning through actual world activities would have higher levels of knowledge (Behling & Hart, 2008).

Constructivist Theory postulates that the active process of learning requires a change in the learner. Reading comprehension requires active thought on behalf of the reader, and emotions can affect the comprehension process. Readers actively process the information they encounter through reading, but emotions may hinder this process of the acquisition of knowledge. Constructivism also emphasizes active learning, versus passive learning, which is critical to the study of reading comprehension.

Control Value Theory links the effects of emotions in academic settings. Pekrun (2006) believed that emotions are comprised of a set of subsystems, including affective, cognitive, motivational, expressive, and peripheral. Control Value Theory (CVT) uses the idea of “subjective control” to explain how emotions can affect student outcomes (p. 317). Pekrun

further defined goals as “performance approach goals” and “performance avoidance goals,” in reference to positive and negative outcomes (p. 321). Pekrun commented that “achievement emotions affect the cognitive, motivational, and regulatory processes mediating learning and achievement, as well as psychological, well-being, happiness, and life satisfaction” (p. 326). CVT asserts that emotions affect learning and comprehension while learning also influences students’ emotions. The themes associated with CVT (subjective control, expected failures or successes, and setting performance goals) were evident in the participant’s responses related to research question # 2.

Emotion Regulation Theory is evident in the findings regarding research question # 2. The researcher analyzed the interviews, explicitly looking for themes related to the theoretical framework of this study. The second research question, “How do university students describe the cognition they experience during academic reading?” yielded responses that directly related to Emotion Regulation Theory. Gross (1999) in his paper, “Emotion Regulation: Past, Present, and Future,” discusses the adaptive value of emotions. Emotions can be regulated, especially in an academic setting. Gross further showed the differences between regulation of emotion versus regulation by emotion. Clore (1994) echoed the idea that “Emotions are said to tailor cognitive style to situational demands” (p. 288). In Table 4.5, the a priori coding is categorized into the prevailing themes, along with the number of times each theme was found in the transcribed interviews.

Table 4.5

A priori coding based on CT, CVT, and ERT

Theory	Coding
Constructivist Theory	CT: prior knowledge (11)
Codes: 3	CT: scaffolding (7)
Quotations: 22	CT: active engagement (4)

Control Value Theory	CVT: subjective control (10)
Codes: 3	CVT: expected failures or successes (9)
Quotations: 26	CVT: setting performance goals (7)
Emotion Regulation Theory	ERT: regulation of/by emotion (14)
Codes: 3	ERT: altering emotions (8)
Quotations: 26	ERT: altering the situation's emotional impact (4)

Note: the initialisms in the Coding column denote the theory most closely associated with the code from the researcher's perspective. CT stands for Constructivist Theory. CVT stands for Control Value Theory. ERT stands for Emotion Regulation Theory.

The three theories that guided this research were represented in research question # 2. Constructivist Theory was represented in 30 % of the quotations, while Control Value Theory and Emotion Regulation Theory were equally represented in 35 % of each of the total quotations. The quotations could sometimes overlap, and the researcher used the surrounding context of the response to determine the best fit for each quote. The emergent themes were also revealing. The most common theme of Constructivist Theory was the mention of prior knowledge. Unity Charm mentioned, "I try to relate the material back to something I know." Lori Unger knew to use her prior knowledge for comprehension, as she noted, "To comprehend stuff, I have to make references to things I do know." The participants felt that their prior knowledge was instrumental in their reading comprehension. Scaffolding was also used to build on their prior knowledge and increase their understanding of the material. Scaffolding is seen in Mary Jones' response, as she describes her approach to reading new material:

I think it's doing with rhetorical analysis. Okay, put on the side what you think the author's saying, and things like that. But for the MCAT, you really don't have time to annotate. I get the general picture, pick up the elements, get the argument and the overall theme, and then make a structure in my mind that I think answers the question.

Subjective control and expected failures or successes were almost equally accounted for in Control Value Theory. Kelly Iota said, “The second reading, I make sure I understand stuff.” She used subjective control to encourage an expected success. Karen Newsome, after an exam, noted, “I feel fine. I feel confident and relaxed.” Her expected success after the exam illustrates the Control Value Theory. Setting performance goals, such as successfully completing an exam, was shown through the participants’ pre-exam activities and attitudes. Mary Jones stated, “Just looking for ways to analyze effectively has been effective and that’s just because I really enjoy preparing for exams. I pay attention and really absorb the material.” Kelly Iota said, “The second reading, I make sure I understand stuff.” Both participants used subjective control to encourage an expected success, a performance goal.

Emotional Regulation Theory was also evident in the respondents’ remarks. Regulation by emotion was noticed as Kelly Iota said, “If I am stressed or upset, I can’t focus on what I’m reading, and then I, I can’t study when I’m like that.” Altering emotions was shown through Karen Newsome’s observations, “When I prep for an exam, I first feel overwhelmed initially, and then once I start reading it, I start to feel more relaxed, and when I’m done, I feel confident.” Her emotions change from overwhelmed to relaxed, to confident. Altering a situation’s emotional impact, Mary Jones noted, “I push myself past what I’m comfortable with. So, I’m like, my mindset is okay.”

The findings for research question # 2 were (1) cognition description was focused on pre-testing techniques and study skills strategies, (2) personal preference descriptions were insignificant in regards to cognition, (3) vocabulary references were negligible in regards to cognition, and (4) reflection was usually found on pre-exam descriptions. The following section

presents the emergent themes for research question # 3 and the theoretical framework for Emotional Response Theory (ERT) and Control Value Theory of Achievement Emotions (CVT).

Data Analysis for Research Question # 3

The third research question explored how university students' emotions affected their cognition in academic reading experiences. Interview question 3 directly asked the participants whether their emotions affected their academic reading composition, and what emotion described their feelings before an exam. Question 9 asked what distracted them during a testing situation, and question 11 asked them to describe boring and interesting reading material, and how each affected their comprehension. Question 13 asked for any additional reading observations they could share. Using ATLAS.ti for interview analysis, coding was completed, and emergent themes were noted. The findings included (1) emotional state affected cognition, (2) cognition was described as being affected by emotions, and (3) reading material could affect comprehension. The themes are analyzed and supported with quotes from the interviews.

The most common theme mentioned in Finding # 9 concerned focus, which was mentioned 39 % of the time. The second most common theme was motivation, which was mentioned 32 % of the time, with the theme of interest being mentioned 29 % of the time. Diane Zott noticed, "If I'm just in a really bad mood, I tend not to be able to focus on what I'm reading, and it feels like an unproductive reading session." In Finding # 10, the most common theme dealt with comprehension. Theme was mentioned 61 % of the time regarding research question # 3. Finding # 11, reading material can affect comprehension, dealt with boring versus interesting reading material. Interview question # 11 specifically asked participants to "describe interesting versus boring material," and how each affected their comprehension. The themes were further classified into "interesting" (62 %) and "boring," (38 %).

Table 4.6*Findings for research question # 3*

Note: The initialisms in the Codes column represent the most closely related theory from the researcher's perspective. CT means Constructivist Theory, CVT means Control Value Theory of Achievement Emotions, and ERT means Emotion Regulation Theory.

Findings	Emergent Themes	Codes
Finding #9: Emotional state affects cognition	a. Interest Codes: 1 Quotations: 12	ERT: interest, mood (12)
	b. Motivation Codes: 1 Quotations: 13	ERT: motivation, distracted, frustrated (13)
	c. Focus Codes: 1 Quotations: 16	ERT: focused, overwhelmed, confident (16)
Finding #10: Cognition is described as being affected by emotions	a. Comprehension Codes: 1 Quotations: 17	CVT: comprehend, understand (17)
	b. Retention Codes: 1 Quotations: 4	CVT: retention, remember (4)
	c. Connection Codes: 1 Quotations: 7	CT: connection (7)
Finding #11: Reading material can affect comprehension	a. Interesting Codes: 1 Quotations: 8	ERT: interesting, exciting (8)
	a. Boring Codes: 1 Quotations: 5	ERT: boring, unimportant (5)

Finding # 9- Emotional State Affects Cognition

Eighty-two quotations are contained in this section of the research. The responses for Finding # 9 made up 50 % (41) of the responses. The three themes in Finding # 9 deal with interest, motivation, and focus. The theme of interest referred to participants' attentiveness towards the reading material. The theme of motivation referred to the participants' incentives or stimulus towards the reading task. The theme of focus referred to their focal point or center of attention as related to the reading material. Each theme is further described below.

Interest. Terms classified under this theme included “interest” and “mood.” Nancy Charles noted, “I also can’t study if I am not energized and interested.” Unity Charm mentioned, “When I’m definitely not in the mood to read, that definitely affects my comprehension.” Both participants recognized their internal emotions, and the effects those emotions have on their comprehension. Unity Charm also presented a positive aspect to this theme, stating, “When I’m studying anatomy, I am interested, and so I’m excited to learn about the topic.” She also later said, “My reading speed improves if I am interested.”

Motivation. Terms found within this theme included “motivation,” “distracted,” and “frustrated.” Diane Zott mentioned, “Unmotivated? So, I can just kind of like not put all my effort in it compared to something that is interesting.” Blair Smith said, “Reading, I’m motivated to read and learn, because it applies to my future career.” Distraction was also a theme that emerged, as Blair Smith stated, “I get distracted really easily in testing situations.” Karen Newsome saw feeling distracted as “anxiety, and a feeling of being overloaded.” Frustration was also mentioned, as Mary Jones noted: “It piles up and gets more and more, and then I don’t understand anything.” Unity Charm referring to the MCAT, said, “the best description was frustrating.”

Focus. As mentioned earlier, the most common theme mentioned in Finding # 9 concerned focus, which was mentioned 39 % of the time. The second most common theme was motivation, which was mentioned 32 % of the time, with the theme of interest being mentioned 29 % of the time. The theme of focus was mentioned as “focused,” “overwhelmed,” and “confident.” The word “focus” was used 12 times, or 75 % of the time, while “overwhelmed” and “confident” were each used 12.5 % of the time. Kelly Iota noticed, “If I’m stressed or upset, I can’t focus on what I’m reading, and then I can’t study, when I’m like that.” Lori Unger said,

“You’re going to have to really focus to study the material.” Mary Jones realized, “So until I have addressed the reason behind the emotions, and sometimes I will find, when I’m extremely excited, I cannot focus.” Nancy Charles said, “If I study when I’m stressed or overwhelmed, I can’t retain the information that day.” Kelly Iota remarked, “If I am relaxed or confident or feel secure in the material, then I won’t mind reading.” Nancy Charles said, “Timed reading makes me nervous, because I tend to be overwhelmed, and I don’t feel as confident.”

Finding # 10- Cognition is Described as Being Affected by Emotions

Of the 82 quotations contained in this section, 34 % (28) of the responses referred to Finding # 10. The three themes that emerged were comprehension, retention, and connection. The theme of comprehension referred to the participants’ understanding after reading a text. Retention refers to their ability to retain the information they have read—connection refers to the reader relating to the reading selection in a positive manner. Comprehension accounted for 61 % of the responses found in Finding # 10, with the connection being mentioned 25 % of the time and the theme of retention being found 14% of the time.

Comprehension. The theme of comprehension accounted for 61 % of the themes found in Finding # 10. Mary Jones noted, “Whenever I am down inside, it is so, so hard to actually comprehend.” Nancy Charles also revealed, “If I feel down and stressed and unmotivated, then I will not comprehend the information.” As students’ progress through their educational journeys, comprehension is the main component that is measured in reading tests, so students are usually familiar with the importance of comprehension in reading (Texas Education Agency, 2022). Karen Newsome stated, “My emotions affect my academic reading comprehension, because if it is a difficult subject, I feel overwhelmed and confused, even as I go through material I don’t understand.” Terry Upton also recognized, “If it is boring, it doesn’t not always affect how much

I understand.” Mary Jones commented, “the more a material relates to me as a person, the more I am keen to understand what’s going on.” A student who is proficient in reading may not always read effectively; emotional detractors may contribute to poor comprehension.

Retention. Their emotions sometimes compromised the participants’ ability to retain information. As Nancy Charles observed, “If I’m down or too excited in the polar extremes, I am not successful with my retention or comprehension. If I study when I’m stressed or overwhelmed, I can’t retain the information that day.” Blair Smith also stated, “Reading interesting material makes it easier to remember and understand.” The theme of retention is mentioned 14 % of the time for Finding # 10.

Connection. The theme of connection is mentioned 25 % of the time. Diane Zott stated, “Interesting material for me would be when I’m actually more engaged with the reading, and I can make better connections.” Mary Jones recognized, “With interesting material, I’m excited, I’m like, okay, I have this sense of connection.” Unity Charm also understood the importance of connection, remarking, “You’re connected when you’re interested in it, and you can apply it to the real world, but if connections aren’t being formed, then it’s boring.” Connection to the reading material results in more positive emotions.

Finding # 11- Reading Material can Affect Comprehension

Of the 82 quotations used to answer research question 3, 16 % referred to the reading material. Responses were classified under the themes of “interesting” and “boring.” The participants explained their interpretations further. Interview question 11 was phrased as, “How would you describe interesting versus boring material?” “Interesting” accounted for 62 % of the responses, with “boring” accounting for the remaining 38 % of the responses. When readers are confronted with a boring text, their comprehension scores may be lower simply because they are

not engaged with the reading. In fact, discomfort with a reading text can trigger a flight or fight response, further impeding comprehension (Zambo & Brem, 2004).

Interesting. Participants displayed a preference for interesting text when reading. Mary Jones said, “With interesting material, I’m excited. I’m like, okay, I have this sense of connection with the author.” An interesting text accounts for increased anticipation or pleasure from the reader. The participants also recognized increased comprehension, as Blair Smith observed, “Reading interesting material makes it easier to remember and understand.” Lori Unger noticed increased comprehension and reading speed, stating, “I feel like interesting material, you’re gonna like, really be into the story or into the passage. And you might read it faster, really like it might stick with you more.” Nancy Charles noticed increased comprehension, remarking, “If it is interesting, I’m actually diving into every detail, and it’s easier to comprehend.”

Boring. Participants’ reactions were less enthusiastic when describing boring texts. Their voices lowered, they sometimes sat back or slumped in their chair, and their intonation tended to wander into the higher registers of their speech. Diane Zott stated, “Reading boring material, it doesn’t spark my interest, so I get it. My mind instantly thinks that it’s not important, so I don’t really need to worry about it.” Felix Pena remarked, “If you’re reading something boring, my comprehension is less. I have a lot less comprehension.” Kelly Iota observed, “Boring material, well, makes me focus less, because I start zoning out, because I don’t understand it.”

Control Value Theory

This theory links the effects of emotions in academic settings. Pekrun (2006) believed that emotions are comprised of a set of subsystems, including affective, cognitive, motivational, expressive, and peripheral. Control Value Theory (CVT) uses the idea of “subjective control” to

explain how emotions can affect student outcomes (p. 332). Pekrun further defined goals as “performance approach goals” and “performance avoidance goals,” in reference to positive and negative outcomes (p. 332). Pekrun commented that “achievement emotions affect the cognitive, motivational, and regulatory processes mediating learning and achievement, as well as psychological, well-being, happiness, and life satisfaction” (p. 326). CVT asserts that emotions affect learning and comprehension while learning also influences students’ emotions. The themes associated with CVT, that is affect learning, expected failures or successes, and setting performance goals, were evident in the participants’ responses related to research question # 3.

Emotion Regulation Theory

The researcher analyzed the interviews, explicitly looking for themes related to the theoretical framework of this study. The third research question, “How do university students’ emotions affect their cognition in academic reading experiences?” yielded responses that directly related to Emotion Regulation Theory. Gross (1999), in his paper, “Emotion Regulation: Past, Present, and Future,” discussed the adaptive value of emotions. Emotions can be regulated, especially in an academic setting. Gross further showed the differences between regulation of emotion versus regulation by emotion. Clore (1994) echoed the idea that emotions are said to tailor cognitive style to situational demand.

In Table 4.7, the a priori coding was categorized into the prevailing themes, along with the number of times each theme was found in the transcribed interviews.

Table 4.7

A priori coding based on Control Value Theory, and Emotion Regulation Theory- part of the Conceptual Framework

Theory	Coding
Control Value Theory	CVT: subjective control (13)

Codes:	CVT: expected failures or successes (5)
Quotations:	CVT: setting performance goals (3)
Emotion Regulation Theory	ERT: regulation of/by emotion (27)
Codes:	ERT: altering emotions (21)
Quotations:	ERT: altering the situation's emotional impact (6)

Note: the initialisms in the Coding column denote the theory most closely associated with the code from the researcher's perspective. CVT stands for Control Value Theory. ERT stands for Emotion Regulation Theory.

Two theories that guided this research were represented in research question # 3. Control Value Theory was represented in 26 of the participants' responses regarding research question # 3, and Emotion Regulation Theory was represented in 66 % of the quotations collected for this section of research. The emergent themes were also revealing. The most common theme of CVT was subjective control, while the most prevalent theme for ERT was regulation of/by emotion.

Control Value Theory uses "subjective control" as one of its themes. Subjective control is evident when Mary Jones stated, "With interesting material, I'm excited, I'm like, okay, I have this sense of connection." Mary found the material interesting, which she used to create a sense of connection, choosing to control her emotions to her advantage. Unity Charm's performance goal of comprehension is summed up with her statement, "If you can write a summary, then you get it." Participants used such terms as "interested," "focused," "overwhelmed," and "confident" when describing how their moods affected their cognition. Emotion Regulation Theory (ERT) was prevalent in their responses, with themes such as regulation of/by emotion, altering emotions, and altering situations' emotional impacts. Emotional Regulation Theory is appropriate for this research. Gross (1999), in his paper, "Emotion Regulation: Past, Present, and Future," discussed the adaptive value of emotions. Emotions can be regulated, especially in an academic setting. Gross further showed the differences between regulation of emotion versus regulation by emotion. Clore (1994) echoed the idea that "Emotions are said to tailor cognitive

style to situational demands” (p. 287). Gross noted that cognitive change involves the learner evaluating the situation and altering its emotional impact, while response modulation is the action of altering emotions as they arise. Situations themselves do not generate emotions, It is the participant’s reaction to a situation that results in emotions, and it is this aspect of the study that is the focus of this dissertation.

Diane Zott noted, “If I say that during the day I had like a really bad day, I’m just in a really bad mood, I tend not to be able to focus...it feels like an unproductive reading session.” Mary Jones also mentioned, “Whenever I am down inside, it is so, so hard to actually comprehend.” Both of these participants had negative feelings before reading, and the emotion, in turn, affected cognition. Regulation of/by emotion is illustrated in these participants’ responses. Altering emotions are also present, as Karen Newsom stated, “When I prep for an exam, I first feel overwhelmed initially, and then once I start reading it, I start to feel more relaxed, and when I’m done, I feel confident.” As Karen progressed through her readings, her emotions change from overwhelmed to relaxed, to confident. Mary Jones altered the situation’s emotional impact, imparting, “Then frustration begins to set in. But I’m learning to pace myself. And then, like, maybe just sit down. Take a breather, and then come back to it.” Mary recognized her frustration and used strategies to calm herself down. The emotional impact of the situation changes from frustration to calmness. Gross (1999) noted that emotion regulation involved “decreasing and increasing negative and positive emotions” (p. 558). Mary decreased the negative emotions and increases the positive emotions—her response modulation results in a more positive outcome.

The findings for research question # 3 were (1) emotional state affects comprehension, (2) cognition is described as being affected by emotions, and (3) reading material can affect

comprehension. The following section presents the emergent themes for research question # 4 and the theoretical framework for Emotional Response Theory (ERT).

Data Analysis for Research Question # 4

The fourth question explored how university students' cognition affected their emotions in academic reading experiences. Interview questions that helped answer this research question involved how the participants felt during and after an exam (interview questions 5 and 10), their descriptions of boring versus interesting reading material (interview question 11), and what helped them comprehend reading material (interview question 12). Using ATLAS.ti for interview analysis, coding was completed, and emergent themes were noted. The findings included (1) positive emotions linked to adequate comprehension and (2) negative emotions linked to inadequate comprehension. The themes are analyzed and supported with quotes from the interviews.

The most common theme mentioned in Finding 12 concerned relief, which was mentioned 65% of the time; Smith noted, "I usually feel really, really relieved because I can reward myself after, like, do something I enjoy." The remaining 35% of the responses for Finding # 12 involved confidence, which was mentioned eight times. Karen Newsome said, "After reading, I feel fine, I feel confident, and more relaxed." The most common theme for Finding # 13 was stress, which was mentioned 55 % of the time. Blair Smith illustrated this theme, mentioning "I don't know if I'm supposed to read what's there, so I stress out on the MCAT." The theme of frustration was mentioned the remaining 45 % of the time. Mary Jones realized, "If it's not clicking, I'm lost and frustrated." Pekrun, et al. (2011) described achievement emotions, including affective, cognitive, motivational, and psychological, when linked with other emotions, such as hope, pride, or shame, the resultant emotions can then be

associated with success or failure. If students feel they are out of control in terms of reading, that sensation can trigger a fight or flight response, verifying Zambo and Brem's conclusions.

Findings # 12 and # 13 verify these conclusions, as comprehension, part of cognition, affects the resultant emotions.

Table 4.8

Findings for research question # 4.

Findings	Emergent Themes	Codes
Finding # 12: Positive emotions are linked to adequate comprehension.	d. Confidence Codes: 1 Quotations: 8	ERT: confident, accomplished (8)
	e. Relief Codes: 1 Quotations: 15	ERT: relieved, relaxed, happy (15)
Finding # 13: Negative emotions are linked to inadequate comprehension.	d. Stress Codes: 1 Quotations: 12	ERT: stress, anxiety (12)
	e. Frustration Codes: 1 Quotations: 10	ERT: frustrated, overwhelmed, confused (10)

Note: The initialisms in the Codes column represent the most closely related theory from the researcher's perspective. ERT means Emotion Regulation Theory.

Finding # 12- Positive Emotions are Linked to Adequate Comprehension

Twenty-three quotations are contained in this section of the research. The responses were evenly distributed between the two findings. The two themes found in Finding # 12 deal with confidence and relief. The theme of *confidence* refers to the positive emotions of confidence and accomplishment. The theme of *relief* deals with the emotions of relief, relaxation, and happiness. Each theme is further described below.

Confidence. This theme refers to feelings of confidence, accomplishment, security, and pride. Karen Newsome stated, “Once I start reading it, I start to feel more relaxed, and when I’m done, I feel confident.” Nancy Charles said:

A lot of the time, I break down the subject into sections and then hit each section. I read each section once, then return to it later to review. I also review my notes and put them on flashcards and summarize them. It gives me confidence and lets me know what I need to work on. It can seem overwhelming, but I gain confidence.

This also reflects the earlier finding, Finding # 1, that pre-exam positive emotions are related to preparation. Nancy was preparing for an exam, and her preparation, even before the exam, resulted in feelings of confidence. She was also altering emotions, one of the components of Emotion Regulation Theory (ERT). Response modulation is the action of altering emotions as they arise (Gross, 1999).

Relief. Understandably, many of the participants experienced a sense of relief after a testing situation that involved reading. The theme of relief included feelings of relief, relaxation, and happiness. Lori Unger realized:

After completing an exam, the reading questions, with your emotions there, I’ve been like most times, I’m just glad that it’s over. It’s really like, if it’s a routine exam, there’s no time like I can take a lot of time. Read the passage and go back and forth, but if it’s timed, it’s like, Okay, I’m glad that was over. So relief- a kind of a relief.

Mary Jones realized:

I’m excited, I’m like, okay, I have this sense of connection with the author, like, Oh yeah, I know exactly what you’re saying. Like, I know what’s going on, so I feel comfortable, I feel really relaxed.

Terry Upton mentioned the theme of happiness after a testing situation involving reading, “I feel more confident. I am happy.”

Finding # 13- Negative Emotions are Linked to Inadequate Comprehension

This finding included themes of stress and frustration. The quotations were evenly distributed between the two themes, with a total of 12 quotes under the theme of stress and 10 quotations under the theme of frustration. The theme of stress included feelings of anxiety and pressure. The theme of frustration included feelings of being overwhelmed or confused. Each theme is further described below.

Stress. Understandably, participants felt negative emotions when their comprehension was inadequate. Kelly Iota stated, “I feel anxious when I have to read during an exam, because I have to understand the material. I feel stressed and kind of freaked out.” Unity Charm also noticed, “The questions on exams cause me anxiety. My emotion is anxious, and time makes it ten times worse. During exams, I feel anxious about the reading sections.” Terry Upton said, “The main emotion that affects my comprehension is anxiety. Anxiety from not understanding what I read.” Terry was caught in a whirlpool of emotions. Her anxiety affected her comprehension, which then produces more anxiety, which then lowers her comprehension. It is a self-perpetuating process.

Frustration. The theme of frustration accounted for 45 % of the responses. This theme included feelings of frustration and confusion, and feelings of being overwhelmed. Mary Jones stated, “If it’s not clicking, then frustration sets in.” She later mentions:

So, when I find myself like going around in circles with the author? What is tr? Ig to say, I find it boring. My emotion is frustrated like. Yes, I was frustrated, tired, and almost giving up. Tired, yes, hopeless.”

Nancy Charles said, “I believe timed reading makes me nervous because I tend to be overwhelmed.” Karen Newsome echoes this sentiment, saying, “As I go through the material I don’t understand, I feel overwhelmed and confused.” Mary Jones says, “If I didn’t understand it, then I feel confusion and disappointment.”

Emotion Regulation Theory

The researcher analyzed the interviews, specifically looking for themes related to the theoretical framework of this study. The fourth research question, “How do university students’ cognition affect their emotions in academic reading?” yielded responses that directly related to Emotion Regulation Theory. Gross (1999), in his paper, “Emotion Regulation: Past, Present, and Future,” discusses the adaptive value of emotions. Emotions can be regulated, especially in an academic setting. Gross further shows the differences between regulation *of* emotion versus regulation *by* emotion. Clore (1994) echoes the idea that “Emotions are said to tailor cognitive style to situational demands.

In Table 4.9, the a priori coding has been categorized into the prevailing themes, along with the number of times each theme was found in the transcribed interviews.

Table 4.9

A priori coding based on Emotion Regulation Theory

Theory	Coding
Emotion Regulation Theory	ERT: regulation of/by emotion (21)
Codes: (3):	ERT: altering emotions (15)
Quotations: 45	ERT: altering the situation’s emotional impact (9)

Note: the initialisms in the Coding column denote the theory most closely associated with the code from the researcher’s perspective. ERT stands for Emotion Regulation Theory.

Findings # 12 and # 13 were predictable, in that if the participants had adequate comprehension, their subsequent feelings were positive. Conversely, if the participants had inadequate comprehension, then the accompanying feelings were negative. Using Emotion Regulation

Theory allowed the researcher to categorize elicited responses regarding emotions into three areas, which then allowed the participants' responses to be more thoroughly understood. The themes for ERT- regulation of/by emotion, altering emotions, and altering the situation's emotional impact- brought an increased understanding to the researcher regarding the emotions experienced by the participants during academic reading. The three themes of ERT were noted throughout the interviews: regulation of/by emotion (47%) and altering emotions (33 %) were the most prevalent.

Regulation of/by emotion. In this study, the researcher was interested in conscious regulation of/by emotion. Gross (1999) noted that conscious regulation involves “a continuum of processes that vary in the degree to which they are controlled, effortful, and conscious” (p. 558). After testing, Karen Newsome stated, “I feel fine. I feel confident, and more relaxed.” She is regulating her emotions after completing an exam, consciously experiencing emotions of relief and confidence. Nancy Charles mentioned, “Timed reading makes me nervous because I tend to feel overwhelmed, and if it's timed, I don't feel as confident.” Nancy's encounter with timed testing results in her experiencing emotions of feeling overwhelmed and underconfident. It is not the timed test that caused her to feel these emotions; it is her reaction to the situation that results in her experiencing these emotions.

Altering emotions. Karen Newsome, when reading before an exam, stated, “I first feel overwhelmed initially, and then once I start reading it, I start to feel more relaxed, and when I'm done, I feel confident.” This quote illustrates the progression of emotions as Karen reads. She becomes overwhelmed, but as she reads, she feels more relaxed. When she is done with her task, she feels confident. Nancy Charles says:

A lot of the time, I break down the subject into sections and then hit each section. I read each section once, then return to it later to review. I also review my notes and put them on flashcards and summarize them. It gives me confidence and lets me know what I need to work on. It can seem overwhelming, but I gain confidence.

Nancy is preparing for an exam, and her preparation, even before the exam, results in confidence. She was also altering emotions, one of the components of Emotion Regulation Theory (ERT). Response modulation is the action of changing emotions as they arise (Gross, 1999). Gross noted that emotion regulation involves “decreasing and increasing negative and positive emotions” (p. 558). Both Karen and Nancy decreased the negative emotions and increased the positive emotions—their response modulation resulted in a more positive outcome.

This section of the chapter discussed the findings for research question # 4: (12) positive emotions are linked to adequate comprehension, and (13) negative emotions are linked to inadequate comprehension. It also provided an overview of the coding procedure used in this study. A discussion of the findings related to each research question and corresponding emergent themes revealed from the open coding and theoretical framework was presented. The next section of the chapter is the summary.

Summary of the Chapter

This study provided insight into the effects that emotions have on cognition and the effects that cognition has on emotions. Ten Prairie View A&M University (PVAMU) students, all members in good standing with the Texas Undergraduate Medical Academy (TUMA), were participants in this study. This chapter presented an overview of the study’s implementation. The second section of this chapter presented descriptive statistics, including a profile of the participants, with accompanying information on gender, class, GPA, earned credits for the

Spring 2023 semester, anticipated date of their attempted MCAT, number of practice MCATs completed, expected graduation date, and degree. The third section presented the findings of the research questions by theme derived from open coding and conclusions based on the theoretical framework. The chapter concluded with a synopsis.

The findings for this study of PVAMU TUMA students included: (1) pre-exam positive emotions are related to preparation, (2) pre-exam negative emotions are related to internal stress and distraction, (3) during testing, positive emotions are related to confidence and preparation, (4) during testing, negative emotions are mainly related to internal anxiety and frustration, (5) cognition description is focused on pre-testing techniques and study skills strategies, (6) personal preference descriptions were insignificant in regards to cognition, (7) vocabulary references were insignificant in regards to cognition, (8) reflection was usually found on pre-exam descriptions, (9) emotional state affects cognition, (10) cognition is described as being affected by emotions, (11) reading material can affect comprehension, (12) positive emotions are linked to adequate comprehension, and (13) negative emotions are linked to inadequate comprehension.

Chapter V presents the results related to the research questions, a summary of the overall study, conclusions from the research findings, a discussion of the research findings, recommendations, and future research.

CHAPTER V

DISCUSSIONS AND CONCLUSIONS

Reading is a complex and multi-faceted field. Most degree programs for teacher certification in the United States include multiple courses involving the teaching of reading, regardless of what subject the future instructor plans to teach (Walsh et al., 2006). Traditional reading tests at the elementary level may include testing for fluency, vocabulary, and comprehension (NAEP, 2020). As students progress through their educational journeys, comprehension is the main component that is measured in reading tests, which continue through the high school years, especially on standardized and state tests. Reading specialists frequently determine the cause of reading difficulties to be *alexia* (such as dyslexia), second language differences, or low comprehension skills. Dyslexia can be defined as “a disorder of constitutional origin manifested by a difficulty in learning to read, write, or spell, despite conventional instruction, adequate intelligence, and sociocultural opportunity” (Texas Education Agency, 38.003, 2022). At the university level, reading continues to be a part of academic study, and standardized tests, such as the Graduate Record Exam (GRE), the Medical College Admissions Test (MCAT), and the Dental Admissions Test (DAT), all have a reading test component.

University students expect their collegiate career to include studying, testing, and writing. All of these expectations have reading in common. Reading is essential to earning a college degree; it is assumed that a college student has successfully completed high school, and is proficient in reading.

The field of reading theory is currently enjoying a renaissance (Salvatori & Donahue, 2012). As standardized test scores continue to drop nationwide, especially in reading- with the 2012 reading scores on the SAT being the lowest in 40 years, (Peralta, 2012), parents, teachers,

and administrators needed to understand why reading scores are alarmingly low. Exhaustive research continues, but the reading field is so complex, with so many variables involved, that no simple answer exists to answer the question of declining reading scores. One aspect of reading research focuses on the link between emotion and cognition. Zambo and Brem (2004) discovered relationships among cognition, mood, and self-schemas. Readers' emotions can serve to raise or lower comprehension of a text. When readers are confronted with a boring text, for instance, their comprehension scores may be lower simply because they are not engaged with the reading. In fact, discomfort with a reading text can trigger a flight or fight response, further impeding comprehension (Zambo & Brem, 2004). The study of emotions and cognition in connection to reading, then, is a valid and needed area of research.

In this chapter, the researcher provides the discussion and recommendations for the research study, including a statement of the problem, research questions, and methodology. A synopsis of the findings, the limitations of the research, and the significance of the study are included. The chapter ends with recommendations for practice, directions for future research, a conclusion, and a summary.

Statement of the Problem, Research Questions, and Method

Reading has been characterized as a talent, a skill, an ability, and a necessity. Reading instruction in America did not include remedial reading instruction until the 20th century (Smith, 2002). With the growing acceptance of the idea of reading differences in individuals, the field of reading research also grew exponentially. Currently, over 100,000 research studies regarding reading have been published since 1966 (National Reading Panel, 2000).

The standardized tests in public schools highlight the reading rates of public-school students. As reading scores continue to fall, with accompanying lower comprehension rates,

solutions must be found (Peralta, 2012). Increasing numbers of high school students are expecting to enroll in college or university, graduate, and enter the workforce as productive members of society. Not only will lower reading skills result in poor academic skills in higher education, but the reading deficit will continue to haunt the individual in his home and workplace.

Impediments to competent reading must be discovered, addressed, and remedied. In this respect, the study of emotions linked with reading proficiency may have yielded valuable data that can be used to help increase reading proficiency in individuals. Instructors and administrators may then use this information to improve their reading curriculum. As Pekrun (2006) noted, “to fully explore the richness of emotions experienced in classroom settings, we need field studies, non-experimental approaches, and qualitative data as well” (p. 331). Linking cognition to emotions may yield greater insight into the role that emotions play in connection with reading comprehension.

Exploring a link between cognition and emotion is critical to determining strategies and assessments that will help all readers. Reading comprehension is necessary in academic, professional, and personal settings (Smith, 2002). While standardized testing is helpful in determining which areas of reading are in need of remediation in both individual and classroom environments, more research is needed to determine how emotions can affect reading comprehension (Pekrun, 2006).

The following research questions were used to guide this study:

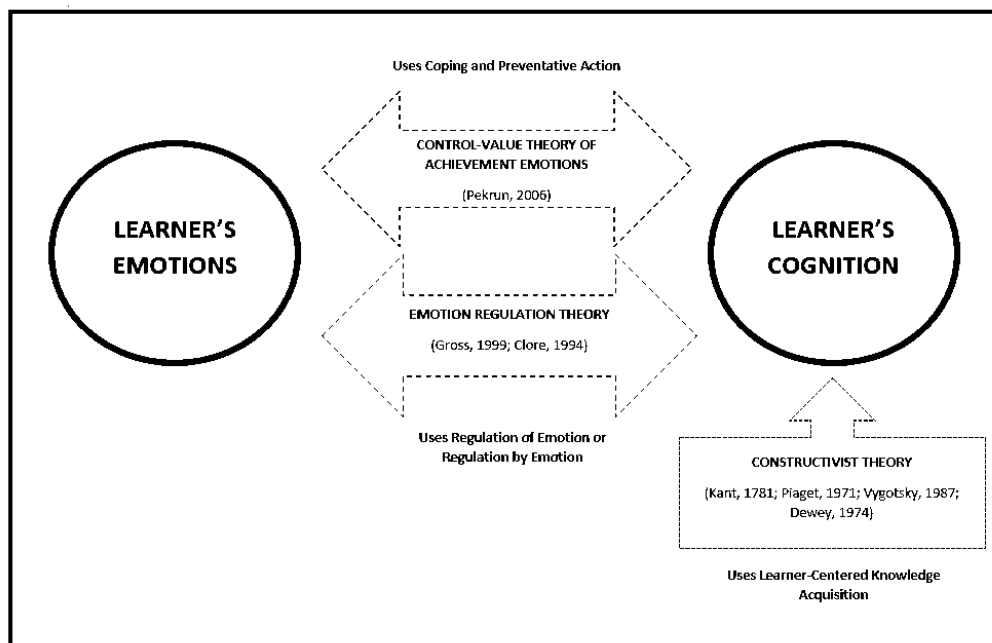
5. How do university students describe the emotions they experience during academic reading?

6. How do university students describe the cognition they experience during academic reading?
7. How do university students' emotions affect their cognition in academic reading experiences?
8. How do university students' cognition affect their emotions in academic reading?

For this study, I used qualitative phenomenological methodology to answer my research questions. Phenomenology is appropriate to understand and assess the participants' experience with cognition and emotion (Greening, 2019). The four steps of phenomenological research, bracketing, intuiting, analyzing, and describing was helpful in conducting this research. The theoretical concepts of Constructivism, Control Value Theory of Achievement Emotions, and Emotion Regulation Theory were used as my conceptual framework. Constructivist Theory was appropriate for this research, as it answered the question of learner-centered knowledge acquisition in regard to the learner's cognition (Dewey, 1974; Kant, 1781; Piaget, 1971; Vygotsky, 1987). Both Control Value Theory of Achievement Emotions (Pekrun, 2006) and Emotion Regulation Theory (Clore, 1994; Gross, 1999) discussed the dual impacts of emotions and cognition as they affect each other. The combination of these three theories addressed the study's research questions.

Figure 5.1

Conceptual Framework for the Study of CT, CVT, and ERT



A multi-case, oral history derived through guided interviews approach was used for this study. Purposive sampling, defined as selecting participants based on specific characteristics, and snowballing techniques were used to determine the 10 participants for this study. Students who were eligible to participate in this study were 10 TUMA students who were currently enrolled at PVAMU and were planning on taking the MCAT exam within the next two years. Data for the study was obtained through structured interviews with PVAMU TUMA junior or senior-level students planning to attempt the MCAT within the next two years. Both introductory and substantive interviews were used to collect information.

After the interviews were transcribed, the data was analyzed in two ways: using open coding developed through inductive analysis and using a priori codes derived from the conceptual framework of Constructivist Theory, Control Value Theory of Achievement Emotions, and Emotion Regulation Theory. The themes were then organized, with quotes used to illustrate each phenomenon. The next section of the chapter discusses the findings of the study.

Discussion of Findings

Using open coding and the theoretical framework of the Constructivist Theory, Control Value Theory of Achievement Emotions, and Emotion Regulation Theory, the interviews were analyzed, and themes were identified for each of the research questions (see Table 5.1). A synopsis of these findings is presented in this section of the chapter.

Findings for Research Question # 1

The first research question asked how university students described the emotions they experienced during academic reading. The findings from the data analysis were: (1) pre-exam positive emotions are related to preparation, (2) pre-exam negative emotions are related to internal stress and distraction, (3) during testing, positive emotions are related to confidence and preparation, (4) during testing, negative emotions are mainly related to internal anxiety and frustration.

Table 5.1

Findings related to the Research Question for the Study

Research Question # 1: How do university students describe the emotions they experience during academic reading?
Finding # 1: pre-exam positive emotions are related to preparation Finding # 2: pre-exam negative emotions are related to internal stress and distraction Finding # 3: during testing, positive emotions are related to confidence and preparation Finding # 4: during testing, negative emotions are mainly associated with internal anxiety and frustration
Research Question # 2: How do university students describe the cognition they experience during academic reading?
Finding # 5: cognition description is focused on pre-testing techniques and study skills strategies Finding # 6: personal preference descriptions were insignificant in regard to cognition Finding # 7: vocabulary references were insignificant in regard to cognition Finding # 8: reflection was usually found in pre-exam descriptions
Research Question # 3: How do university students' emotions affect their cognition in academic reading experiences?

Finding # 9: emotional state affects cognition
Finding # 10: cognition is described as being affected by emotions
Finding # 11: reading material can affect comprehension
Research Question # 4: How do university students' cognition affect their emotions in academic reading?
Finding # 12: positive emotions are linked to adequate comprehension
Finding # 13: negative emotions are linked to inadequate comprehension

The participants expressed both positive and negative emotions regarding this first question. Half of the positive emotions expressed dealt with motivation, while other emotions mentioned included confidence, motivation, organization, happiness, and connection. When the participants were in a positive mood, they approached reading differently than if they were experiencing negative emotions. Emotion, then, can affect comprehension through confidence, or being prepared to read. Before one even picks up a book, the emotions the individual experiences can affect his comprehension.

Students appeared highly motivated during pre-exam activities and viewed preparing for exams more positively than actually taking exams. The participants were encouraged to read and prepare for an exam, realizing their hard work would result in more confidence during a testing situation. The earned confidence, in turn, resulted in better comprehension of the reading material.

Organization also affected their emotions. A sense of organization was expressed as a feeling of preparedness. The majority of the participants appeared to be very organized in reference to their reading and study habits.

Happiness was directly related to feelings of confidence and preparedness. An upbeat, happy attitude helped increase motivation, comprehension, and a sense of competency, which resulted in the reader successfully reading and understanding what they were reading. Pekrun

(2006) commented that “achievement emotions affect the cognitive, motivational, and regulatory processes mediating learning and achievement, as well as psychological, well-being, happiness, and life satisfaction” (p. 326). When students related to the material they were reading, they referred to this emotion as “connected.” If readers feel a connection to the material they are reading, then comprehension will most likely increase.

Negative emotions were also discussed. Stress was the most common emotion expressed by the participants regarding pre-exam negative emotions, with approximately one-third of the negative responses relating to stress. Distraction, frustration, and tiredness were also mentioned. Pre-exam, negative emotions were expressed frequently, in contrast to positive emotions expressed fewer times. Students were more likely to identify their weaknesses than their strengths, but also were more likely to suggest remedies for their perceived weaknesses. Pekrun (2006) defined these emotions as “negative activating,” referencing the effects negative emotions may have on academic outcomes (p. 326). Many of the participants felt test anxiety before the exam, defined as “extreme levels of stress, nervousness, and apprehension during testing that drastically hinders [students’] ability to perform well” (Salend, 2012, p. 23).

Feelings of frustration and feeling overwhelmed during test preparation were mentioned by half of the participants. These negative emotions were expected in a testing situation. A significant difference was whether the student encountered the material first and felt overwhelmed, but eventually gained confidence, (cognition affecting emotion), or whether she was already overwhelmed before approaching reading, (emotion affecting cognition).

If participants had negative feelings before reading, the emotion affected their cognition. Internal distractions accounted for over one-quarter of the negative responses. The internal

feeling of distraction appeared to lower comprehension. Participants also noted feelings of emotional tiredness when preparing for an exam.

Interestingly, the participants had positive feelings during an exam, given that some students dreaded testing. Participants tended to consider this question longer and were more reflective in their responses. Some felt it was also essential to use metacognition, to “know yourself” when testing. Participants’ interest in the material led to confidence and a readiness to comprehend it. Their preparation also resulted in feelings of confidence during the testing situation, resulting in feelings of relaxation. Pekrun (2006) referred to this phenomenon as “positive activating” (p. 326).

Metacognition, the awareness of how one’s thought processes are working, was evident in the participants’ responses. Participants realized they may not have had the background information needed to comprehend a reading fully, so they reacted negatively, acknowledging they were sabotaging their own learning. Participants recognized their metacognitive processes and the role they might play during testing situations.

During testing, negative emotions were mainly related to internal anxiety and frustration. Participants mentioned feelings of stress, frustration, and distractedness. Testing situations frequently induce stress and anxiety, and participants were mainly concerned with insufficient time or knowledge in regard to the exam.

Feelings related to stress accounted for over half of the responses of emotions experienced during a testing situation. “Anxiety” was the most commonly used word in this area, while “stressed” and “rushed” were also used. Participants experienced their cognition affecting their emotions: they encountered the material first, and then had an emotional reaction to it.

The term “frustration” was used 50% of the time to describe emotions experienced during testing situations. The feelings of frustration expressed during testing situations were usually related to both the testing situation and the testing material. Feeling distracted could result from encountering distractions, such as timers, noises, or internal thoughts. Both external and internal distractions were discussed, with the outside distraction causing more feelings of stress or frustration than internal (or actual) feelings of distraction.

Open coding findings for research question #1 were consistent with the theoretical framework of Emotion Regulation Theory (ERT). Situations themselves do not generate emotions. It is the participant’s reaction to a situation that results in emotions, and it is this aspect of the study that was the focus of this study. Of interest to the researcher was the idea that emotions can be regulated, though emotions are frequently generated subconsciously. Using Emotion Regulation Theory allowed the researcher to categorize elicited responses regarding emotions into three areas, which then allowed the participants’ responses to be more thoroughly understood. The themes for ERT- regulation of/by emotion, altering emotions, and altering the situation’s emotional impact- brought an increased understanding to the researcher regarding the emotions experienced by the participants during academic reading. The three themes of ERT were seen throughout the interviews.

Findings for Research Question # 2

The second research question was: How do university students describe the cognition they experience during academic reading? The findings from the research were: (1) cognition description is focused on pre-testing techniques and study skills strategies, (2) personal preference descriptions were insignificant in regards to cognition, (3) vocabulary references were negligible in regards to cognition, and (4) reflection was usually found on pre-exam descriptions.

Cognition description was focused on pre-testing techniques and study skills strategies. Participants often mentioned terms such as “preview, reread, review, and annotate” when describing their interaction with academic materials. Constructivist Theory was prevalent in their responses, as the themes of activating prior knowledge, scaffolding, and active engagement were evident in their descriptions. Participants’ prior knowledge interested them in the current reading, and they applied their past experiences to a possible new strategy. Straker and Kelman (2015) noted,

Pre-reading will help activate your prior knowledge. That means it will help you remember what you already know about the topic. If the topic is new to you, it will help you begin building a solid foundation for your learning and understanding of the topic (p. 57).

Scaffolding was also used, as participants described building on their existing knowledge, creating a scaffold where ideas built on one another. They were building their knowledge as they encountered new information. The use of a “structure” in their minds was organizing and comprehending the processes, as they absorbed complex material and organized it mentally. Piaget (1971) realized that learners create “schemas” as they encounter new ideas, resulting in knowledge construction. Lack of prior knowledge for some participants resulted in the inability to scaffold information, resulting in lower comprehension.

When a participant recognized they were not as proficient in a subject as they should be, they chose to review the material again, creating performance goals while expecting success from reviewing the material. Reviewing and reinforcing academic knowledge created an expectation of success. Data also revealed that interest affected comprehension and cognition. If participants found the material interesting, their engagement with the material resulted in a

higher understanding/comprehension of the information. Participants realized that their emotions were affecting their active concentration. The regulation of/emotions played a crucial part in their concentration.

Personal preference did not play a key role in participants' descriptions of cognition. It is essential to note this finding, as the researcher expected more data regarding personal preferences. When asked about distractions, the participants listed their dislikes, such as noise, tapping, timers, and windows, but never directly stated their preferences, such as a quiet room or no timer.

Vocabulary references were insignificant in regard to cognition. In Texas, most curriculum involves vocabulary study, yet vocabulary did not seem to play a crucial part in participants' descriptions of cognition. Joshi (2006) noted:

There is a close relationship between vocabulary and comprehension; hence, individuals with poor vocabulary have difficulty understanding written text. Further, students with poor vocabulary knowledge read less and acquire fewer new words, while students with better vocabulary knowledge read more and improve their comprehension (p. 209).

A few reasons for the lack of mentioning vocabulary could include that the students were comfortable with their vocabulary knowledge, that students did not consider vocabulary as part of cognition or comprehension, or that students did not separate vocabulary work as a distinct process when preparing for an exam or during an exam.

Reflection was usually found in pre-exam descriptions, and both Control Value Theory and Emotion Regulation Theory were evident in this finding. With CVT, words and phrases such as “analyze effectively” and “absorb” were mentioned. Participants checked their knowledge

through reflection and used subjective control to encourage expected success. Using ERT, participants regularly altered the situation's impact.

Open coding findings revealed the three theories that guided this research were represented in research question # 2. The most common theme of Constructivist Theory was the mention of prior knowledge. The participants felt that their prior knowledge was instrumental in their reading comprehension. Scaffolding was also used to build on their prior knowledge and increase their understanding of the material. Subjective control and expected failures or successes were almost equally accounted for in Control Value Theory. Setting performance goals, such as successfully completing an exam, was shown through the participants' pre-exam activities and attitudes. Participants used subjective control to encourage an expected success, a performance goal. Emotional Regulation Theory was also evident in the respondents' remarks. Regulation by emotion was evident, as was altering emotions. Altering a situation's emotional impact was frequently mentioned.

Findings for Research Question # 3

Research question # 3 asked: How do university students' emotions affect their cognition in academic reading experiences? The findings from the data analysis were: (1) emotional state affects cognition, (2) cognition is described as being affected by emotions, and (3) reading material can affect comprehension.

Emotional state affected cognition. Themes included interest, motivation, distraction, frustration, and focus. Terms classified under the theme of interest, for instance, included "interest" and "mood." Participants recognized their internal emotions, and the effects those emotions had on their comprehension. These "pre-emotions" were common when preparing for

an exam, or during an exam—the most common theme mentioned in Finding # 9 concerned focus.

Cognition was described as being affected by emotions. Themes involved comprehension, retention, and connection. The theme of comprehension referred to the participants' understanding after reading a text. Retention referred to their ability to retain the information they had read—connection referred to the reader relating to the reading selection in a positive manner. Comprehension accounted for almost two-thirds of the responses. As students progress through their educational journeys, comprehension is the main component that is measured in reading tests, so students are usually familiar with the importance of comprehension in reading (Texas Education Agency, 2022). A student who is proficient in reading may not always read effectively. Emotional detractors may contribute to poor comprehension.

Their emotions sometimes compromised participants' ability to retain information. Connection to the reading material, however, resulted in more positive emotions. Also, of interest to the researcher was the finding that reading material could affect comprehension. Interview question 11 was phrased as, "How would you describe interesting versus boring material?" "Interesting" accounted for 62 % of the responses, with "boring" accounting for the remaining 38 % of the responses. The participants could then explain their interpretations further. When readers were confronted with a boring text, their comprehension scores were lower, possibly because they were not engaged with the reading. Discomfort with a reading text can trigger a flight or fight response, further impeding comprehension (Zambo & Brem, 2004).

Participants displayed a preference for interesting text when reading. An interesting text accounts for increased anticipation or pleasure from the reader. The participants also recognized that an interesting text, as it appealed to them, increased comprehension. Participants' reactions

were less enthusiastic when describing boring texts. Open coding findings for research question # 3 were consistent with the theoretical framework of Control Value Theory and Emotion Regulation Theory. The emergent themes were also revealing. The most common theme of CVT was subjective control, while the most prevalent theme for ERT was regulation of/by emotion.

Control Value Theory uses “subjective control” as one of its themes (Pekrun, 2006, p. 317). The participants are controlling their emotions. If the participants found the material interesting, they used that interest to create a sense of connection, choosing to control their emotions to their advantage.

Participants also described how their moods affected their cognition. Emotion Regulation Theory (ERT) was prevalent in their responses, with themes such as regulation of/by emotion, altering emotions, and altering situations’ emotional impacts. If participants had negative feelings before reading, for example, the emotion affected their cognition. Regulation of/by emotion was illustrated in participants’ responses. The emotional impact of a situation could change from frustration to calmness. Gross (1999) noted that emotion regulation involves “decreasing and increasing negative and positive emotions” (p. 558). A participant could decrease the negative emotions and increase the positive emotions.; the response modulation would result in a more positive outcome.

Findings for Research Question # 4

Research question # 4 asked: How do university students’ cognition affect their emotions in academic reading? The findings from the data analysis were: (1) positive emotions are linked to adequate comprehension, and (2) negative emotions are linked to inadequate comprehension.

The most common theme mentioned in Finding # 12 concerned feelings of relief and confidence. Pekrun et al. (2011) described achievement emotions, including affective, cognitive,

motivational, and psychological; when linked with other emotions, such as hope, pride, or shame, the resultant emotions can then be associated with success or failure. If students feel they are out of control in terms of reading, that sensation can trigger a fight or flight response, verifying Zambo and Brem's conclusions. Comprehension, part of cognition, affects the resultant emotions.

Positive emotions were linked to adequate comprehension, including feelings of confidence, accomplishment, security, and pride. As noted earlier, pre-exam positive emotions are related to preparation. Many of the participants experienced a sense of relief after a testing situation that involved reading. The theme of relief included feelings of relief, relaxation, and happiness.

Negative emotions were linked to inadequate comprehension. This finding included themes of stress and frustration. Participants felt negative emotions when their comprehension was insufficient. In addition, anxiety affected comprehension, which then produced more anxiety, which then lowered comprehension, a self-perpetuating process.

Open coding findings for research question # 4 were consistent with the theoretical framework of Emotion Regulation Theory. Gross (1999), in his paper, "Emotion Regulation: Past, Present, and Future," discusses the adaptive value of emotions. Emotions can be regulated, especially in an academic setting. Gross further shows the differences between regulation *of* emotion versus regulation *by* emotion. Clore (1994) echoes the idea that "Emotions are said to tailor cognitive style to situational demands" (p. 287).

The findings for research question # 4 were predictable. If participants had adequate comprehension, their subsequent feelings were positive. Conversely, if participants had inadequate comprehension, then the accompanying feelings were negative. Using Emotion

Regulation Theory allowed the researcher to categorize elicited responses regarding emotions into three areas, which then permitted participants' responses to be more thoroughly understood. When participants were preparing for an exam, their preparation, even before the exam, resulted in feelings of confidence.

Findings Related to the Conceptual Framework

After conducting the study and compiling the findings, the researcher revisited the conceptual framework to determine if it verified the results of the study. Figure 5.2 shows the results of the conceptual framework for the study. The two large circles represent the areas of interest for the researcher: the learner's emotions and the learner's cognition. Within learner's emotions are the four research findings, including (1) pre-exam positive emotions are related to preparation, (2) pre-exam negative emotions are related to internal stress and distraction, (3) during testing, positive emotions are related to confidence and preparation, and (4) during testing, negative emotions are mainly related to internal anxiety and frustration. Emotion Regulation Theory (ERT) supported these findings, with the themes of regulation of/by emotion, altering emotions, and altering the situation's emotional impact significantly supporting the researcher's conclusions. Within learner's cognition, four findings are listed: (1) cognition description is focused on pre-testing techniques and study skills strategies, (2) personal preference descriptions were insignificant in regards to cognition, (3) vocabulary references were insignificant in regards to cognition, and (4) reflection was usually found on pre-exam descriptions.

Constructivist Theory (CT), Control Value Theory of Achievement Emotions (CVT), and Emotion Regulation Theory (ERT) all supported the findings regarding a learner's description of his cognition during academic reading. Constructivist Theory, with the themes of using prior

knowledge, scaffolding, and active engagement, supported these findings, as participants frequently mentioned prior knowledge and building on existing knowledge when describing their cognition. Subjective control, expected failure/success, and setting performance goals (themes of CVT) were all evident in the learner's description of cognition. ERT was also present, as evidenced by the participants' reference to the regulation of/by emotion, altering emotions, and altering the situation's emotional impact.

The two arrows in the center of the framework represent the effect emotion and cognition have on each other in this study. More specifically, the top arrow shows the effect that a learner's emotions have on his cognition, including (1) emotional state affects cognition, (2) cognition is described as being affected by emotions, and (3) reading material can affect comprehension. Both the theories of CVT, that is, subjective control, expected failure/success, and setting performance goals and ERT, regulation of/by emotion, altering emotions, and altering the situation's emotional impact, were present in the researcher's findings, and support this finding.

The bottom arrow represents the effect that a learner's cognition has on his emotions, including (1) positive emotions are linked to adequate comprehension, and (2) negative emotions are linked to inadequate comprehension. Gross (1999) noted this effect. Emotion Regulation Theory (ERT) supports these findings, with the themes of regulation of/by emotion, altering emotions, and altering the situation's emotional impact being present in the researcher's conclusions.

Constructivist Theory states that learners build or construct knowledge, instead of passively just memorizing information (Kant, 1781). Kant (1781) posited that humans have prior cognitive structures, which enable humans to "construct" their environment and be active learners. The participants frequently used their prior knowledge when reading, especially if the

reading directly related to them. This resulted in a scaffolding process as they scaffolded the new knowledge onto their pre-existing ideas (Piaget, 1971).

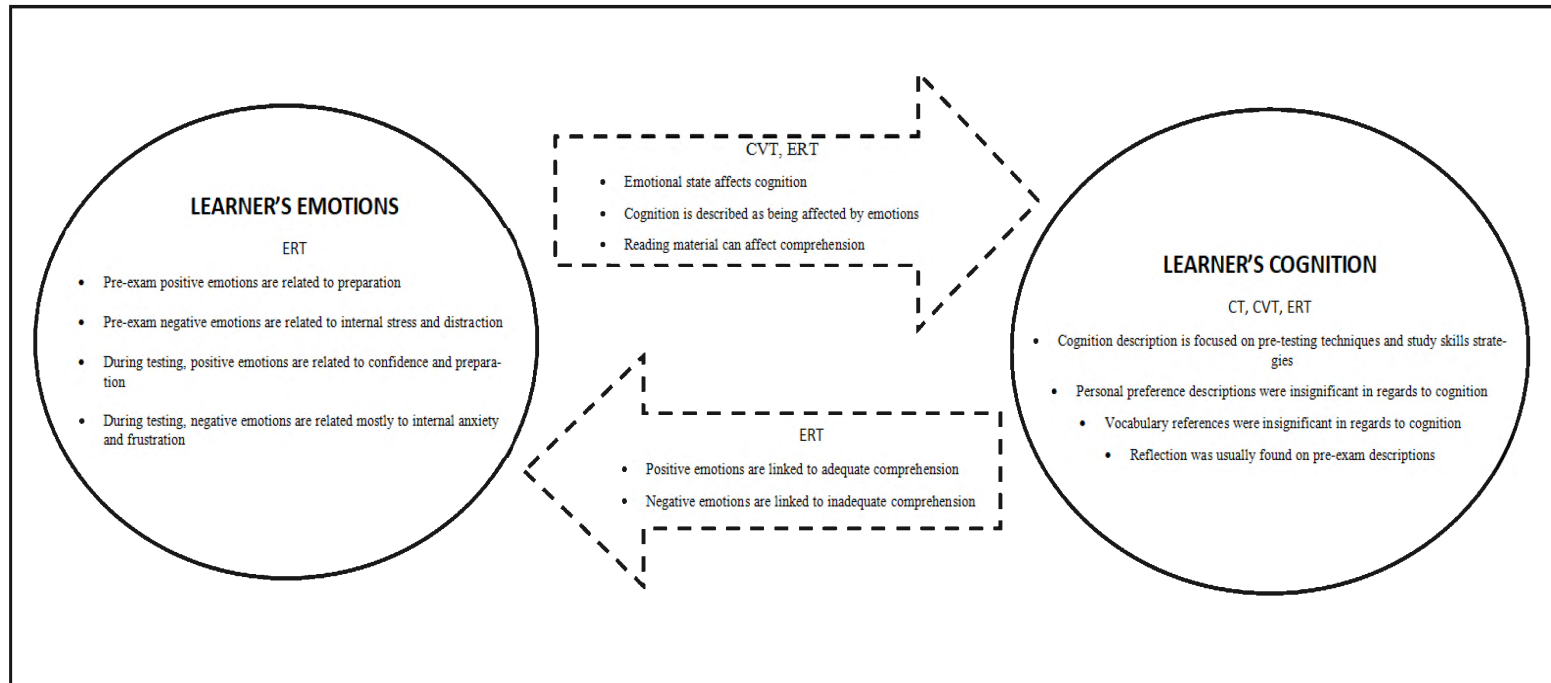
Constructivist Theory postulates that the active process of learning requires a change in the learner. Reading comprehension requires active thought on behalf of the reader, and emotions can affect the comprehension process. Readers actively process the information they encounter through reading, but emotions may hinder this process of the acquisition of knowledge, as evidenced in Findings # 9- 11. Constructivism also emphasizes active learning, versus passive learning, which is critical to the study of reading comprehension.

Control Value Theory links the effects of emotions in academic settings. Pekrun (2006) posited that emotions are comprised of a set of subsystems, including affective, cognitive, motivational, expressive, and peripheral. Control Value Theory (CVT) uses the idea of “subjective control” to explain how emotions can affect student outcomes (p. 326). This idea was verified through Findings # 9-11, as participants frequently stated that their emotions directly affected their reading comprehension. Pekrun further defined goals as “performance-avoidance goals” in reference to positive and negative outcomes (p. 326). This idea was seen throughout Findings # 1-4, causing the researcher to actually classify the emotions into positive and negative categories. The researcher concluded that preparation was vital to determining positive emotions, while negative emotions were derived from feelings of anxiety and frustration. CVT asserts that emotions affect learning and comprehension while learning also influences students’ emotions. This study clearly showed the link between emotion and cognition.

Emotion Regulation Theory was the only theory that significantly supported the findings for all four research questions. Gross, (1999) in his paper, “Emotion Regulation: Past, Present, and Future,” discusses the adaptive value of emotions. Emotions can be regulated, especially in

an academic setting. Clore (1994) echoes the idea that “Emotions are said to tailor cognitive style to situational demands (p. 287). The results of this study strengthened the link between emotions and comprehension, leading to students using emotion to improve comprehension. Students may use emotion before attempting reading, as evidenced by participants realizing that if they were “in a bad mood,” their comprehension would suffer, during reading, as participants recognized test anxiety and would use physical and mental techniques, such as practiced breathing, to control their emotions, or after an exam, as students would feel nervous before a testing situation, but “confident” afterward. Gross noted that cognitive change involves the learner evaluating the situation and altering its emotional impact, while response modulation is the action of altering emotions as they arise. Situations themselves do not generate emotions. It is the participant’s reaction to a situation that results in emotions. Of interest to the researcher is the idea that emotions can be regulated, though emotions are frequently generated subconsciously. This study revealed that students’ emotions and cognition were linked and could affect each other.

Figure 5.2 Revised Conceptual Framework for the Study



Note: The initialisms denote the theory most closely associated with the findings from the researcher's perspective. CT stands for Constructivist Theory (Dewey, 1974; Kant, 1781; Piaget; 1971; Vygotsky, 1987). CVT stands for Control Value Theory (Pekrun, 2006). ERT stands for Emotion Regulation Theory (Clare, 1994; Gross, 1999).

Findings Related to the Literature

The results of this research study further strengthened the major findings of the significant literature review for this research. The literature regarding the link between emotion and cognition focuses on identifying specific emotions that may impede the reading process. Salvatori and Donahue (2012) outlined the renaissance of reading theory, which started in the 1980s. The shift from studying what the text means to what the reader *thinks* the text means led to intimately studying the reader, resulting in Jolliffe and Harl (2008) recommending that instructors teach their students how to become active readers, instead of passive readers. Zambo and Brem (2004) recognized that external distractors played a crucial role in reading success, emphasizing the vital connection between emotion and cognition. Pekrun (2011) created the Achievement Emotions Questionnaire, (AEQ), which measured student emotion as linked to cognition, especially in reading. Brand (1987) cemented the link between emotion and cognition in regards to writers, with Micciche (2005) noting that emotions were necessary to make changes.

Allen (2012) emphasized that reading should be a safe activity, and Moje and Luke (2009) extended this idea, breaking down identity into five components and positing that identity matters to literacy, and literacy matters to identity. Most of the researchers accepted that emotion affects cognition, and their research further emphasizes this conclusion. In this research study, the researcher first determined how the participants described their emotions and cognition regarding reading and then cemented the link between the two. Since reading is considered a continual process throughout a reader's life, reading research can focus on any age or grade level of the reader. While public schools actively teach reading skills to beginning readers and high school readers, universities rarely teach reading skills to the same extent, if at all. The

participants in this study, all university students, were not currently enrolled in any kind of reading enrichment course and were relying on previously acquired reading skills. The participants could, however, build on their previously learned skills, so Constructivist Theory was helpful and relevant in this research study.

Control Value Theory of Achievement Emotions (CVT) links the effects of emotions in academic settings and uses the idea of “subjective control” to explain how emotions can affect student outcomes. (p. 317). Pekrun (2006) further defined goals as “performance approach goals” and “performance avoidance goals,” in reference to positive and negative outcomes (p. 325). In this research study, it was beneficial to classify the data results into positive and negative emotions, which served to clarify the findings. Pekrun’s Achievement Emotions Questionnaire (AEQ) also proved invaluable in conducting this research. CVT asserts that emotions affect learning and comprehension while learning also influences students’ emotions. Pekrun concluded,

To date, it is quite unclear whether the results of laboratory-based mood studies can be transferred to the real-life, context-bound, and occasionally very intense achievement emotions experienced by students in academic settings. There is a clear need to complement laboratory experiments with field experiments, as well as non-experimental field studies, in research on achievement emotions (p. 331).

This dissertation added to the scant body of knowledge in regard to CVT.

The regulation of/emotion in regard to reading was especially intriguing to the researcher of this study. Gross (1999), in his paper, “Emotion Regulation: Past, Present, and Future,” discusses the adaptive value of emotions. Emotions can be regulated, especially in an academic setting. Gross further shows the differences between regulation *of* emotion versus regulation *by*

emotion. Clore (1994) echoes the idea that “Emotions are said to tailor cognitive style to situational demands. Proving the link between emotions and comprehension can result in students using emotions to improve comprehension. Gross noted that cognitive change involves the learner evaluating the situation and altering its emotional impact, while response modulation is the action of altering emotions as they arise. Situations themselves do not generate emotions. It is the participant’s reaction to a situation that results in emotions, and it is this aspect of the study that was the focus of this dissertation. These ideas were central to this research study. The idea that emotions can be regulated, though emotions are frequently generated subconsciously, also helped to steer this dissertation.

Enhancements to the Literature

Three aspects of the findings of this research were not anticipated based on the literature reviews for this study, (1) including cognition description focused on pre-testing techniques and study skills strategies (2), personal preference descriptions were insignificant in regards to cognition (3), and vocabulary references were negligible in regards to cognition. These are discussed below.

Cognition Description is Focused on Pre-testing Techniques and Study Skills Strategies

Findings from this study indicated that students described the cognition they experienced during academic reading in terms related to pre-testing techniques, such as “preview,” “skim,” “reread,” and “review,” and study skills terms, such as “summarize,” “annotate,” and “prepare.” The participants were all university students, and were well-versed in pre-testing techniques. They were also required, as students of the Texas Undergraduate Medical Academy (TUMA), to attend study skills seminars for every semester they were part of the TUMA, which may account

for their use of study skills terminology. In addition, the questionnaire used for this study used the terms “preparation,” “skimming,” and “annotating.”

Personal Preference Descriptions were Insignificant in Regard to Cognition

Personal preference did not play a key role in participants’ descriptions of cognition. It is essential to note this finding, as the researcher expected more data regarding personal preferences. When readers are confronted with a boring text, for instance, their comprehension scores may be lower simply because they are not engaged with the reading. In fact, discomfort with a reading text can trigger a flight or fight response, further impeding comprehension (Zambo & Brem, 2004). Pekrun (2011) created the Achievement Emotions Questionnaire, (AEQ), which specifically asked students their preferences regarding reading material. The TUMA students approached reading tasks as necessary and mentioned almost nothing regarding their personal preferences in regard to cognition.

Vocabulary References were Insignificant in Regard to Cognition

The researcher also expected participants to discuss vocabulary, and refer to it when describing their reading cognition. References to flashcards did not mention vocabulary but rather terms such as “ideas,” “theories,” or “processes.” Smith (2002) mentioned vocabulary is concerned with experience and meaning. Joshi (2006) noted, “There is a close relationship between vocabulary and comprehension” (p. 209). A few reasons for the lack of mentioning vocabulary could include that the students were comfortable with their vocabulary knowledge, that students did not consider vocabulary as part of cognition or comprehension, or that students did not separate vocabulary when preparing for an exam or during an exam.

Limitations

The limitations of this research were those that are typically found in qualitative research. The qualitative approach used in this study means that the findings cannot be applied to all university students, as the participants chosen were all attending Prairie View A&M University, (an HBCU), members in good standing of the Texas Undergraduate Academy, and intended to attend medical school in the near future. Furthermore, because participation was voluntary and not mandatory, the findings in this study represented only those students who chose to participate and met the requirements for participation. With these limitations, university students with different majors, academic standing, or other factors may not be represented. Nevertheless, the findings of this study will add to the literature regarding the effect of emotion on cognition, and the effect of cognition and the effect of cognition on emotion states, “There is a clear need to complement laboratory experiments with field experiments, as well as non-experimental field studies, in research on achievement emotions” (Pekrun, 2006, p. 331). This research has added to that limited knowledge.

Significance

This study is significant due to the declining reading levels across the United States, resulting in a need to improve reading comprehension (Peralta, 2012). A clear understanding of impediments to the reading process, such as the emotion and cognition link, is vital to addressing an aspect of the cause of lower reading comprehension (Clore, 1994; Gross, 1999; Pekrun, 2006). Identifying and understanding this phenomenon will result in improved reading comprehension for college students, not just during their university journey but throughout their lives in both home and workplace. In turn, this data may also be helpful for teachers and

administrators to adjust their reading curriculum for improved reading proficiency in their students.

This research study enhanced the current literature by supporting previous findings, and partially filling in the gaps in the literature. In addition, the study emphasized the role emotion plays in cognition, especially during testing situations. The study also used the revisited conceptual framework to illustrate how Constructivist Theory, Control Value Theory of Achievement Emotions, and Emotion Regulation Theory interact to reveal the link between emotion and cognition.

The study also added to the literature by providing institutions of higher education with insight and recommendations that would improve student success. The benefits reaped from the recommendations would improve the institutions' reputation through offering study skills classes and test-anxiety seminars designed to increase student cognition while decreasing student detriments. The benefits of the study for teachers included improving the classroom environment while reducing testing anxiety. The recommendations for students included suggestions on how to approach testing situations before, during, and after an exam. It also included the suggestion that students should have a clear understanding of how emotions and cognition interact with each other, which can result in improved academic success.

Recommendations for Practice

After analyzing and reviewing the interviews of the 10 participants and reviewing the literature that was the basis for the theoretical framework and historical context of the study, the researcher offers the following recommendations for practice. The recommendations have been classified into sections for higher education institutions, university instructors, and university students.

For Educational Leaders

The following were three recommendations for educational leaders:

1. Institutions offer classes that focus on study skills for students. According to Wernersbach, et al. (2014), “Study skills courses have demonstrated effectiveness in providing academic support for underprepared students” (p. 14). Many institutions already offer study skills classes, seminars, workshops, or Zoom meetings. This research has shown that students described their cognition in terms related to study skills, and an elective or required study skills course could enhance students’ cognition. These classes could also be offered as a one-credit course in conjunction with another class. Students would then have the opportunity to form study groups, possibly leading to higher achievement in the class.
2. Institutions offer test- anxiety workshops for students. Test anxiety, defined as stress or anxiety before, during, or even after experiencing a testing situation. Students described pre-exam negative emotions as “stress” and “distraction” and post-exam negative emotions as “internal anxiety” and “frustration.” Emotion Regulation Theory (ERT), as noted in this research, revealed that students can alter their emotions and alter a situation’s emotional impact (Pekrun, 2006). Test anxiety workshops could offer students strategies to alleviate test anxiety and thereby increase their cognition. Control Value Theory also supports this idea, as expected failure/success can affect the outcome of a testing situation (Gross, 1999).
3. Institutions offer incentives to continue research in this area. The area of emotion affecting cognition and cognition affecting emotion is relatively under-researched (Pekrun, 2006). Faculty, researchers, and students could expand the information

regarding this topic and discover additional methods to increase cognition, leading to higher retention of academic material.

4. Actively campaign for additional funding from local, state, and federal governments for the purpose of additional research in reading. More research will justify additional spending in the field of reading best practices, which is essential for student success in the academic world.

For Teachers

The following were four recommendations for teachers:

1. Create and maintain a positive classroom environment. A positive classroom environment encourages active reading and positive emotions and discourages negative emotions. This study revealed that participants frequently attributed active concentration/reading to focus and concentration. The research showed that when students were comfortable in their environment, they were less stressed and more confident in testing situations. Positive emotions in pre-testing and testing situations were directly related to feelings of confidence and preparedness—conversely, negative emotions centered around feelings of internal anxiety and frustration.
2. Avoid high-stakes testing. Testing is an expected experience in higher education and a necessary one. Instead of having one major test over a subject, teachers should consider breaking a test into more minor exams or offering multiple attempts on some tests. High-stakes testing increases students' stress levels, and as this research shows, negative emotions negatively impact cognition. Other options could include the student being able to choose whether to take a traditional test or perhaps complete a project or paper instead.

By avoiding high-stakes testing, teachers can actually increase positive emotions, which, in turn, increases cognition.

3. Encourage active reading. Teachers can encourage active reading by modeling reading assignments in class and stopping to check for comprehension as a class activity. Short lessons regarding active versus passive reading would also educate students who may not be aware of the perils of passive reading which can result in lower retention rates, attention spans, and comprehension rates. This study revealed that active concentration when reading led to more interest, focus, and interest in the reading material.
4. Offer a variety of reading material. By offering a variety of reading material, teachers are more likely to catch a student's interest. This can be achieved by providing students projects of their own choosing, (thereby choosing reading material more suited to their interest), allowing students to select their reading material from a pre-determined list, or focusing on topics that are interesting to a majority of the class, possibly done by a class survey or vote. While personal preference was not a significant factor in this research, interesting vs. boring material was.

For Students

The following were four recommendations for students:

1. Be prepared for exams. This research showed that being prepared for exams resulted in Participants using such terms as “relaxed,” “comfortable,” and “confident” when discussing their positive feelings before and during exams. These emotions were all linked to preparedness. Internal stress and frustration were attributed to negative feelings before an exam. During an exam, confidence and preparation were directly related to positive feelings, which led to better cognition. Negative emotions during an exam

included feelings of stress and frustration. Exam preparedness equates to positive emotions leading to better cognition.

2. Be an active reader. Active readers enjoy higher retention rates, better attention spans, and higher comprehension rates. Passive reading leads to lower retention rates, lower attention spans, and lower comprehension rates. Passive reading can also lead to rereading, which is a poor use of limited study time. This study showed that pre-testing techniques and study skills strategies led to more positive emotions and, thus, better cognition.
3. Learn to alter a situation's emotional impact. The easiest way to reduce high-stakes testing anxiety is to be prepared. Emotion Regulation Theory posits that students are able to alter their emotions and also alter a situation's emotional impact (Gross, 1999). Using study skills and test-taking strategies will help a student reduce negative emotions, but ultimately, the student must alter his emotions. As Gross noted, emotions can be regulated, especially in an academic setting. Being able to alter emotions will result in students being more positive physically, emotionally, and academically.
4. Recognize emotions and cognition affect one another. This research has shown that emotions and cognition affect each other and that relationship can affect academic achievement. Participants recognized when they were not in an ideal mental state to study and would alter their plans accordingly. Participants also recognized that lower cognition could lead to feelings of frustration, which would then compound into even lower cognition. Recognizing the link between emotions and cognition and the steps students can take to alleviate their adverse effects while increasing their positive impact can result in higher academic achievement.

For the Texas Undergraduate Medical Academy (TUMA)

The Texas Undergraduate Medical Academy currently has a working strategy in place. Study skills classes, which also include courses on test anxiety, are required of all TUMA students every semester. The goal of the study skills classes is to practice the strategies they learn in a variety of courses so they can more easily apply them in professional school (Straker, 2022). In addition to the study skills classes, TUMA also offers practice MCATs several times a semester, in order to prepare students for the rigors of admissions testing. TUMA also meets with every student individually every two weeks. TUMA has its own medical library, with a variety of reading materials and publications relevant to the students' academic and future professional careers; students can also request publications of interest to be purchased (Sablatzky, 2022). Full-time tutors are also available.

One recommendation for TUMA would be to ensure that their students understand that emotions and cognition affect one another. The study skills class teaches this, but perhaps this could be reinforced in a variety of settings.

Future Research

This qualitative study regarding the link between emotions and cognition enhanced the body of literature relevant to this topic. Further exploration of this relationship is needed to understand this phenomenon more thoroughly. This study offers recommendations for further research on this topic, as listed below.

1. The participants in this study were all members of TUMA in good standing attending an HBCU. TUMA has a specialized population of future medical, dental, veterinary, and pharmacy school students. A prospective study could broaden the participant base to include students outside of these characteristics, such as business majors, sophomores, or

PWI attendees. The results of this study would be intriguing, and this study could also be used as a comparative source.

2. This study dealt with cognition as it related to reading comprehension and reading experiences. A similar study could be done, but it would involve mathematics or a science-related field. The parameters of a mathematical study, for instance, would focus on mathematical comprehension, which would be fascinating in regards to the comparison of reading comprehension. A similar admissions test could be the GRE, LSAT, or the Uniform CPA examination.
3. This study dealt with participants attending university. A similar study could be done, but using participants at the high school level, or even junior high or elementary school level. The lower grades actively teach reaching strategies, so it would be interesting to note the responses, especially regarding cognition, of younger aged students. High school students are not generally enrolled in reading classes. Still, the findings involving high school-aged students could be used to show a progression or regression in comparison to university students. The results might also serve as predictive when compared to this study.
4. This study revealed factors that affected both emotion and cognition in an academic environment. Additional research regarding the alleviation of the negative aspects would be beneficial to a wide range of people, including students, instructors, educational leaders, and parents. A study could offer solutions to identify and decrease negative impacts further, as well as strategies to reinforce positive impacts.

Conclusion

This study examined the link between emotion and cognition in an academic setting. The findings revealed that emotion and cognition affect each other, with both positive and negative factors contributing to the relationship. Little research has been done on this topic, yet most administrators, teachers, and students seem to be aware of it. Standardized testing is done in most states in the United States, and most of those involved know that a “bad day” emotionally, such as feeling emotionally tired, upset, or unprepared, can lead to a “bad day” cognitively, like performing poorly on a test. Conversely, a “bad day” cognitively, such as a student knowing he performed poorly on a test, can result in a “bad day” emotionally, such as feelings of depression, frustration, or anger. Positive emotions also lead to more positive cognition, and positive cognition can lead to positive emotions. Showing a relationship between these phenomena, then, is critical to increasing student success, both academically and emotionally, while decreasing student failure both academically and emotionally.

The relationship between emotions and cognition can result in a variety of reactions, and education professionals recognize this. One solution is the application of study skills. Study skills are taught in most educational institutions, either through a formal class or seminar, or through informal means, such as a supplement to a class. These informative sessions usually also discuss test anxiety, which was evident in the research study. For example, an endless cycle of emotion affecting cognition affecting emotion was revealed, with anxiety compounding incomprehension, leading to even more anxiety. The data revealed personal remedies to this difficulty, with different solutions being effective for other individuals- every participant mentioned no one solution.

The theoretical framework of Constructivist Theory, Control Value Theory of Achievement Emotions, and Emotion Regulation Theory provides a clearer understanding of the link between emotion and cognition. Constructivist Theory was prevalent in the findings regarding a learner's cognition description, and provided additional support to my findings, especially in reference to active engagement. Control Value Theory of Achievement Emotions shows how subjective control, expected failure and success, and performance goals affect both emotion and cognition in an academic setting and contribute to the support of this study's findings. Researching changing emotions and responses to a situation's emotional impact led this research to Emotion Regulation Theory (ERT). ERT provided the conceptual framework of this study with insight and evidence, and the theory provided support to all four of the research questions' findings. This research found a link between emotion and cognition, and added to the literature regarding this relationship.

I enjoyed working with my 10 study participants. They were very open and helpful, and their dedication to achieving their goals was inspirational. They were successful, happy, and hardworking students, and their willingness to take time out of a hectic schedule to assist me with my research was greatly appreciated. Their insights into emotion and cognition were revealing, and I learned a tremendous amount about the role emotion linked to cognition plays in their academic experiences. Based on this research, I recommend more studies should be done regarding the link between emotion and cognition in an educational setting. Qualitative studies are vital to capture subtleties of experience, yet quantitative studies are needed to accommodate a more significant number of participants, and provide additional insights.

This section of the chapter provided the conclusion for the study. The following section includes the summary of the chapter.

Summary of the Chapter

In this chapter, the researcher provided the discussions and recommendations regarding this study of the link between emotions and cognition in an academic setting and determined how the participants described their emotions and cognition. The researcher provided a brief context of the study, research questions, and methods. The chapter also contained a synopsis of the findings, the limitations of the research, and the significance of the study. The chapter concluded with recommendations for practice and directions for future research. This qualitative study used a qualitative research design with a phenomenological perspective to address the research questions.

Data was collected through interviews with Texas Undergraduate Medical Academy students in good academic standing who were planning to attend medical school in the near future. The conceptual framework of the study was based on the theoretical concepts of Constructivist Theory, Control Value Theory of Achievement Emotions, and Emotion Regulation Theory. The findings for this study included: (1) pre-exam positive emotions are related to preparation, (2) pre-exam negative emotions are related to internal stress and distraction, (3) during testing, positive emotions are related to confidence and preparation, (4) during testing, negative emotions mainly related to internal anxiety and frustration, (5) cognition description is focused on pre-testing techniques and study skills strategies, (6) personal preference descriptions were insignificant in regards to cognition, (7) vocabulary references were insignificant in regards to cognition, (8) reflection was usually found on pre-exam descriptions, (9) emotional state affects cognition, (10) cognition is described as being affected by emotions, (11) reading material can affect comprehension, (12) positive emotions are linked to adequate comprehension, and (13) negative emotions are linked to inadequate comprehension. Based on

the findings of this research study, the researcher recommends more studies regarding the link between emotion and cognition to continue to understand the impact this relationship has in an academic setting.

REFERENCES

- AAMC (2022). The MCAT exam. <https://students-residents.aamc.org/taking-mcat-exam/taking-mcat-exam>.
- ACT (2006). Reading between the lines. *College Readiness*.
https://www.act.org/content/dam/act/unsecured/documents/reading_summary.pdf.
- Abdolrezapour, P., Tavakoli, M. (2012). The relationship between emotional intelligence and EFL learners' achievement in reading comprehension. *Innovation in Language Learning and Teaching*. 6. 1-13. 10.1080/17501229.2010.550686.
- Appelbaum, Y. (2014, September 10). *Publishers gave away 122,951,031 books during World War II*. The Atlantic. <https://www.theatlantic.com/business/archive/2014/09/publishers-gave-away-122951031-books-during-world-war-ii/379893/>.
- Austin, M. (1961). *The torch lighters*, Harvard University Press.
- Behling, K., & Hart, D. (2008). Universal design: A model for professional development. In *Universal design in higher education: From principles to practice* (pp. 109–125). Cambridge, MA: Harvard Education Press.
- Holy Bible, New International Version, (2011).
<https://www.biblegateway.com/passage/?search=Matthew%2025%3A29&version=NIV>
- Cherukunnath D, Singh A. (2022). Exploring cognitive processes of knowledge acquisition to upgrade academic practices. *Frontiers in Psychology*. 13(682628). doi: 10.3389/fpsyg.2022.682628. PMID: 35602694; PMCID: PMC9120965.
- Clore, G. L. (1994). Why emotions are never unconscious. In P. Ekman & R. J. Davidson (Eds.), *The nature of emotion: fundamental questions* (pp. 285-290). New York: Oxford University Press.

- Coladarci, T., Cobb, C., Minium, E., Clarke, R. (2008). *Fundamentals of statistical reasoning in education* (4th edition). Wiley.
- Dewey, John (1974). *John Dewey on education: Selected writings*. University of Chicago Press.
- Gall, M. D., Borg, W. R., & Gall, J. P. (1996). *Educational research: An introduction* (6th ed.). Longman Publishing.
- Giorgi, A. (1994). A phenomenological perspective on certain qualitative research methods. *Journal of Phenomenological Psychology*, 25(2), 190-220.
- Greening, Neville. (2019). Phenomenological research methodology. *Scientific Research Journal*, 7(5), 88-92, 10.31364/SCIRJ/v7.i5.2019.P0519656.
- Gross, J. (1999). Emotion regulation: past, present, future. *Cognition and Emotion*, 13(5), 551-573.
- Guba, E. G., & Lincoln, Y. S. (1982). Epistemological and methodological bases of naturalistic inquiry. *Educational Communication and Technology*, 30(4), 233–252.
<http://www.jstor.org/stable/30219846>.
- Husserl, E. (1970). *The crisis of European sciences and transcendental phenomenology*. 1st ed. Evanston: Northwestern University Press. (Original work published 1938).
- Imai, K., Bougher, L. (2021). *Quantitative social science*. Princeton University Press. Retrieved from <https://www.perlego.com/book/1983771>.
- Jolliffe, D. A., & Harl, A. (2008). Studying the “reading transition” from high school to college: What are our students reading and why? *College English*, 70(6), 599–617.
<http://www.jstor.org/stable/25472296>.
- Joshi, R. (2005) Vocabulary: A critical component of comprehension. *Reading & Writing Quarterly*, 21(3), 209-219, DOI: 10.1080/10573560590949278.

- Maxwell, J. (2012). *Qualitative Research Design: An Interactive Approach* (3rd edition). George Mason University.
- Merton, R. K. (1968). The Matthew effect in science. *Science*, 159(3810), 56–63. DOI: <https://doi.org/10.1126/science.159.3810.56>, PMID: 5634379.
- Mervosh, S. (2022, September 1). The Pandemic erased two decades of progress in math and reading. *The New York Times*, . <https://www.nytimes.com/2022/09/01/us/national-test-scores-math-reading-pandemic.html>.
- Micciche, L. (2005). *Doing emotion: Rhetoric, writing, teaching*. Boyton/Cook Press.
- Moje, E., Luke, A. (2009). Literacy and identity: Examining the metaphors in history and contemporary research. *Reading Research Quarterly*. 44(4), 415-437. 10.1598/RRQ.44.4.7.
- Morrow, R., Rodriguez, A., & King, N. (2015). Colaizzi's descriptive phenomenological method. *The Psychologist*, 28(8), 643-644.
- National Association of Adult Literacy (2003). *Percentage of adults in each prose, document, and quantitative literacy level*. National Assessment of Adult Literacy. https://nces.ed.gov/naal/kf_demographics.asp.
- National Center for Education Statistics (2020). *The nation's report card*. The 2019 NAEP Reading Assessment. <https://www.nationsreportcard.gov/reading?grade=4>.
- National Reading Panel (US), National Institute of Child Health & Human Development (US). (2000). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction: Reports of the subgroups*. National Institute of Child Health and Human Development, National

Institutes of Health.

<https://www.nichd.nih.gov/sites/default/files/publications/pubs/nrp/Documents/report.pdf>

NCES (2023). *SAT scores*. National Center for Education Statistics.

<https://nces.ed.gov/fastfacts/display.asp?id=171>.

NCES (2019). *Adult literacy in the United States*. Data Point.

<https://nces.ed.gov/pubs2019/2019179/index.asp>.

NEA (2020). *History of standardized testing in the United States*. National Education

Association. <https://www.nea.org/professional-excellence/student-engagement/tools-tips/history-standardized-testing-united-states>.

Neubauer, B., Witkop, C., Varpio, L. (2019). How phenomenology can help us learn from the experiences of others. *Perspectives of Medical Education* 8, 90–97.

<https://doi.org/10.1007/s40037-019-0509-2>.

Nhamo, E. (2013). Note taking: A lesson for novice qualitative researchers. *Journal of Research & Method in Education* 2(3), 13-17.

Oltmann, S. (2016). Qualitative interviews: A methodological discussion of the interviewer and respondent. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 17(2), <http://nbn-resolving.de/urn:nbn:de:0114-fqs1602156>.

Opdenakker, R. (2006). Advantages and disadvantages of four interview techniques in qualitative research. *Forum Qualitative Sozialforschung = Forum : Qualitative Social Research*, 7(4).

Pekrun, R. (2006). The Control Value Theory of achievement emotions: Assumptions, corollaries, and implications for education research and practice. *Educational Psychology Review*, 18:315–341 DOI 10.1007/s10648-006-9029-9

- Peralta, E. (2012) 2012 Reading scores lowest since 1972. *The Two Way*, NPR.
<https://www.npr.org/sections/thetwo-way/2012/09/24/161695636/2012-sat-reading-scores-lowest-since-1972>
- Perl, E. J., & Noldon, D. F. (2000). Overview of student affairs research methods: Qualitative and quantitative. *New Directions for Institutional Research*, 2000(108), 37–48.
 doi:10.1002/ir.10803.
- Piaget, J. (1971). *Biology and knowledge*. Chicago: University of Chicago Press.
- Prairie View A&M University (2022). Facts about PVAMU.
<https://www.pvamu.edu/recruitment/facts-about-pvamu/>
- Sablatzky, T. (2023). Undergraduate Medical Academy: Home (library guide).
<https://pvamu.libguides.com/UMA>
- Salend, S. J. (2012). Teaching students not to sweat the test. *Phi Delta Kappan*, 93(6), 20–25.
<https://doi.org/10.1177/003172171209300605>
- Schwartz, S. (2019, December 03). *The most popular reading programs aren't backed by science*. Education Week. <https://www.edweek.org/teaching-learning/the-most-popular-reading-programs-arent-backed-by-science/2019/12>
- Smith, N. (2002). *American Reading Instruction*. Delaware: International Reading Association.
- Stahl, N. (2002). *Epilogue*, American Reading Instruction.
- Stanovich, K. E. (1986). Matthew effects in reading: some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly*, 21(4), 360–407.
<http://www.jstor.org/stable/747612>
- Straker, K, Kelman, E. (2015). *Six steps to college success- learning strategies for STEM Students*. Houston: Karista Press.

Taylor, B. J., & Francis, K. (2013). *Qualitative research in the health sciences: Methodologies, Methods, and Processes*. London: Routledge.

Texas Education Agency (2022). *Dyslexia, dysgraphia, and dyscalculia in the individualized education program*.

https://tea.texas.gov/sites/default/files/Dyslexia%20in%20the%20IEP%206.3_accessible%208.1.pdf

Texas Undergraduate Medical Academy (2022). Texas Undergraduate Medical Academy. Prairie View A&M University. <https://www.pvamu.edu/uma/home/about-us/>.

Vygotsky, L. (1987). *Collected works of L.S. Vygotsky: Volume 1: Problems of General Psychology* (N. Minick, Trans.) New York: Plenum.

Walsh, K., Glaser, D., Wilcox, D. (2006). *What education schools aren't teaching about reading and what elements, and what elementary teachers aren't learning*. National Council on Teacher Quality. <https://www.nctq.org/publications/What-Education-Schools-Arent-Teaching-About-Reading----and-What-Elementary-Teachers-Arent-Learning>

Wernersbach, B., Crowley, S., Bates, S., Rosenthal, C. (2014). Study Skills course impact on academic self-efficacy. *Journal of Developmental Education*, 37(2) p14-16, 18-23, 33 Spr 2014. <https://eric.ed.gov/?id=EJ1070256>

APPENDICES

Appendix A: Final Request for Participation

Date

Name

Title

Address City, State, Zip

Dear _____,

I am writing to ask for your participation in my qualitative dissertation study exploring the link between emotion and cognition as it applies to reading comprehension. My dissertation, titled “*The Link Between Emotion and Cognition in Reading Comprehension of Undergraduate Pre-Medical Students enrolled at an HBCU*,” is a phenomenological inquiry using a conceptual framework of Constructivism, Control Value Theory of Achievement Emotions, and Emotion Regulation Theory to explore the reading experiences of university students preparing to attempt the Medical College Admission Test (MCAT) during or after their junior year of attending a Historically Black College or University (HBCU).

Your response to this request is essential to advance the research of the link between emotion and cognition in reading comprehension and affect the policies of reading instruction. Your participation is greatly needed, valued, and appreciated. The participant’s time commitment would be one interview that would last no more than 90 minutes and be scheduled at your convenience from March to April 2023.

Please verify in your return email your current grade level status (junior or senior) at PVAMU and verify your plan to attempt the Medical College Admissions Test (MCAT) within the next two years.

I would be honored if you would agree to share your experiences with me for this important research study. If you are interested in participating, please reply to this email with your agreement. After receiving your consent, I will contact you to set up an interview. If you have any questions or need additional information, please feel free to contact me at (281) 236-9912, or gabrekke@pvamu.edu.

Thank you for your time and consideration!

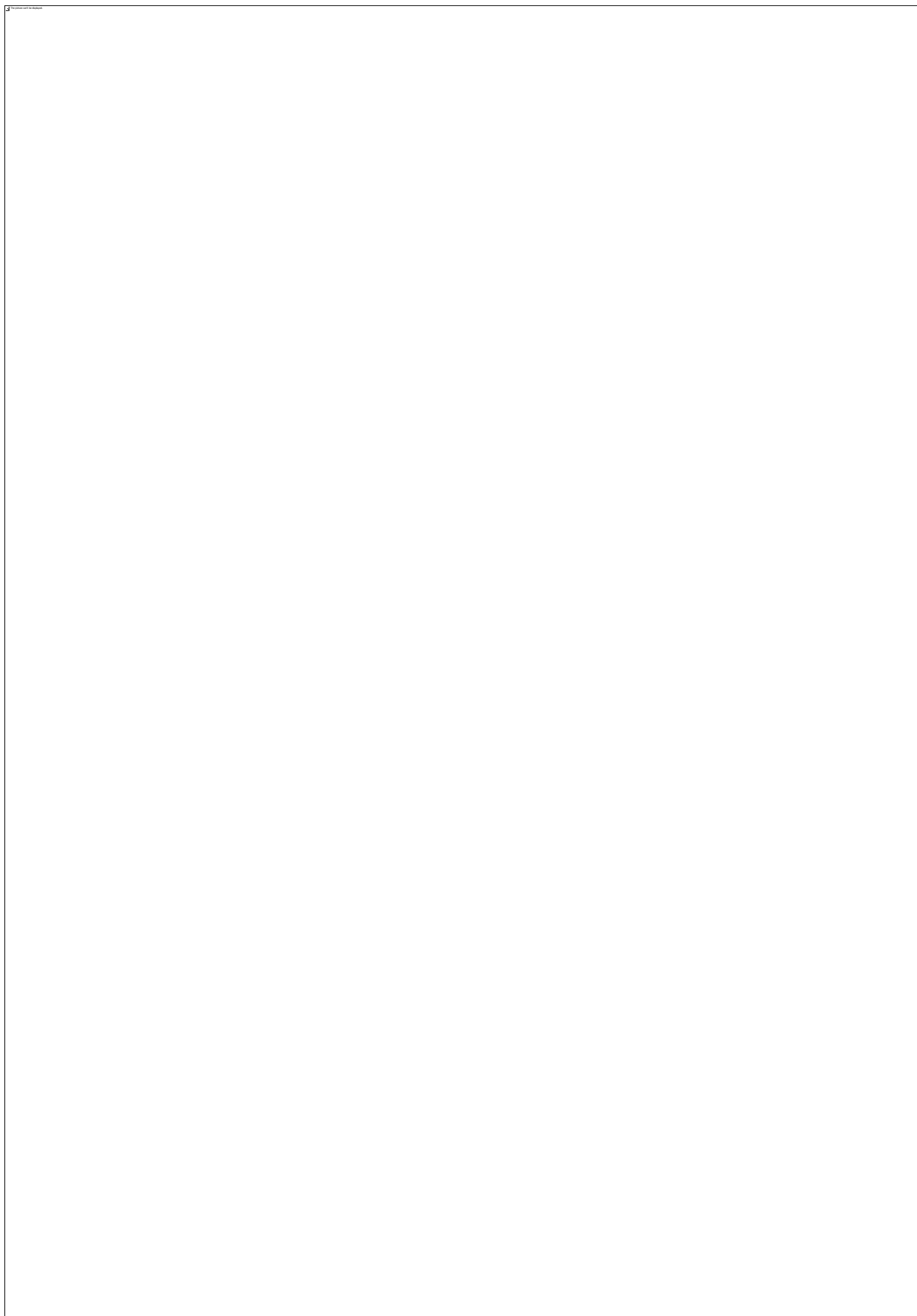
Sincerely,

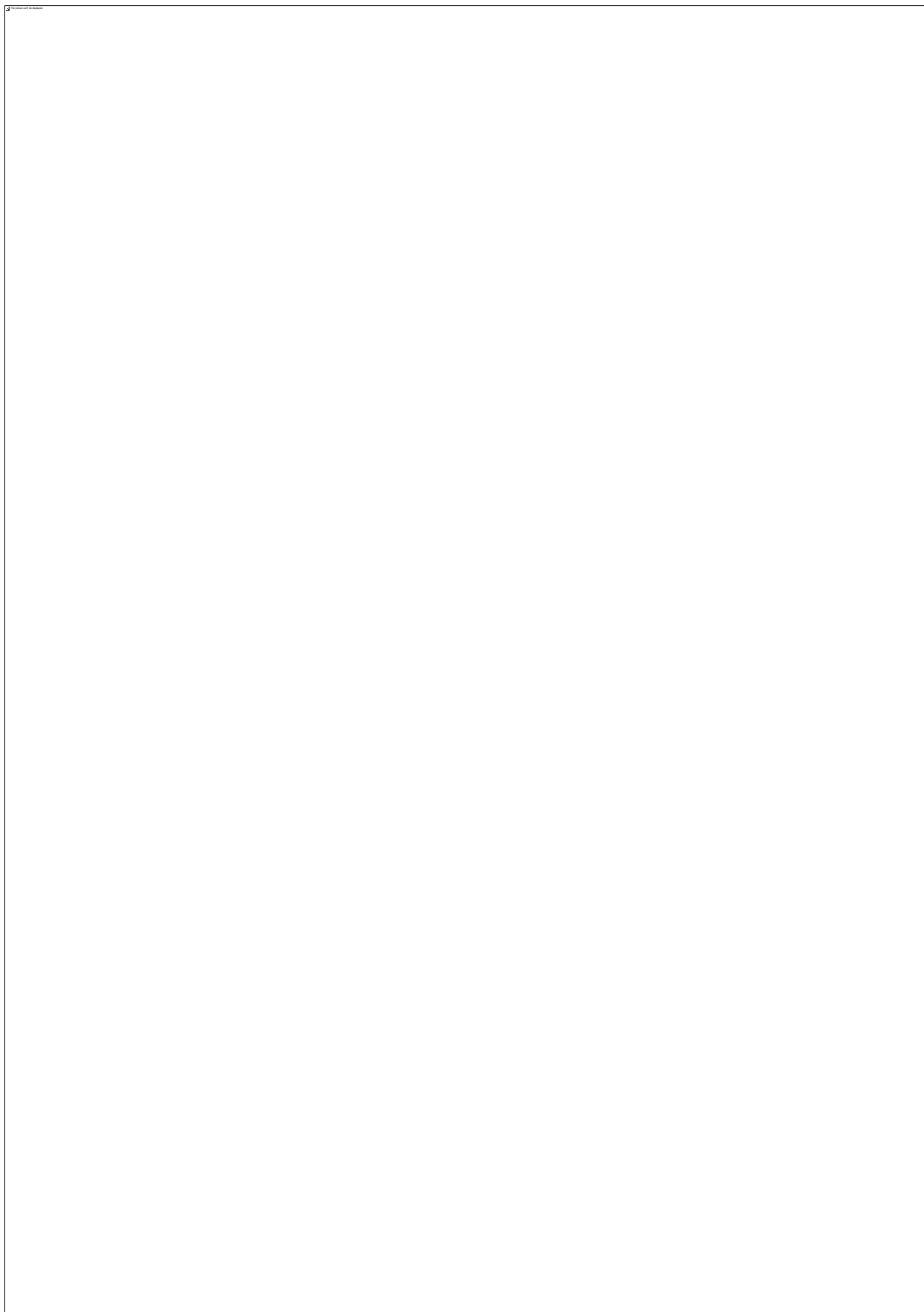
Gail D. Brekke

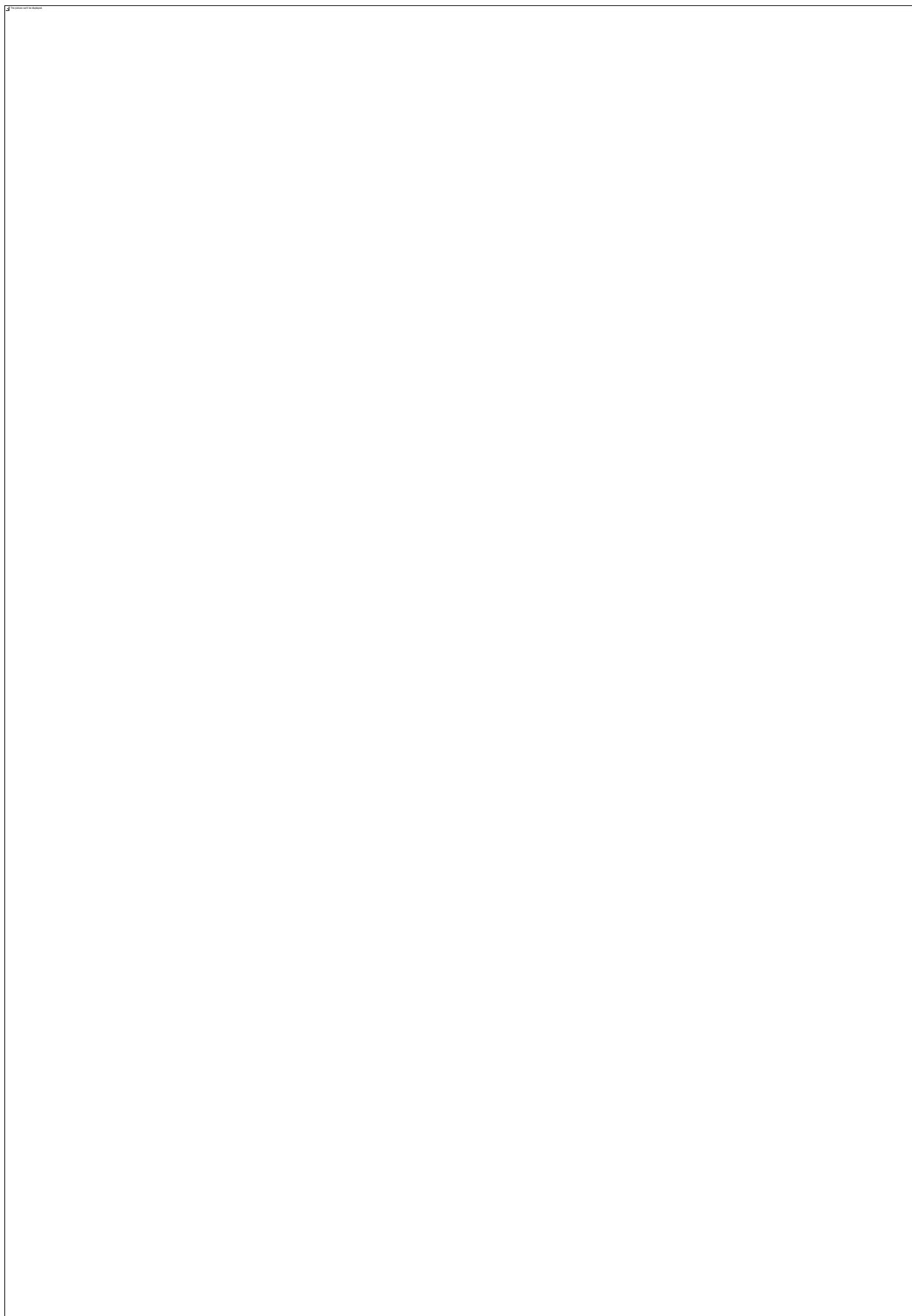
Education Leadership and Counseling Program, Whitlowe R. Green College of Education

Prairie View A&M University

Appendix B: Informed Consent







Appendix C: Interview Protocol

1. Tell me about your experiences with reading.
 - a. Do you enjoy reading?
 - b. How often do you read for pleasure?
 - c. What types of leisure reading material do you enjoy?
2. How much time a week, on average, do you spend reading for academic purposes?
3. How do you approach reading in preparation for an exam?
 - a. What is your strategy for academic reading?
 - b. How do you feel when you have to read in preparation for an exam?
4. Do your emotions ever affect your academic reading comprehension?
 - a. What emotion describes your feelings when you are reading to study?
5. What emotion describes your feelings when you are reading during an exam?
 - a. How does timed reading during an exam affect you emotionally?
6. Do you prefer reading comprehension questions that are multiple choice or short answers?
7. What reading strategies (such as skimming or annotating) do you use during a testing situation?
8. How is your concentration when you are reading during a timed exam?
9. What distracts you from reading during a testing situation?
10. How do you feel after completing an exam that contained reading questions?
11. How would you describe interesting versus boring material?
 - a. How does reading boring material affect your comprehension?
 - b. How does reading interesting material affect your comprehension?
12. What helps you comprehend reading material?
13. Are there any other reading observations you would like to share with me?

CURRICULUM VITAE

Gail Brekke

Oriel212@aol.com

EDUCATION

- M.A.A.E.L. Applied Linguistics, University of Houston, Houston, TX 1994
- R.L. Theoretical Linguistics, Oriel College, Oxford University, Oxford, England 1994
- B.A. English Literature, University of Houston, Houston, TX 1988
- A.A. Secondary Education, Lone Star College, Houston, TX 1986

WORK EXPERIENCE

- Company: Prairie View A&M University
Position: English Faculty, 2016- Present
Job: English instruction
- Company: Sam Houston State University
Position: Interim Director, ESL and Special Populations, 2006-2007
Job: Direction and Instruction
- Company: University of Houston- Downtown
Position: Instructor, 1999-2007
Job: Direction and Instruction

PROFESSIONAL TECHNICAL AND WORK-RELATED EXPERIENCE AND SKILLS

- Skilled in all aspects of English instruction
- Proficient in research and methodology
- Trained in FEMA CERT instruction

PUBLICATIONS

Brekke, G. (2023) Fighting With Fanon. *The Monograph*.

Brekke, G. (2022) Critics' Dependence on Duality In Gloria Naylor's *Mama Day*. *The Monograph*

Brekke, G., (2021) Generational Storytelling in Asian-American Literature: Garrett Hongo's "Kubota." *The Monograph*.

Brekke, G., Fontus, M. and Giraud, J. (2020) Fighting with Infinity: A Proposal for the Addition of New Terminology. *Linguistic Frontiers, Sciendo, DeGruyter*. DOI: 10.2478/If-2020-0017.

Brekke, G. and Giraud, T. (2019) The Power of Quilts: Alice Walker's "Everyday Use" and The Color Purple. *The Monograph*.

Brekke, G. and Giraud, T. (2017) Their Eyes Were Watching Janie: Evolution of Criticism in Zora Neale Hurston's *Their Eyes Were Watching God*. *The Monograph*, 694-708.