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Differences in Coping Strategies of African American Children With Chronic Pain

Eddie Lee Coleman
Walden University

Walden University

College of Social and Behavioral Sciences

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Eddie Lee Coleman

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Review Committee
Dr. Silvia Bigatti, Committee Chairperson, Psychology Faculty
Dr. Anne Morris, Committee Member, Psychology Faculty
Dr. Rolande Murray, University Reviewer, Psychology Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

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2018

Abstract

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MA, George Mason University, 2007

BS, Spalding University, 1975

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Chronic pain is a significant problem in the U.S. pediatric population, conservatively estimated to affect 15% to 20% of children. Few studies have focused on coping strategies African American children use to manage chronic pain. The purpose of this study was to examine coping strategies used by African American children and adolescents ages 11 to 18 years suffering from chronic pain and to examine gender and age differences in this population. The gate control theory provided the framework for the study. The Pain Coping Questionnaire was used to measure coping strategies in a convenience sample of 44 children and adolescents recruited from pain clinics and online pain support groups. Descriptive statistics indicated that active coping was used most often, and emotion-focused coping was used least often. Analyses of variance indicated that age was positively related with cognitive distraction, that male participants used problem solving more often than female participants, and that female participants sought out social support and used internalizing/catastrophizing more often that male participants. Findings may be used to improve assessment and management of chronic pain by providing mental health professionals and doctors with a better understanding of African American children and adolescents' coping strategies.

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Dedication

This dissertation is dedicated to my lifelong best friend, Sophie. No matter how many times she was asked to read a paragraph or review some pages, she would *always* say yes. Her tireless effort, support, and advice have been invaluable. I am in her debt; thank you very much for being my friend.

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Chapter 1: Introduction to the Study

Chronic pain has been described as ongoing or recurrent pain lasting beyond the usual course of acute illness or injury or more than 6 months, which adversely affects the individual's well-being (International Association for the Study of Pain [IASP], 2012). Carter and Threlkeld (2012) referred to chronic pain as lasting three months or more and for which the cause cannot be easily linked to a known or reasonably well-understood underlying pathology.

From 2004 to 2010, U.S. hospital admissions rose ninefold for children exhibiting chronic pain (Cohen, Vowles, & Eccleston, 2010). In a study of pediatric admissions to U.S. hospitals, Cohen et al. (2010) found that abdominal pain, headaches, and limb and back pain were the most common types of chronic pain. The typical patient was 14, White, and female (Cohen et al., 2010).

Prevalence rates of chronic pain in children differed among studies depending on the research focus (definition and sample) and research design. For example, two studies (Norwegian and German) (Palmer & Shepard, 2008) indicated rates ranging from 21% to 46% for school children ages 8 to 18 years. Despite the prevalence of chronic pain in children, the phenomenon of pediatric pain remains underinvestigated relative to pain research on adults (Palmer & Shepard, 2008).

Substantial evidence has indicated support for coping as an effective means of counteracting the negative effects of stress on adolescents (Compas et al., 2006). The ability to cope with chronic pain had been extensively studied in adult populations, and researchers have observed significant differences in the coping strategies of men and

women (Kotzer, 2000). However, very little research has addressed whether similar differences in coping strategies exist among children and adolescents who suffer from chronic pain (Luffy & Grove, 2003). Only a small number of studies have addressed how children handle recurrent or chronic pain (Eccleston, Bruce, & Carter, 2006), and fewer studies have addressed sex and age differences in coping techniques in this population (Eccleston et al., 2006; Gibson & Chambers, 2004). Because most children treated in pain clinics are White, the experience and coping of non-White pediatric chronic pain patients has received little attention and remains an important gap in knowledge (Huguet & Miró, 2008). The scarcity of research on coping strategies in African American children has limited the ability to make specific predictions on coping strategies (Gaylord-Harden, Gipson, Mance, & Grant, 2008) in this population. Such information is important in the context of a biobehavioral model of pediatric pain, in which coping strategies are conceptualized as one of the many factors that may play an important role in health-related outcomes such as pain intensity or functional disability (Walker, Barber, Garber, & Smith, 2008; Walker, Smith, Garber, & Claar, 2006).

The study may provide mental health professionals and doctors who treat pain with a better understanding of African American children's and adolescents' coping strategies related to pain and how they are applied in daily situations. Findings may be used to develop coping typologies for African American children and adolescents with chronic pain.

Background

Chronic pain in children is a complex phenomenon that may develop spontaneously or after disease, infection, injury, surgery, or from idiopathic causes (Martin, McGrath, Brown, & Katz, 2007). The experience of chronic pain and continuing complaints over long periods of time often follow children into adulthood (Walker, Dengler-Crish, Rippel, & Bruehl, 2010). Developmental issues may impede children's ability to communicate their pain effectively, and adolescents experience challenges related to cognitive, emotional, and social development that may inhibit or complicate their experience of pain (Gaylord-Harden, Elmore, Campbell, & Wethington, 2011). Although chronic pain in children is not well understood, considerable evidence supports the influence of coping on counteracting the effects of pain on children and adolescents (Compas et al., 2006; Gaylord-Harden et al., 2008).

Coping commonly refers to any behavior that can be observed in response to a threat, regardless of its success (Tunks & Bellissimo, 1988). Coping is one of the ways adolescents adopt to a stressor. Coping varies by gender and age. Lazarus and Folkman (1984) narrowed the definition by focusing on controlled forms of behavior and defining coping as effortful behavior engaged in response to a stressor. Van Damme, Crombez, and Eccleston (2008) defined *chronic pain* as an archetypal stressor that is fundamentally threatening, interruptive, and aversive; it also interferes with the everyday tasks of life and provokes other related stresses.

Several classification systems have been proposed for coping and have referred to the particular strategy involved in coping with pain. The most frequent classification

systems are active (control or continue to function) versus passive (withdraw or surrender), approach (engage pain) versus avoid (engage away from), and problem focused (deal with or solve) versus emotion focused (Lazarus & Folkman, 1984; Van Damme et al., 2008). The most frequently used classification system has been active versus passive coping (Van Damme et al., 2008). Emotion-focused coping strategies address the emotional responses to the pain and the stress it evokes (Van Damme et al, 2008).

Much of the research on the phenomenon of coping with pain has been conducted in adult populations, specifically young and middle-aged adults (Rollman, 2004). There are significant differences in the way men and women cope with chronic pain (Kotzer, 2000; Rollman, 2004). Pain coping is typically studied along with the experience of pain. However, the pain or pain coping experiences of those at opposite ends of the life continuum have received less attention. Very little research has addressed whether differences in pain coping exist among male and female children and adolescents who suffer from chronic pain (Hadjistavropoulos & Craig, 2004; Kotzer, 2000; Rollman, 2004; Skevington & Mason, 2004). Although some pain research has focused on potential gender effects in pain experience, there has not been a consensus on how gender or age impact pain experience or coping strategies (Gibson & Chambers, 2004; Kotzer, 2000). Most prior pain studies suggested different racial and ethnic groups cope with pain differently (Rahim-Williams et al., 2007; Rollman, 2004), yet research has been limited to White middle-class samples. A review of the literature showed a gap in understanding the impact of gender and age on coping strategies among African American children and

adolescents experiencing chronic pain. Pain research with child populations has focused mostly on the pain experience, which is a complex perception that differs among individual patients. Because children experience pain differently, they may cope differently and there may be wide variability in their coping strategies (Palmer & Shepard, 2008).

Problem Statement

Chronic pain is a significant problem in the pediatric population, affecting 15% to 20% of children (International Association for the Study of Pain [IASP], 2012). Chronic pain is pain that persists or recurs for more than 3 months, persists for more than 1 month after resolution of an acute tissue injury, or accompanies a nonhealing lesion (IASP, 1979). The healing process or passage of time has no effect on chronic pain (IASP, 2012). Causes include chronic disorder (e.g., arthritis, diabetes), injuries (e.g., herniated disk, torn ligament), and primary pain disorders (e.g., neuropathic pain, fibromyalgia, chronic headache) (IASP, 2012).

The topic of pediatric pain and coping has begun to receive more attention, yet most studies have focused on acute and procedural pain more than chronic pain, and few have addressed gender and age (Lynch & Kashikar-Zuck, 2007). Very few studies have had sufficient numbers of children or adolescents from different ethnic backgrounds, genders, and ages to determine whether differences in pain coping exist (Cohen et al., 2010; Luffy & Grove, 2003; Palmer & Shepard, 2008). The scarcity of research on pain coping strategies in children results in many clinicians extrapolating from findings on adult populations (Cohen et al., 2010; Kotzer, 2000; Palmer & Shepard, 2008).

The coping literature on African American children has indicated inconsistent results (Gaylord-Harden et al., 2008). Some but not all studies suggest the same support for adaptive coping strategies as found in the general population literature (Gaylord-Harden et al., 2008). Identifying gender and age differences in pain coping strategies in African American children is needed to permit better assessment and management (Lynch & Kashikar-Zuck, 2007).

Inconsistent results in the literature may be related to how coping was measured in children. In a study of 498 African American adolescents in Grades 6 through 8, Gaylord-Harden et al. (2008) sought to clarify the effectiveness of the Children's Coping Strategies Checklist (CCSC) in capturing coping strategies in this population drawn from a low-income urban area. Gaylord-Harden et al. noted that although elements of the checklist were confirmed, other aspects of the instrument were not because certain items on the checklist did not properly translate to the specific population. For example, the CCSC addressed children's behaviors such as bike riding and playing sports, but Gaylord-Harden et al. found that children living in low-income urban communities were less likely to spend time outdoors playing like their suburban or rural counterparts. Gaylord-Harden et al. noted that many of urban children spent much of their spare time at home and indoors and participated in few extracurricular activities, such as school sports. African American children from a low income urban background would likely rate low on certain checklist items, and reasons for the children's low rating may be subject to misinterpretation. More troubling is the fact that so little research has been conducted on

low-income African American children to explore their coping strategies (Gaylord-Harden et al., 2008).

Purpose of the Study

The purpose of this quantitative, correlational, cross-sectional study was to examine the predictive relationship between gender and age (independent/predictor variables) and coping strategies (dependent/outcome variable) in a group of African American children ages 11 through 18 with chronic pain. Gender and age differences have been reported in adult pain and coping literature; however, little attention has been given to possible differences in coping strategies in African American children (Rahim-Williams et al., 2007). Few studies have addressed gender effects in populations of children. Researchers have observed the presence of boys and girls in pain and coping research, but have not analyzed potential gender differences (Ayers, Muller, Mahoney, & Seddon, 2011). Like gender, age has also proven difficult to assess for its significance in pain research (Gibson & Chambers, 2004; Kotzer, 2000). Very few studies have focused on chronic pain coping strategies of minority children, especially African American children, compared to the more prevalent research on pain in adults and White populations (Gaylord-Harden et al., 2008). The current study was intended to contribute to an understanding of how African American children cope with chronic pain (see Laster, Holsey, Shendell, McCarty, & Celano, 2009; Lee, Jackson, Parker, DuBose, & Botchway, 2009) with the intent to inform possible interventions for these children.

Research Questions and Hypotheses

The present study addressed the following research questions (RQs) and hypotheses:

RQ1: What are the most frequently used coping strategies to deal with pain by African American children who experience chronic pain?

H_o1: African American children with chronic pain do not use emotion-focused coping strategies for chronic pain more than approach or distraction strategies.

H_a1: African American children with chronic pain use emotion-focused strategies for chronic pain more than approach or distraction.

RQ2: Do the coping strategies of African American children with chronic pain differ by age?

H_o2: Coping strategies of African American children with chronic pain do not differ by age.

H_a2: Coping strategies of African American children with chronic pain differ by age.

RQ3: Do the coping strategies of African American children with chronic pain differ by gender?

H_o3: Coping strategies of African American children with chronic pain do not differ by gender.

H_a3: Coping strategies of African American children with chronic pain differ by gender.

Theoretical Framework

Three major theories were used to address the concept of pain in the current study: specificity theory, pattern theory, and gate control theory. The specificity theory of pain proposes that specific nerves carry messages from pain receptors in the skin to a pain center in the brain and that the intensity of the pain is correlated to the amount of tissue damage (Moayedi & Davis, 2013). The pattern theory suggests that there are no separate systems for perceiving pain, but instead the nerves are shared with other senses (Moayedi & Davis, 2013). The gate control theory (Melzack & Wall, 1965) considers the biological, psychological, and social factors in pain and not simply the medical factors alone.

Melzack and Wall (1965) developed a scientific theory about psychological influence on pain perception, and the theory has spawned a multidimensional approach to pain management. The gate control theory suggests that there is a gating system in the central nervous system that opens and closes to let pain messages through to the brain or to block them. According to the gate control theory, the signal from the brain might include cognitive or emotional factors, such as thoughts, beliefs, emotions, mood, prior experience, expectations, and cultural attitudes; thoughts, beliefs, and emotions may affect how much pain is felt from a given physical sensation. This theory provides an explanation for why someone finds relief by rubbing or massaging an injured or painful area (Melzack & Wall, 1965). Gate control theory is now considered the accepted theory on pain (Kotzer, 2000) and was the theory that guided this study.

Nature of the Study

A correlational cross-sectional survey design was selected for the current study. Correlational cross-sectional studies involve studying groups of individuals in different age groups at the same point in time (Creswell, 2009). I examined the relationship between gender and age (independent/predictor variables) and coping strategies (dependent/outcome variable) among a convenience sample of African American children treated for chronic pain. Data obtained from the study were transferred from SurveyMonkey to the latest version of the Statistical Package for Social Sciences (SPSS). Data were cleaned, and the PCQ subscale scores were computed. The instruments were hand scored, and SPSS Version 22 was used for data analysis. A cross-sectional survey design was appropriate for this study because it provided a snapshot of the outcome and the characteristics associated with it at a specific point in time. Cross-sectional techniques are relatively inexpensive and take little time to conduct while yielding significant amounts of data.

Definitions

Acute pain: Pain that may result from inflammation, tissue damage, injury, illness, or recent surgery and is of short duration, usually lasting less than a week or two. Acute pain usually ends after the underlying cause has been treated or resolved (ISAP, 2012).

Chronic pain: Pain that persists or recurs for more than 3 months, for more than 1 month after resolution of an acute tissue injury, or accompanies a non-healing lesion (ISAP, 2012).

Coping: The process by which an individual consciously exerts effort to moderate thoughts, feelings, behaviors, and physical reactions and adapts to environmental factors with an eye toward alleviating or avoiding anxiety or distress in response to disturbing stimulus (Ayers et al., 2011).

Gender: Social constructs, both biological and physiological, that divide and define men and women (Krieger, 2003; Hiestand & Levitt, 2005).

Pain: "An unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage" (IASP, 1979, p. 248).

Self-efficacy: A person's belief in his or her ability to achieve a desired outcome; a cognitive factor that strongly predicts success in coping with pain and reducing disability (Vranceanu, Barsky, & Ring, 2009).

Assumptions

I assumed that volunteers would be willing to participate and would not be biased, that they would respond truthfully, that they would understand the survey, and that their responses would reflect their real coping strategies. Additionally, I assumed that the instrument was a valid measure of coping in children between the ages of 11 and 18 years. Finally, I assumed that the sample would be representative of African American children and adolescents suffering from chronic pain.

Scope and Delimitations

This study was confined to data gathered from a convenience sample of children and adolescents who met the requirements set forth in the study: (a) male and female children and adolescents between the ages of 11 and 18 who were experiencing chronic

pain from a variety of conditions, and (b) individuals who were participating in a chronic pain management program. Children were recruited through pediatric pain clinics and hospitals. Other children's hospitals were sought as potential sources of patients, listserves, and other venues as backup data collection sites. Only the data from individuals who self-reported as suffering from a chronic pain condition 3 or more months were included.

Limitations

A limitation of this study was that it was cross-sectional and provided no findings as to how these concepts changed over time. Another limitation was that the participants who volunteered may not have given honest answers to the survey, which could have altered the results. Self-report bias is possible in all survey studies because participants may want to respond in a way that makes them look as good as possible. They may tend to underreport behaviors deemed inappropriate by the researcher, and they may tend to overreport behaviors viewed as appropriate (Paulhus & Vazire, 2007). Although some children may have been interested in participating in the study, parents may have chosen not to allow their participation, which could have biased the sample. To minimize researcher bias, I used SurveyMonkey to gather the required data. Only data from African American children and adolescents were collected.

Significance

Studies of how age, gender, and cultural factors shape an individual's experience of pain have yielded mixed findings on the salience and significance of differences between groups, and only a small number of studies have addressed how children handle

recurrent or chronic pain. Fewer studies have focused on sex and age differences in coping techniques among children. Coping can be observed in response to pain, and coping can be learned or unlearned behavior. Very few studies have included sufficient numbers of children or adolescents from different ethnic backgrounds or genders and ages to determine whether differences in pain coping exist (Gibson & Chambers, 2004; Kotzer, 2000; Page & Blanchette, 2009). Further, the coping literature on African American children has shown inconsistent results (Rollman, 2004). Studies of African American children with chronic pain have failed to indicate consistent results for the use of active strategies; some studies have indicated benefits of the use of avoidant strategies (Steward, Steward, Blair, Jo, & Hill, 2008). A better understanding of pain coping strategies is needed to permit assessment and management of children coping with chronic pain (Lynch & Kashikar-Zuck, 2007), particularly African American children and adolescents.

This study focused on the pain coping strategies of African American children who experience chronic pain, regardless of causative factors. This study added to the research on pain coping strategies among African American children ages 11 to 18, as reported by the children. Findings from the study may provide a better understanding of coping strategies and responses to treatment, which may lead to better assessment and management of chronic pain in this group.

Findings from this study may aid in the creation of strategies that will help medical personnel, families, and doctors who treat pain in African American children. Social change may occur when health care personnel, families, and primary care

physicians have a better understanding of the coping strategies used on a daily basis by African American children suffering from chronic pain. Results may contribute to the research on pain coping strategies in African American children, which may inform practice. Findings may also encourage researchers to develop additional coping typologies for the population in this study.

Summary

Approximately 80% of doctor visits are initiated by feelings of pain (Hadjistavropoulos & Craig, 2004). The experience of persistent or chronic pain can greatly inhibit a person's quality of life; individuals who suffer from pain are more likely to miss school or work than their peers who do not report pain (Gibson & Chambers, 2004). Much of the research on the phenomenon of pain has been conducted in adult populations, specifically young and middle-age adults. Elderly adults and children have received much less attention. Lack of exploration of chronic pain in children has been widely acknowledged (Kotzer, 2000). Some studies have suggested that certain factors associated with race and ethnicity may play a role in an individual's experience of pain (Rollman, 2004). More attention was needed regarding the experience of pain among different racial and age groups, and the ways different patients cope with their pain. Although some research has addressed gender differences in pain experience, this needed further study.

African Americans, particularly those who are economically disadvantaged, access and use health care services differently than others (Gaylord-Harden et al., 2011). The perception and report of pain may be culturally determined; it was necessary to better understand these constructs in diverse cultural groups. Chapter 2 presents a review of the existing literature and an overview of chronic pain in children and adolescents.

Chapter 2: Literature Review

Chronic pain in children is a complex phenomenon that may develop spontaneously or after disease, infection, injury, surgery, or from idiopathic causes (Martin et al., 2007). The experience of chronic pain and continuing complaints over long periods of time often follow children into adulthood (Walker et al., 2010). The most common pain complaints in children include "musculoskeletal pain, abdominal pain, headache, neuropathic pain, fibromyalgia, temporomandibular disorders and disease-related pain such as related to sickle cell disease and arthritis" (Huguet & Miró, 2008, p. 228). Children and their families experience significant emotional and social consequences as a result of pain and disability. Although important contributions have been made to understanding the pain experience through theory and research on coping (Walker et al., 2008), recent attention has been on acute and procedural pain and focused primarily on White children (Aldridge & Roesch, 2008).

How a child copes with the pain experience determines and identifies the interplay of internal and external factors that inform the child's perceptions and behaviors (Carter & Threlkeld, 2012; Eccleston, 2006). Generally, coping is the process of dealing with life difficulties in an effort to solve the personal and interpersonal problems, seeking to overcome or work through them (Compas et al., 2006; Gaylord-Harden et al., 2008). Although coping generally refers to positive (adaptive or constructive) strategies, some coping strategies can be considered negative (maladaptive or noncoping) and include dissociation, anxious avoidance, escape, and self-medication (Aldridge & Roesch, 2008, Ayers et al., 2011). Positive or adaptive methods include humor, adequate exercise, sleep,

and seeking social support (Aldridge & Roesch, 2008; Ayers et al., 2011). The importance of the power of positive thoughts, valuing oneself, and expressing emotions cannot be overlooked in helping to respond to life's stresses (Ayers et al., 2011; Skinner & Zimmer-Gembeck, 2007).

This literature review addresses the gap in the literature regarding coping strategies among African American children and adolescents with chronic pain, including research on gender and age differences in this group. The present study was conducted to fill that gap. Following a background of the problem to provide context for the literature review, the chapter focuses on pain research, with a brief overview of the history of pain theory leading into a discussion of the current leading theory of pain. The importance of the age of patients in pain research is also discussed, as are the potential effects of race, ethnicity, and gender. The literature review also addresses the literature on coping, and specifically coping with pain experiences. Ethnicity effects as they have appeared in the coping literature are examined. Comparative analyses of ethnic differences of the pain experience are included.

The purpose of the present study was to examine gender and age differences in coping strategies in African American children with chronic pain. The scarcity of research on minority populations has raised concerns that there may be coping strategies that are specific to minority groups that are not being properly identified. Findings from the present study may guide clinical and research work. Understanding coping in children may help clinicians develop interventions to reduce chronic pain experience. Researchers may study interventions to reduce pain experience in this young population.

Literature Search Strategy

The literature search for this study was conducted using the following databases: Academic Search Premier, MEDLINE, PsycARTICLES, Psychology and Behavioral Sciences Collection, and ProQuest. I also used the Google Scholar search engine and the *Journal of Health Psychology*. The years searched were from 1998 through 2014. The key search words and phrases used singularly or together were the following: *adolescent*, *age*, *African American*, *children*, *chronic*, *coping*, *culture*, *disease*, *Gate Control Theory*, *family*, *gender*, *health*, *illness*, *pain*, *race*, and *ethnicity*.

Theoretical Foundation

Melzack and Wall (1965) developed a scientific theory, gate control theory, about psychological influence on pain perception. The traditional approach to understanding pain consisted of the dualistic perspective, which assumed that the mind and body were separate entities. The emergence of the gate control theory spawned a multidimensional approach to pain management; it argued that the experience of pain is a function of physical, psychological, and environmental factors operating together. The gate control theory suggested that there is a gating system in the central nervous system that opens and closes to let pain messages through to the brain or to block them. According to the gate control theory of pain, the signals from the brain might include cognitive or emotional factors, such as thoughts, beliefs, emotions, mood, prior experience, expectations, and cultural attitudes (Melzack & Katz, 2004). People's thoughts, beliefs, and emotions may affect how much pain they feel from a given physical sensation (Beatty, Kamarck, Matthews, & Shiffman, 2011; Chatters, Taylor, Jackson, & Lincoln,

2008). One of the most critical contributions of gate control theory was that it highlighted the influence of the psycho-emotional and psychosocial facets of the pain experience (Kotzer, 2000; Melzack & Katz, 2004).

Various factors influence pain. The biopsychosocial model (Voerman et al., 2012) states that "pain is caused by a complex interaction between biological (e.g., genetics), psychological (e.g., attention), and social variables (e.g., role models)" (p. 2). Pain is not simply a matter of biological functioning gone awry, but is an experience situated in a personal and environmental context (Voerman et al., 2012). This suggests in part why such vast differences exist in human distress related to pain (Voerman et al., 2012). The emerging consensus on pain experience includes professional disciplines such as genetics, molecular biology, neurology, neuropsychology, pharmacology, and other biological sciences, as well as the range of emotional, behavioral, and social sciences (Voerman et al., 2012). The gate control theory moved past Descartes's formulation of a single and straightforward pain process toward what has been described as a "dynamic interlocking series of biological reactive mechanisms" (Deleo, 2006, p. 59). Although many aspects of these dynamic, interlocking mechanisms remain to be explored, the current field of pain research generally maintains that peripheral, spinal, and supraspinal elements have a complicated interplay in shaping pain experience (Manchikanti, 2007). Gate control theory is now considered the accepted theory on pain (Kotzer, 2000) and there are virtually no competing theories. The gate control theory was used to guide the current study.

Children and Pain

Chronic pain is a significant problem in the pediatric population (Luffy & Grove, 2003; Palmer & Shepard, 2008). Although research is more commonly focused on pain in adults and particularly in elderly adults, pain is a common experience of childhood (Hadjistavropoulos & Craig, 2004). Research has demonstrated that approximately 15% of school-age children reported experiencing musculoskeletal pain, while three quarters of students reported periodic abdominal pain with 13-15% of this group stating their abdominal pain was a weekly occurrence (Hadjistavropoulos & Craig, 2004).

Perquin et al. (2000) studied the prevalence of pain and the relationship with age, gender, and pain in a population of Dutch children and adolescents ages 0 to 18 years. Perquin et al. found that limb pain, headache, and abdominal pain were the most common types of pain. Girls experienced more types of pain, girls reported a higher intensity of pain, girls reported multiple and severe pains more often, and pain rates tended to increase with age (Perquin et al., 2000). These findings indicated that chronic pain is a common complaint in childhood and adolescence.

Perquin et al. (2003) performed a follow-up study of the same cohort of children identified in the previous population-based prevalence study. Repeatedly annually for two years, the study was designed to assess the course of chronic pain in childhood and adolescence (Perquin et al., 2003). Perquin et al. found that chronic pain in childhood and adolescence remained common and seemed to persist in a considerable proportion (30-45%) of the population, remaining stable over time. Pain generally did not deteriorate over time (Perquin et al., 2003).

King et al. (2011) performed a review of pain studies and categorized them according to the type of pain investigated. The studies included abdominal, back, headache, combined with general pain (King et al., 2011). King et al. found that headache pain (23%) was the most common pain studied. Girls experienced more pain types, and rates tended to increase with age; however, gender differences were not addressed (King et al., 2011).

Research has demonstrated that abdominal pain, headache, and limb and back pain appear to be the more prevalent in children and adolescents, with abdominal pain prevalence highest in early years (5 to 6 years of age) and headache and limb and back pain more prevalent in later years (Gibson & Chambers, 2004). Many questions remain as to whether children experience and process pain differently and whether they manifest significantly different coping styles — there is indication that they do — and how these experiences may be shaped by chronological and developmental level (Gibson & Chambers, 2004; Kotzer, 2000; Page & Blanchette, 2009) and gender effects (Ayers et al., 2011; Gibson & Chambers, 2004; Kaczynski, Claar, & Logan, 2009). Despite the prevalence of pain and pain type in children and given the complexity of the pain phenomenon, the study of pain and how children cope with the pain experience remains relevant for children (Page & Blanchette, 2009; Palmer & Shepard, 2008).

Coping

Coping is defined as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (Lazarus & Folkman, 1984, p. 141). Early coping

research and theory focused on the use of specific defense mechanisms in response to distress. Defense mechanisms were seen as stable aspects of a person's personality that dictated consistently adaptive or maladaptive responses to stressful events.

Coping is the process by which an individual consciously exerts effort to moderate thoughts, feelings, behaviors, and physical reactions and adapt to environmental factors with an eye toward alleviating or avoiding anxiety or distress in response to disturbing stimulus (Compas et al., 2006). Research has addressed coping styles, providing evidence of effective and ineffective coping strategies. There has been compelling support for the usefulness of support-seeking strategies and active coping strategies, as well as some distraction strategies in moderating stress and anxiety effects in children and adolescents (Ayers et al., 2011); conversely, avoidance coping strategies (such as suppressing or denying stressors) have been shown to be detrimental to children and adolescent's healthful development (Gaylord-Harden et al., 2008). The relationship between coping and well-being that has been supported in the current literature illustrates the vital role coping plays in physical and psychological health (Compas et al., 2006).

Compas et al. (2006) explored coping strategies employed by adolescents living with chronic pain. Compas et al. surveyed 164 teenagers between the ages of 11 and 18 who suffered from recurrent abdominal pain. The participants were mostly Caucasian, 94% and female, 54.9% (Compas et al., 2006). Based on the responses of both the adolescents and their parents about the adolescent's pain condition and coping styles, Compas et al. identified three primary coping strategies in evidence in the population. Compas et al. termed one *primary control engagement coping* (capturing problem solving

behavior and cognitions, emotional expressiveness, emotional regulation.) The next was termed *secondary control engagement coping* (positive thinking, positive restructuring, distraction and acceptance as coping mechanisms), and the final was *disengagement coping* (avoidance, denial, and wishful thinking cognitions (Compas et al., 2006).

Compas et al. (2006) observed that the employment of disengagement, or passive, coping strategies correlated with increases in somatic (physical) symptoms as well as psychopathological conditions. Compas et al. further noted a correlation between disengagement strategies and higher rates of psychopathological conditions as well as an increase in somatic complaints. These echoed similar research findings that catastrophizing cognitions in children and adolescents with chronic pain linked to reports of greater pain severity and increased somatic symptoms and psychopathological conditions (Page & Blanchette, 2009; Simons, Claar, & Logan, 2008; Vervoort, Goubert, Eccleston, Bijttebier, & Crombez, 2006). Conversely, secondary control engagement coping mechanisms were shown to track with less psychopathological conditions and fewer somatic conditions (Compas et al., 2006).

Walker, Baber, Garber, and Smith (2008) identified six coping profiles they used to characterize the coping behaviors observed in a population of about 700 children between 8 and 18 years of age who suffered from chronic (abdominal) pain. Divided into two samples (n for Sample 1 = 311; n for Sample 2 = 388), the majority of the patients were female (Sample 1: 57%; Sample 2: 61%) and Caucasian/white (Sample 1: 95%; Sample 2: 91%) (Walker et al., 2008). The remaining participants were African American (4% each sample) or other/unknown (Walker et al., 2008). The six profiles were

identified by how the children responded to pain and were identified as *avoidant copers* (withdrawing from social contact and being stoic), *dependent copers* (reach out to others for support), *self-reliant copers* (acceptance, self-encouragement and pain minimization behaviors and cognitions), *engaged copers* (self-encouragement, distraction and problem solving), *infrequent pain copers* (few if any pain coping strategies), and *inconsistent copers* (coping behaviors seemingly in contradiction with one another (Walker et al., 2008).

Findings were consistent with those of Compas et al. (2006) (also Walker et al., 2006). Pain catastrophizing cross-loaded on active and passive higher order coping factors, suggested that catastrophizing served as a form of disengagement (a passive function) or as an appeal for help (an active function) (Walker et al., 2006). Walker et al. (2008) noted that the dependent copers profile showed the highest concentration of females (74.1% of that group) while the lowest concentration of girls was in the self-reliant group (46.4%). As for age, engaged copers had the highest concentration of the youngest children while the oldest/adolescents were represented at the highest level in the avoidant copers group (Walker et al., 2008).

Coping and Socioeconomic Status

Although not a specific factor in this study, the role of socioeconomic influence on pain and coping is cited with some regularity in the literature. Beatty, Kamarack, Matthews, and Shiffman (2011) reported on a study comparing psychosocial resources seen in Black and White subject samples. Using a sample of 342 middle-age African American (n = 49) and Caucasian (n = 293) adults, the objective was to determine

whether lower childhood socioeconomic status (SES) was associated with fewer psychosocial resources independent of adult SES, and whether these associations differed by race/ethnicity (Beatty et al., 2011). Beatty et al. found that the condition of low socioeconomic status in childhood had a more lasting and significant impact on Black Americans than on similarly matched non-Hispanic White Americans, regardless of their adulthood socioeconomic status levels. Black adults who came from impoverished childhood backgrounds reported fewer social supports and lower coping skills (also Chester, Jones, Zalot, & Sterrett, 2007), even when they had achieved higher socioeconomic status as adults, than did Black adults who had moderate to high socioeconomic childhood backgrounds, and White adults from both low and high socioeconomic backgrounds.

Individuals from impoverished economic backgrounds often have more limited educational opportunity than those from middle and upper-class backgrounds (Finnegan, Shaver, Zenk, Wilkie, & Ferrans, 2010). Higher education levels frequently correlated with greater information awareness and sense of efficacy and control (Finnegan et al., 2010; Frey, Ellis, Templin, Naar-King, & Gutai, 2006) and some research has suggested that lower education levels correlated with greater pain experience (Miller & Cano, 2009). Given that African Americans are disproportionately represented in low socioeconomic populations, they may be more subjected to the negative health effects associated with impoverished conditions (Martin et al., 2011; McIlvane, 2007).

Furthermore, members of marginalized or minority communities have been prone to aggravated stress levels requiring significant coping, due to the experience of latent or

overt expressions of discrimination or bias in their daily lives (Compas et al., 2006). Populations living in low-income communities have been confronted with an array of stressors that are rarely accounted for in research conducted with middle and upper-class subject populations (Gaylord-Harden et al., 2008; see also Gaylord-Harden et al., 2010; 2011). It is postulated that this may be because many of the stressors in environments marked by chronic poverty are uncontrollable, making active strategies that are effective in other groups (Compas et al., 2006; see also Gaylord-Harden et al., 2008, 2010, 2011) a maladaptive response for low income youth, and may actually exacerbate the effects of these negative circumstances (Ayers et al., 2011; Compas et al., 2006; see also Gaylord-Harden et al., 2008, 2010, 2011) .

Coping and African American Youth

The idea "that coping behavior is a mediator between stress and psychological well-being, illustrate the importance of examining how the African American community copes with stressors" (Forsythe, 2010, p.12). However, as previously noted, there are only a few studies that have focused specifically on African America youth and coping (Buser, 2009; Gaylord-Harden et al., 2008; Laster et al., 2009). The minimal representation of these adolescents within stress and coping research has been a cause for concern (Aldridge & Roesch, 2008; Buser, 2009). For the literature that is available, noted differences are apparent from those that have been found in studies of Caucasian adolescents; some of these differences have been attributed to different research designs and different measures of coping (Buser, 2009; Gaylord-Harden et al., 2008; Laster et al., 2009).

Landis et al. (2007) explored the coping strategies used with uncontrollable chronic stressors. The study population was a diverse sample of racially and ethnically sixth through eighth grade students from families of low-income socio-economic status. The study consisted of 796 students, 442 females and 354 males (Landis et al., 2007). It was comprised of 64.6% African Americans, 12.1% Hispanic, 10.9% Asian, 5.5% European American, 3.4% Mixed, 1.6% American Indian, and 1.9% other (Landis et al., 2007). Landis et al. found that African American youth, specifically males, reported greater use of support-seeking coping strategies, active and distraction forms of coping, in reaction to chronic and uncontrollable stressors as compared to females. Low-income African American males who reported high use of support-seeking coping strategies experienced high internalizing symptoms as a response to chronic uncontrollable stressors (Landis et al., 2007). Landis et al. found that those youth who utilized lower levels of support-seeking coping experienced lower internalizing symptoms as a response to chronic, uncontrollable stressors. This may have occurred in part because active coping strategies encompass both strategies that act upon the stressor and the adolescent's adaption to the stressful situation (Ayers et al., 2011). Support-seeking coping is typically seen as an adaptive type of coping for youth (Compas et al., 2006), support seeking can have protective effects for youth exposed to certain types of stressors, but not others Landis et al., 2007). The adaptiveness of the coping strategies may well depend on how coping strategies match the demands of the stressor or the youth (Ayers et al., 2011; Landis et al. 2007).

While the researchers noted that other studies have indicated these two coping patterns are not mutually exclusive, the Gaylord-Harden et al. (2008) population demonstrated notably high rates of both. Gaylord-Harden et al. speculated that these children might have learned adaptive avoidance strategies as an effective way to manage in a risky environment with numerous potential dangers. In this way, avoidant coping strategy would be reflective of an active coping strategy in that the children consciously employed avoidance techniques as a way of negotiating dangerous situations (Gaylord-Harden et al., 2008). Overall, Gaylord-Harden et al. found evidence that two primary coping styles could be identified for their population – the first they described as a pattern of "self-reliant avoidant" coping and the second was a pattern of "diversified" coping, employing the range of coping strategies.

Mosher and Prelow (2007) reported similar findings that avoidant coping in African Americans appeared to have a positive, mitigating relationship. Mosher and Prelow examined approach and avoidant coping and coping efficacy among 192 African Americans and 114 European American urban adolescents. Mosher and Prelow found that among the African American sample, avoidance-oriented coping was related to coping efficacy whereas among the European American sample, approach-oriented coping was found to be related to coping efficacy. Edlynn et al (2008) examined various coping strategies as either protective or vulnerability factors for 240 African American adolescents who had been exposed to community violence. In contrast to the Mosher Prelow study reported above, Edlynn et al. found that approach-oriented coping (similar

to active coping) was neither a protective factor nor a vulnerability factor for their sample.

Chandra and Batada (2006) conducted a mixed methods study with 26 African American ninth graders living in poverty in East Baltimore, MD. Chandra and Batada examined and assessed the role of unmanaged stress during early adolescence, exploring perceptions of stress, sources of social support, and the use of coping strategies. Results showed that most teens used avoidance type coping to stay away from the problems they faced (Chandra and Batada, 2006). Girls reported more frequent use of support-seeking and active coping strategies than boys. Boys used avoidance and distraction coping.

The paucity of research on minority populations has brought about concerns that there may exist features of coping that are specific to minority groups that are not being properly identified (Kotzer, 2000). Gaylord-Harden et al. (2008) sounded a cautionary note about race comparative studies saying that they may inadvertently simplify distinctions and fail to capture the complexity of within-group responses, glossing over coping differences within a studied population and favoring a more global interpretation of results. Findings for race comparative studies may also be confounded by the researcher's perceptions and framing of findings (Gaylord-Harden et al., 2008; Landis et al., 2007). For this reason, the present study focused on the limited amount of literature that is currently available on the understanding of pain coping strategies of African American children who are low income.

Coping and Age

As greater understanding of the pain experience was realized, exploration of the pain experience was expanded. This in large part reflected the influence of gate control theory in providing a grounded framework for considering the potential effects of developmental and age-related factors (Gibson & Chambers, 2004). Kotzer (2000) suggested that there may be a misapprehension about the importance of chronological age and that children's developmental level or their experiences may play a more meaningful role in shaping their pain responses and perceptions. Kotzer cited a number of studies that have shown significant and non-significant age-related effects for children experiencing pain. In some studies, the younger the child the lower the tolerance to pain. Other research has indicated that older children (adolescents) have reported very low pain tolerance (Kotzer, 2000).

Wilson, Pritchard, and Revalee (2004) examined the relationship between coping and health symptoms in a sample of 546 adolescents 10-19 years of age. They found that emotion-focused coping strategies were related to the reporting of more health symptoms. They found problem-focused coping strategies to be related to fewer depressive symptoms and avoidant-oriented coping strategies to be related to more depressive symptoms (Wilson et al., 2004). Ebata and Moos (1991) examined the coping responses of adolescents 12-18 years of age and the relationship between these coping responses and overall adjustment. Of 510 participants, there were a total of 343 boys and 167 girls, from rural (n = 123) and urban (n = 387) schools with diverse student populations (Ebata & Moos, 1991). Ebata and Moos found that approach-oriented coping led to high levels

of overall well-being as well as lower levels of distress. Ebata and Moos noted that the use of avoidant-oriented strategies such as resigned acceptance and emotional discharge to be related to higher levels of distress. Ebata and Moos found that adolescents with emotional and/or behavior problems were more likely to utilize avoidant-oriented coping strategies.

Gibson and Chambers (2004) found that younger children are less likely to use cognitive strategies. The greater use of cognitive strategies is most likely to be used by older children. Older children tend to engage in greater cognitive-based coping strategies in dealing with chronic pain than younger children (Gibson & Chambers, 2004). There has been compelling research that adolescents engage in more emotion-centered coping – specifically in terms of employing avoidance as a strategy than is seen in children in their middle years (approximately ages 8 through 12) (Page & Blanchette, 2009). The research speculation on this finding has been that adolescents reported greater prevalence of chronic pain and that emotion-centered avoidance may have reflected the difficulties these older children have in managing their pain experience (page & Blanchette, 2009).

In a study with a sample of 275 children 11-18 years of age, Hechler et al. (2010) found that coping strategies became more fully developed with age. The relationship between coping and well-being that has been supported in the current literature illustrated the vital role coping played in both physical and psychological health (Hechler et al., 2010). One problem with the current coping literature was its generalizability to diverse populations (Gibson and Chambers, 2004; Kotzer, 2000). The majority of studies has focused primarily on Caucasian samples. The next step was to examine the limited

amount of literature that was currently available on the effects of coping in diverse populations.

Gender Differences

Gender differences in pain-related coping has been widely reported and it is now well established that there are significant differences in the way men and women cope with pain (Logan, Simons, Stein, & Chastain, 2008). However, the studies are few regarding gender differences in children and how recurrent chronic or current pain is handled and, as noted by Lynch and Kashikar-Zuck (2007), developmental variation in coping may complicate any gender differences found in coping.

Some of the research on coping has suggested that males and females engaged different coping strategies given certain conditions and circumstances (Kaczynski, Claar, & Logan, 2009). Several studies have indicated that both White and African American male youths engaged in more avoidant and distraction coping strategies than their female peers, while females employ more support-seeking techniques in their coping (Gaylord-Harden et al., 2008). In a study of coping strategies of African American youth, Chandra and Batada (2006) found that males used avoidant strategies such as distraction more often than females and females used approach strategies such as support seeking more than males. Landis et al. (2007) found that African American males used active distraction forms of coping more than females. Gender difference had been found in Caucasian samples of males using avoidant coping strategies more frequently than females and females using approach coping strategies more than males had also been found in samples of African American youth (Gaylord-Harden et al., 2008).

Summary

Up until the mid-20th century, pain theory had been driven by a biological focus on the anatomy of pain (Melzack & Katz, 2004). Pain was understood to be an experience of the physical body created by a "straight-through sensory projection system" grounded in connections in neuropathways triggering recognition in a presumed "pain center in the brain," (Melzack & Katz, 2004, p.14). Gate control theory highlighted the influence of the psychological, emotional, and psychosocial facets of the pain experience (Kotzer, 2000). Pain is not simply a matter of biological functioning, but an experience situated in a personal and environmental context. Gate control theory represents a more comprehensive explanation for the individual's pain experience. The gate control theory of pain allows for the consideration of psychological variables such as perception of control, depression, anxiety, and how pain is conceived of and experienced by the individual (Thomas, Wilson-Burnet, & Goodhart, 1998). It is the theory that guided my research.

There is general acknowledgment in the literature that there has been insufficient study of pain issues in populations of children (Kotzer, 2000). Researchers and practitioners express concern that applying adult models of pain and coping to the experience of children may not be effective in identifying or describing children's experiences (Eccleston, Bruce, & Carter, 2006; Gibson & Chambers, 2004). In order to ensure that children are receiving the best care possible it is critical that the potential for childhood differences in pain experience and coping strategies receive greater research attention (Kaczynski et al., 2009). This is especially so in an African American

population, where a gap exists in the search literature. Chapter 3 describes the methodology used and the research questions. The chapter includes a description of the sample population, procedures, instruments used, and analysis of the data.

Chapter 3: Research Method

Chapter 3 includes a description of the study's design, sample, instrumentation, data analysis, and ethical considerations. The study's design includes a rationale for why this particular design was selected. The sample characteristics and size are presented as well as a description of the measures used. The data collection and analysis process is also discussed. The purpose of this quantitative, correlational, cross-sectional study was to examine gender and age differences in coping strategies among African American children with chronic pain.

Research Design and Rationale

A quantitative cross-sectional survey design was used for this study. The design was chosen based on a careful review of existing pain coping research. The relationships between gender and age differences (independent/predictor variables) and coping strategies (dependent/outcome variables) were examined. Correlational cross-sectional studies involve studying groups of individuals in different age groups at the same point in time (Creswell, 2009). A cross-sectional survey design was appropriate for this study because it provided a snapshot of the outcome and the characteristics associated with it at a specific point in time. Cross-sectional survey techniques used to gather data are relatively inexpensive and take little time to conduct, while yielding significant amounts of data. A survey design was the most appropriate design for this study because of the potential for a fast turnaround for data collection and a better opportunity for a larger sample of participants.

Participants

The population to be studied was a convenience sample of African American male and female children and adolescents between the ages of 11 and 18 who had been experiencing chronic pain from a variety of conditions. The sample size for a quantitative study is determined by a statistical test that includes effect size, power, and level of significance (Cohen, 1988). I conducted a G* Power 3 power analysis statistical for an *F* test-ANOVA using a medium effect size ($d = 0.25$) with α level of 0.5 and power of 0.80 (see Faul, Erdfelder, Lang, & Buchner, 2009), and determined that at least 98 participants were needed. Although 98 participants were planned for the study, 44 participants volunteered and no more could be recruited.

Procedures

The institutional review board (IRB) at Walden University approved this study (10-14-16-0082842). Children and adolescents who were diagnosed with chronic pain were recruited through pain clinics and online support groups. Permission was received from the director of the pain clinic and/or online support groups to conduct this study.

Other children's hospitals were considered as potential sources of patients, listserves, and backup data collection sites. All of these potential data collection sites were included in the IRB proposal. Given the difficulties associated with recruiting African American patients for research purposes (Shaghaghi, Bhopal, & Sheikh, 2011), especially when focused on children, no specific pain condition was chosen so as to not limit access to willing participants. Although this approach may have introduced variability, it was necessary given the limited options for data collection. Pain conditions

included but were not limited to back pain, neck pain, headache and joint pain, nerve pain, arthritis, and any other chronic pain conditions. Participants met the following eligibility criteria: (a) experiencing chronic pain over at least a 3-month period and (b) able to read and write well enough to fill in the questionnaires on their own.

The directors of the data collection sites were given a package of materials regarding the study (i.e., a description of the study, informed consent/assent, recruitment flyer, Demographic Questionnaire) for review. A recruitment flyer was presented to the parents of all patients coming for treatment explaining the nature of the study and indicating that a PhD candidate at Walden University was conducting the study. My contact information was provided in the flyer.

I used SurveyMonkey to gather the requested data. A statement of informed assent was included at the beginning of the survey. The nature of the study was also explained. Individuals were informed that their participation was voluntary and that they were free to quit the study at any time. To maintain participants' anonymity, no personal identifying information, including the individual's IP address, was obtained during the study.

To protect the participant's identities and maintain anonymity, the SSL encryption feature was enabled to protect pathways between participants' computers and Survey Monkey's servers. Survey responses were captured through Survey Monkey using a secured encrypted connection to ensure privacy and anonymity of responses. Additionally, IP addresses were masked to protect participants' identifying information.

The participants completed a Demographics Questionnaire and the Pain Coping Questionnaire on SurveyMonkey.

Participants were able to participate in the research study using their personal computers. There were minimal risks for the participants, which could have included minimally invasive questions that could have been uncomfortable for some participants to answer. On the last page of the survey, participants were presented with a letter of gratitude for completion.

Instruments

I created a Demographic Questionnaire to collect information regarding the participant's age, gender, education, ethnicity, and location of pain (Appendix A). The Pain Coping Questionnaire (PCQ; Reid, Gilbert, & McGrath, 1998) was also used. I requested and received a copy of the PCQ after contacting Dr. Reid via e-mail regarding the availability of the instrument for review. Permission to use the instrument in this study was granted by Dr. Reid.

The PCQ was used in the assessment of pain coping strategies and efficacy for the population. The PCQ is one of the few comprehensive questionnaires available to measure pain coping strategies among children and adolescents. The PCQ has been validated with healthy samples and with children and adolescents with recurrent pain. Internal consistency reliability is acceptable for research purposes. The PCQ includes 39 self-report items (Reid et al., 1998) previously validated for use with children. Rapoff (2003) noted this instrument is the most useful for examining pain among children and adolescents. Responses are recorded in a 5-point scale (1 = never, 2 = hardly ever, 3 =

sometimes, 4 = often, and 5 = very often). Higher scores indicate greater use of a coping strategy. The instrument has good reliability, with the eight subscales ranging from 0.78 to 0.86. Sample items for coping strategies subscales include (a) information seeking—asking a nurse or doctor questions; (b) problem solving—think about different ways to deal with the problem, (c) seeking social support—talking to someone about how I'm feeling, (d) positive self-statements—say to myself things will be ok, (e) behavioral distraction—do something fun, (f) cognitive distractions—put it out of my mind, (g) internalizing/castrophizing—think that nothing helps, and (h) externalizing—argue or fight (Reid et al., 1998). All correspondence between the researcher and Dr. Reid is available upon request.

Research Questions and Hypotheses

The present study addressed the following research questions and hypotheses:

RQ1: What are the most frequently used coping strategies to deal with pain by African American children who experience chronic pain?

H_o1: African American children with chronic pain do not use more emotion-focused coping strategies for chronic pain than approach or distraction.

H_a1: African American children with chronic pain use emotion-focused strategies for chronic pain more than approach or distraction.

RQ2: Do the coping strategies of African American children with chronic pain differ by age?

H_o2: Coping strategies of African American children with chronic pain do not differ by age.

H_a2: Coping strategies of African American children with chronic pain differ by age.

RQ3: Do the coping strategies of African American children with chronic pain differ by gender?

H_o3: Coping strategies of African American children with chronic pain do not differ by gender.

H_a3: Coping strategies of African American children with chronic pain differ by gender.

Data Analysis

The independent variables were gender and age; the dependent variable was coping strategies. The data obtained from the questionnaires were transferred from SurveyMonkey to the latest version of SPSS. Data was cleaned, and the PCQ subscale scores were computed. The instruments were hand scored, and SPSS Version 22 was used for data analysis.

Descriptive statistics were computed for all of the demographic and coping-related data, including frequencies, means, and standard deviations for the questionnaire items. Pearson correlation, repeated measures analysis of variance (RM-ANOVA), and multivariate analysis of variance (MANOVA) were performed to examine associations, differences, and relationships between variables. A RM-ANOVA was conducted to test Hypothesis 1 to determine whether there were greater levels of emotion-focused coping than approach or distracting coping used when the stressor was present. For Hypothesis 2, correlational analysis was used to evaluate the strength of the relationship between

coping strategies and age. A correlation coefficient was used to measure the strength and direction of the relationship. Hypothesis 3 was measured using a MANOVA to determine whether coping strategies differed by gender.

Demographic information was presented as percentages describing age, gender, education, ethnicity, type of pain being experienced, illness or condition causing pain/diagnosis, duration of pain, and location of pain, as well as means, modes, ranges, and standard deviations for the PCQ scores. The specific hypotheses to be tested were the following:

H_o1: African American children and adolescent with chronic pain do not use emotion-focused coping strategies for chronic pain more than approach or distraction as assessed by the PCQ. This will be tested with one repeated measures ANOVA (RM-ANOVA).

H_o2: Coping strategies of African American children and adolescent with chronic pain do not differ by age as assessed by the PCQ. This will be tested with correlation analysis.

H_o3: Coping strategies of African American children and adolescent with chronic pain do not differ by gender as assessed by the PCQ. This will be tested using multivariate analysis of variance (MANOVA).

Threats to Validity

This research used nonexperimental quantitative cross-sectional design. The participants studied was a convenience sample of African American male and female children and adolescents between the ages of 11 and 18 who had been experiencing

chronic pain from a variety of conditions. They were recruited through the pain clinics and online support groups. The generalizability of the findings was limited to the participants that were being treated at the clinic and/or online support group, as African American children and adolescents who were from other social economic or geographical areas may rely on different coping strategies due to type and number of stressors encountered. This study cannot establish causation between the independent and dependent variables because the data consists of self-report surveys collected at one time point.

Ethical Issues

The institutional review board (IRB) at Walden University approved this study. Discussion included the procedures for participation in this study, the voluntary nature of the study, risks and benefits of participating in the study, confidentiality issues, participant's right to anonymity, and a way to contact the researcher with any questions. The information sheet and informed consent and assent form stated that participation was anonymous and that all records in this study would remain confidential. Only the researcher and his chair would have access to these records. The informed consent and assent form described the procedures for completing the study including descriptions of the purpose for the study. Participants were notified that there was no obligation to complete any part of the study in which they may have felt uncomfortable or any discomfort. Participants were advised that there were no potential short-or-long-term risks, and that they had the freedom to withdraw from the study whenever they wanted.

Participants' responses were collected, analyzed, and kept in a password-protected database. Data collected through SurveyMonkey was not utilized for purposes other than for the study per the websites strict privacy policies (SurveyMonkey, 2014). Access to the data was limited solely to the researcher and his chair. Copies of the data set will be kept for five years and the will be discarded.

Summary

A description of the methodology that was used and the research questions addressed were presented. A rationale for the study's design was provided. A description of the study's design, sample size, instrumentation, data analysis, and ethical consideration were also included. Sample characteristics and a description of the measures used were included. The data collection process and analysis were discussed. The results of the research are in Chapter 4 and a discussion of the results follows in Chapter 5.

Chapter 4: Results

Chapter 4 includes the results of the research. The results are presented in a descriptive (textual) format as well as in tables. The results are divided into four sections: (a) Introduction, which includes a brief overview of the study purpose, research questions, and statistical hypotheses; (b) Data Collection, which includes information about the population and descriptive findings or the collected sample; (c) Results, which includes the assumptions related to inferential analysis, presentation of findings for the inferential analyses, and tests of hypotheses; and (d) Summary, which provides an overview of the findings and a segue to the Chapter 5. SPSS Version 22 was used for all descriptive and inferential analyses. The inferential analyses were tested at a 95% level of significance.

The purpose of this quantitative, correlational, cross-sectional study was to examine the relationships between gender and age differences (independent/predictor variables) and coping strategies (dependent/outcome variables) in a group of African American children ages 11 through 18, with chronic pain. Gender and age differences are reported in adult pain and coping literature; however, little attention has been given to possible differences in coping strategies in African American children (Rahim-Williams et al., 2007). The following research questions and hypotheses were investigated:

RQ1: What are the most frequently used coping strategies to deal with pain by African American children who experience chronic pain?

H_o1: African American children with chronic pain do not use more emotion-focused coping strategies for chronic pain than approach or distraction.

H_a1: African American children with chronic pain use more emotion-focused strategies for chronic pain than approach or distraction.

RQ2: Do the coping strategies of African American children with chronic pain differ by age?

H_o2: Coping strategies of African American children with chronic pain do not differ by age.

H_a2: Coping strategies of African American children with chronic pain differ by age.

RQ3: Do the coping strategies of African American children with chronic pain differ by gender?

H_o3: Coping strategies of African American children with chronic pain do not differ by gender.

H_a3: Coping strategies of African American children with chronic pain differ by gender.

Data Collection

Population and Descriptive Findings

The sample of participants ($N = 44$) was collected via a convenience sample from a population of male and female African American children and adolescents between the ages of 11 and 18 who were experiencing chronic pain from a variety of conditions. The children and adolescents were recruited through pain clinics and online support groups. Participants completed the Demographic Questionnaire and PCQ survey online through SurveyMonkey. At least 98 participants were planned for the study to meet the power

analysis calculations for a sufficient sample size. However, only 44 participants volunteered, and no more could be recruited. Telephone calls and site participation letters were sent to other children's hospitals.

Some changes were made from the plan presented in Chapter 3. The descriptive data for the eight coping subscales of the PCQ included medians instead of modes. Modes are typically used with frequency count data, and the PCQ coping subscales were continuous in scale. Therefore, a median is a better descriptive statistic for continuous data. Deviations from the methods of statistical analysis also included a change in some of the inferential tests. A chi-square test was originally considered, but it was not needed to address the research questions and hypotheses. A one-sample *t* test was planned to test Null Hypothesis 1. However, three higher-order coping strategies of (a) emotion-focused (b) approach, and (c) distraction were tested. Because there were three higher-order coping strategies and the scores for all three higher-order coping strategies were obtained from the same 44 participants, a repeated measures ANOVA (RM-ANOVA) was used instead of one-sample *t* tests. The RM-ANOVA accounted for the repeated measurement on the same participants while comparing the three higher-order coping strategies in one test (see Gravetter & Forzano, 2012; Gravetter & Wallnau, 2009).

The participants ranged in age from 11 to 17 years (M = 14.41 years, SD = 1.86 years). The time that the participants had been in pain ranged from 1 to 60 months (M = 14.49 months, SD = 15.79 months). Table 1 includes the frequency counts and percentages for the demographic variables of gender and grade level. Fifty-nine percent

of the sample was female, and more than half of the participants (52%) were in Grades 10 through 12.

Table 1

Frequency Counts and Percentages of Demographic Variables for the Study Participants (N = 44)

Variable/Classification	Freq.	%
Gender		
Female	26	59.1
Male	18	40.9
Grade level		
5th grade	1	2.3
6th grade	6	13.6
7th grade	2	4.5
8th grade	6	13.6
9th grade	6	13.6
10th grade	13	29.5
11th grade	9	20.5
12th grade	1	2.3

Note. Freq. = frequency count; % = percentage of group.

Table 2 includes the frequency counts and percentages of the location and type of pain for the participants. One-quarter (25%) of the participants (11) had stomach pain; 22% (10 participants) had pain in their head and/or ears; or, in an extremity, defined as the arms or legs 20% (9 participants). Nine participants (20%) also had pain caused by an injury, strain, or muscle pull. Seven participants (15%) had joint pain. Eighteen percent of participants (8) noted an aching pain, and about 11% (5) noted a stabbing or stinging pain. Twenty-seven percent (12 participants) were classified as having other or nonspecified pain.

Table 2

Frequency Counts and Percentages of Location and Type of Pain for the Study Participants (N = 44)

Variable/classification	Freq.	%
Location of pain		
Back	3	6.8
Body	1	2.3
Bone	1	2.3
Extremity (arms and/or legs)	9	20.4
Head and/or ears	10	22.7
Joint	7	15.9
Muscle	2	4.5
Stomach	11	25.0
Type of pain		
Ache	8	18.2
Burning	2	4.5
Cramping	4	9.0
Injury/strain/muscle pull	9	20.4
Numbness	2	4.5
Pounding	2	4.5
Stabbing/stinging	5	11.4
Other pain, not specified	12	27.3

Note. Freq. = frequency count; % = percentage of group.

Results

Instrumentation

I created the Demographic Questionnaire created to collect information regarding the participants' ages, gender, education level, and location and type of pain (Appendix A). The Pain Coping Questionnaire (PCQ; Reid et al., 1998) was also used. The frequency counts and percentages from the demographic survey are presented in Tables 1 and 2.

The PCQ was used in the assessment of pain coping strategies and efficacy for the participants. The PCQ includes 39 self-report items and was previously validated for use with children. Rapoff (2003) noted that this instrument is the most useful for examining pain among children and adolescents. Responses to each of the 39 survey items were recorded in a 5-point rating scale (1 = never, 2 = hardly ever, 3 = sometimes, 4 = often, or 5 = very often). Higher scores were indicative of greater use of a coping strategy. The PCQ contains three higher-order scales of emotion-focused, approach, and distracting. The 39 items of the PCQ can also be organized in eight coping strategy subscales of (a) information seeking—asking a nurse or doctor questions; (b) problem solving—think about different ways to deal with the problem, (c) seeking social support—talking to someone about how I'm feeling, (d) positive self-statements—say to myself things will be ok, (e) behavioral distraction—do something fun, (f) cognitive distractions—put it out of my mind, (g) internalizing/castrophizing—think that nothing helps, and (h) externalizing—argue or fight (Reid et al., 1998). The three higher-order scales were used to address Null Hypothesis 1. The eight coping strategy subscales were used to test Null Hypotheses 2 and 3.

Internal consistency of a survey with the respondents' answers in a sample can be assessed with Cronbach's coefficient alpha. A Cronbach's alpha value of .70 or greater indicates adequate reliability of an instrument with the data collected (Field, 2013). With the exception of the coping subscale of cognitive distraction ($\alpha = 587$), all Cronbach's alpha coefficients were above the .70 cutoff. According to Field (2013), a lower Cronbach's coefficient alpha can be expected for measures in the field of psychology or

social sciences. Also, Cronbach's alpha coefficients are sensitive to sample size and the number of items constituting a given construct. The sample size was smaller than desired for this study. Additionally, the cognitive distraction coping subscale included only five items. However, the smaller sample size and small number of items were also present in computation of the other coping subscales. The PCQ instrument has been used in many studies with varied populations and has shown good reliability. Therefore, despite a Cronbach's coefficient alpha below the recommended .70, the coping subscale of cognitive distraction was retained and used for statistical analysis. Table 3 includes the measures of central tendency and variability, as well as the Cronbach's alpha coefficients for the three higher-order coping subscales and the eight coping subscales of the PCQ instrument.

Assumptions

The dataset ($N = 44$) was investigated for the multivariate analysis of variance (MANOVA) assumptions of absence of missing data, adequate sample size, absence of univariate and multivariate outliers, univariate and multivariate normality, homogeneity of variance-covariance matrices, linearity and homoscedasticity, and absence of multicollinearity. The assumption of linearity is also required for Pearson's product moment correlational analysis. RM-ANOVA requires the additional assumption of sphericity.

Table 3

Measures of Central Tendency and Cronbach's Coefficient Alpha Coefficients for Coping Scales PCQ for All Study Participants (N = 44)

Coping Scale	# of Items	*M*	*SD*	*Mdn*	Sample Range	α
Emotion-focused	10	2.35	0.45	2.25	1.70 – 3.30	.734
Approach	19	3.38	0.56	3.39	2.16 – 4.74	.879
Distracting	10	2.74	0.84	2.80	1.50 – 4.40	.948
Information seeking	4	3.30	0.75	3.38	2.00 – 5.00	.864
Problem solving	5	3.61	0.91	3.80	2.00 – 5.00	.925
Seeking social support	5	3.48	1.10	.340	1.80 – 5.00	.964
Positive self-statements	5	3.13	0.64	3.20	1.20 – 4.20	.847
Behavioral distraction	5	3.28	1.04	3.20	1.60 – 5.00	.961
Cognitive distraction	5	2.19	0.76	2.20	1.00 – 4.00	.887
Internalizing/Catastrophizing	5	3.04	0.63	3.00	1.80 – 4.60	.735
Externalizing	5	1.65	0.47	1.60	1.00 – 3.00	.587

Note. PCQ = Pain Coping Questionnaire; *M* = Mean; *SD* = Standard Deviation; *Mdn* = Median; α = Cronbach's Alpha Coefficient.

None of the records were missing data. Therefore, the assumption of absence of missing data was met. A requirement for adequate sample size in MANOVA is that there should be more research units in the smallest group than there are dependent variables (Tabachnick & Fidell, 2007). The MANOVA model was tested according to the specifications defined in Chapter 3, namely eight dependent variables which were the

coping sub-scales of the PCQ, and the independent variable of gender (2 groups of male and female, resulting and 8 X 2 = 16 individual grouping "cells", 8 for males, and 8 for females. The smallest cell contained 18 participants, which was a higher number than 8. Therefore, the assumption of adequate sample size was met.

Outliers in a dataset have the potential to distort the results of an inferential analysis. A check of boxplots for the eight dependent variables was performed to visually inspect for univariate outliers. The boxplots indicated outliers on two of the eight dependent variables of positive self-statements (one low-lying outlier) and cognitive distraction (one high-lying outlier). Each outlier was further examined, and it was determined that there were no extreme outliers. Extreme outliers are defined as values that extended beyond 3 box-lengths from the edge of the box (Pallant, 2013). Additionally, the outlying values for both of the dependent variable scores were within the range of possible values. Since all outliers were in the acceptable range of the variables, and the means and medians of each of the dependent variables were close in value (see Table 3), it was determined that the univariate outliers were not adversely affecting the dataset (McKnight, McKnight, Souraya, & Figueredo, 2007). The data were then inspected for multivariate outliers using Mahalanobis' Distance (Tabachnick & Fidell, 2013). No multivariate outliers were found. Therefore, all records were retained for analysis, and the absence of outliers assumption was met.

Univariate normality for the scores of the eight dependent variables was investigated with SPSS Explore. The Kolmogorov-Smirnov test (K-S) for normality indicated that all eight of the dependent variables were normally distributed at the $p = .01$

level. However, the K-S test is sensitive to larger sample sizes, with significant findings returned when sample sizes are larger ($n > 50$; Pallant, 2007). A visual check of the histograms and Normal Q-Q plots for the dependent variables also indicated a distribution close to normal. The mean and median values for the variable were relatively close in value (see Table 3), suggesting that any outliers or skew in the data were not adversely affecting the distribution from normality. Therefore, the assumption of univariate normality was met.

Multivariate normality for the scores of the two dependent variables was investigated with SPSS using Mahalanobis distance criteria. Mahalanobis distance is the distance of a particular case from the centroid of the remaining cases, where the centroid is the point created by the means of all the variables (Tabachnick & Fidell, 2013). The Mahalanobis Distance Test for multivariate normality indicated that none of the cases had a z-score of greater than 26.13, the critical value for concluding a violation of multivariate normality (Pallant, 2013). Therefore, the data met the assumption of multivariate normality.

Investigation of homogeneity of variance-covariance matrices was tested with Box' M Test of Equality of Covariance Matrices. This test was provided in the SPSS output of the MANOVA model. A p-value for the test larger than .001 indicates the assumption has not been violated. The value for the test was Box's $M = 67.44$, $p = .036$. Therefore, the data met the assumption of homogeneity of variance-covariance matrices.

Assumptions of linearity between study variables and homoscedasticity and requirements for the MANOVA were checked with scatterplots of the data. The

assumptions of linearity and homoscedasticity were met. Multicollinearity diagnostics for the MANOVA were performed using SPSS via correlational analysis. Multicollinearity may be assumed if there is a high correlation ($r > .90$) between the dependent variables (Pallant, 2013). None of the dependent variables were highly correlated at the $r > .90$ level, indicating a lack of multicollinearity.

Sphericity, an assumption for the RM-ANOVA model, was checked with Mauchly's Test of Sphericity and the assumption was violated ($p = .008$). When the assumption of sphericity is violated, SPSS provides an adjusted test, the Greenhouse-Geisser test, which should be used to determine statistical significance. Therefore, the Greenhouse-Geisser test was used to test overall significance of the model in the omnibus test (testing for differences between at least one pair of endpoints). Significant findings on the omnibus test were followed with post hoc comparisons between each pair of time points using Bonferroni adjusted p-values.

Tests of Hypotheses

A total of ($N = 44$) records were included for inferential analyses. The results of the inferential analyses are presented according to each of the three research questions and associated statistical hypotheses. The null hypothesis of Research Question 1 was tested with a RM-ANOVA analysis. The null hypothesis of Research Question 2 was tested with a Pearson's product moment correlational analysis. The null hypothesis of Research Question 3 was tested with a MANOVA analysis. Conclusions for each of the null hypotheses are presented following the presentation of each set of analysis findings.

Research Question 1

RQ1: What are the most frequently used coping strategies to deal with pain by African American children who experience chronic pain?

H_o1: African American children with chronic pain do not use more emotion-focused coping strategies for chronic pain than approach or distraction.

H_a1: African American children with chronic pain use more emotion-focused strategies for chronic pain than approach or distraction.

A one-way repeated measures analysis of variance (RM-ANOVA) was used to compare three higher-order coping scale scores of (a) emotion-focused, (b) approach, and (c) distracting. A RM-ANOVA was used because each of the three scores were obtained from the same $N = 44$ participants. The RM-ANOVA with a Greenhouse-Geisser correction for a sphericity violation indicated that the mean higher-order coping skills differed statistically significantly between the three measures [F (1.66,71.23) = 25.97, $p <$ .0005). The effect size of the difference was large (partial $\eta^2 = 0.38$; Cohen, 1992). The observed power of the test was 1.00. Post hoc tests using the Bonferroni correction indicated that the higher-order coping skill of approach had the highest mean score ($M =$ 3.38, $SEM = 0.08$) and the mean for the higher-order coping skill of approach was significantly different than the mean scores for both of the higher-order coping skills of emotion-focused ($M = 2.35$, $SEM = 0.07$; $p < .0005$) and distracting ($M = 2.74$, $SEM =$ 0.13; $p < .0005$). The higher-order coping skills of emotion-focused and distraction did not significantly differ ($p = .093$). A profile plot of estimated marginal means (y-axis)

according to each of the three higher-order coping skill measurements (x-axis) is presented in Figure 1.

The higher-order coping skill of emotion-focused had the lowest mean score of all three of the tested coping skills. Since higher scores of a coping skill are associated with greater use of a coping strategy, it is determined that the higher-order coping strategy of emotion-focused was not used more than the other two higher-order coping strategies. Therefore, do not reject Null Hypothesis 1. There is not sufficient evidence to indicate that African American children with chronic pain will use more emotion-focused strategies for chronic pain than approach or distraction.

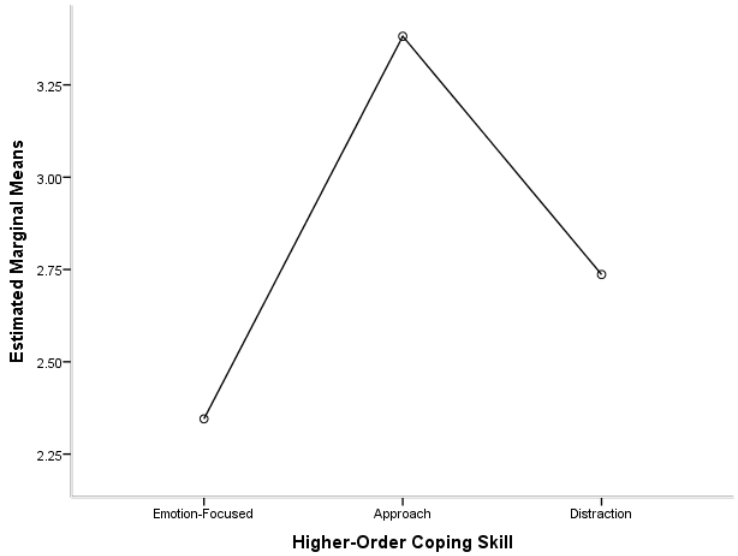

Figure 1. Profile plot of estimated marginal means for the three higher-order coping skills of (a) emotion-focused ($M = 2.35$, $SEM = 0.07$), (b) approach ($M = 3.38$, $SEM = 0.08$), and (c) distracting ($M = 2.74$, $SEM = 0.13$).

Research Question 2

RQ2: Do the coping strategies of African American children with chronic pain differ by age?

H_o2: Coping strategies of African American children with chronic pain do not differ by age.

H_a2: Coping strategies of African American children with chronic pain differ by age.

A series of Pearson's Product Moment correlational analyses were performed to investigate the bi-variate relationships between the variables of (a) age, (b) information seeking, (c) problem solving, (d) seeking social support, (e) positive self-statements, (f) behavioral distraction, (g) cognitive distractions, (h) internalizing/catastrophizing, and (i) externalizing. Table 4 presents the findings of the Pearson's product moment correlational analyses. Cohen (1988) suggests that correlation coefficients with absolute values between .10 to .29 are weak, between .30 to .49 are moderate, and between .50 to 1.0 are strong. A negative (indirect) correlation indicates that the relationship between two variables is contrary, their respective scores move in opposite directions. A positive (direct) correlation coefficient indicates that the two variables' values or scores are moving in a like manner.

The variable of age was significantly directly correlated with the coping subscale of cognitive distraction ($r = .331$, $p = .028$). The direct relationship indicated that the use of cognitive distraction increased as the participants' ages increased. None of the other coping sub-scales were significantly correlated with age.

The many pairs of the coping subscales were significantly correlated. The coping sub-scale of information seeking was significantly directly correlated with problem solving ($r = .578$, $p < .0005$), seeking social support ($r = .348$, $p = .021$) and positive self-statements ($r = .450$, $p = .002$). The direct relationship indicated that as scores increased or decreased for information seeking, the scores of problem solving, seeking social support and positive self-statements moved in a like manner. Information seeking was significantly indirectly correlated with internalizing/catastrophizing ($r = -.385$, $p = .010$). The indirect relationship suggested that higher scores of information seeking were associated with lower scores of internalizing/catastrophizing, and conversely, that lower scores of information seeking were associated with higher scores of internalizing/catastrophizing.

The coping sub-scale of problem solving was significantly directly correlated with positive self-statements ($r = .625$, $p < .0005$), behavioral distraction ($r = .826$, $p < .0005$) and cognitive distraction ($r = .711$, $p < .0005$). The direct relationship indicated that as scores increased or decreased for problem solving, the scores of positive self-statements, behavioral distraction and cognitive distraction moved in a like manner. Problem solving was significantly indirectly correlated with the coping sub-scales of internalizing/catastrophizing ($r = -.572$, $p < .0005$) and externalizing ($r = -.513$, $p < .0005$). The indirect relationship suggested that higher scores of positive self-statements were associated with lower scores of internalizing/catastrophizing and externalizing, and conversely, that lower scores of internalizing/catastrophizing and externalizing information seeking were associated with higher scores problem solving.

The coping sub-scale of seeking social support was significantly indirectly correlated with the coping sub-scales of behavioral distraction (r = -.539, p < .0005) and cognitive distraction (r = -.410, p = .006). The indirect relationship suggested that higher scores of seeking social support were associated with lower scores of behavioral and cognitive distraction, and conversely, that lower scores of behavioral and cognitive distraction were associated with higher scores seeking social support.

The coping sub-scale of positive self-statements was significantly directly correlated with behavioral distraction (r = .428, p = .008) and cognitive distraction (r = .507, p < .0005). The direct relationship indicated that as scores increased or decreased for positive self-statements, the scores of behavioral and cognitive distraction moved in a like manner.

The coping sub-scale of behavioral distraction was significantly directly correlated with cognitive distraction (r = .750, p < .0005). The direct relationship indicated that as scores increased or decreased for behavioral distraction, the scores of cognitive distraction moved in a like manner. The coping sub-scale of behavioral distraction was significantly indirectly correlated with the coping sub-scales of internalizing/catastrophizing (r = -.428, p = .004) and externalizing (r = -.478, p = .001). The indirect relationship suggested that higher scores of behavioral distraction were associated with lower scores of internalizing/catastrophizing and externalizing, and conversely, that lower scores of behavioral distraction were associated with higher scores of internalizing/catastrophizing and externalizing.

The coping sub-scale of cognitive distraction was significantly indirectly correlated with the coping sub-scales of internalizing/catastrophizing (r = -.455 p = .002) and externalizing (r = -.424, p = .004). The indirect relationship suggested that higher scores of cognitive distraction were associated with lower scores of internalizing/catastrophizing and externalizing, and conversely, that lower scores of cognitive distraction were associated with higher scores of internalizing/catastrophizing and externalizing.

The coping sub-scale score of externalizing was significantly directly correlated with internalizing/catastrophizing (r = .355, p = .018). The direct relationship indicated that as scores increased or decreased for externalizing, the scores of internalizing/catastrophizing moved in a like manner.

The variable of Age was significantly directly correlated with the coping subscale of cognitive distraction (r = .331, p = .028). Therefore, reject Null Hypothesis 2. There is sufficient evidence to indicate that the variable of age relates to at least one coping strategy of African American children with chronic pain.

Research Question 3

RQ3: Do the coping strategies of African American children with chronic pain differ by gender?

H_o3: Coping strategies of African American children with chronic pain do not differ by gender.

H_a3: Coping strategies of African American children with chronic pain differ by gender.

A MANOVA was performed to test Null Hypothesis 3. The eight coping sub-scale scores were used as the eight dependent variables were in the MANOVA: (a) information seeking, (b) problem solving, (c) seeking social support, (d) positive self-statements, (e) behavioral distraction, (f) cognitive distractions, (g) internalizing/catastrophizing, and (h) externalizing. The independent variable was gender with two levels of male and female. Results of the omnibus model test indicated that there was significance for the independent variable of gender on at least one of the eight dependent variables, Wilks' Lambda = 0.17, F (8, 35) = 21.61, p < .0005, η p2 = .832, observed power = 1.00. According to generally accepted criteria (Cohen, 1988) the strength of effect sizes for ηp2 can be classified as small (.01), medium (.06) and large (.14). The effect size for the significant effect of gender was large and indicated that approximately 83% of the variance in the eight dependent variables as a whole was explained by the gender variable.

Between-subjects effects were examined to further investigate the significant results found for gender as relates to each of the eight individual coping sub-scales. Table 5 includes a summary of the between-subjects tests for each of the eight coping sub-scales used as dependent variables in the MANOVA model. The estimated marginal means for each of the eight coping sub-scales used as dependent variables, presented according to gender group, are detailed in Table 6. A statistically significant difference was found between the gender groups for the mean scores of the coping skill of problem solving, F (1,42) = 21.23, p < .0005, η_p^2 = .336.

Table 4

Pearson's Product Moment Correlations for Bi-Variate Relationships of Age and Coping Strategy Sub-Scales (N = 44)

Variable	1	2	3	4	5	6	7	8
1. Age								
2. Information seeking	-.218							
3. Problem solving	-.113	.578**						
4. Seeking social support	-.084	.348*	-.292					
5. Positive self-statements	-.173	.450**	.625**	.077				
6. Behavioral distraction	-.124	.287	.826**	-.539**	.428**			
7. Cognitive distraction	.331*	.240	.711**	-.410**	.507**	.750**		
8. Internalizing/Catastrophizing	.182	-.385**	-.572**	.200	-.287	-.428**	-.455**	
9. Externalizing	.166	-.276	-.513**	.137	-.269	-.478**	-.424**	.355*

* $p < .05$
** $p < .01$

A review of the estimated marginal means of the two gender groups indicated that males had significantly greater mean scores for problem solving ($M = 4.23$, $SEM = 0.18$) than females ($M = 3.18$, $SEM = 0.15$). This finding suggested that the male participants used problem solving skills for pain management significantly more often than the female participants.

A statistically significant difference was found between the gender groups for the mean scores of the coping skill of seeking social support, $F\ (1,42) = 67.39$, $p < .0005$, $\eta_p^2 = .616$. A review of the estimated marginal means of the two gender groups indicated that females had significantly greater mean scores for seeking social support ($M = 4.18$, $SEM = 0.73$) than males ($M = 2.46$, $SEM = 0.61$). This finding suggested that the female participants sought out social support for pain management significantly more often than the male participants.

A statistically significant difference was found between the gender groups for the mean scores of the coping skill of behavioral distraction, $F\ (1,42) = 52.60$, $p < .0005$, $\eta_p^2 = .556$. A review of the estimated marginal means of the two gender groups indicated that males had significantly greater mean scores for behavioral distraction ($M = 4.20$, $SEM = 0.81$) than females ($M = 2.65$, $SEM = 0.61$). This finding suggested that the male participants used behavioral distraction to manage pain more often than the female participants.

A statistically significant difference was found between the gender groups for the mean scores of the coping skill of cognitive distraction, $F\ (1,42) = 30.98$, $p < .0005$, $\eta_p^2 = .424$. A review of the estimated marginal means of the two gender groups indicated that

males had significantly greater mean scores for cognitive distraction ($M = 2.78$, $SEM = 0.57$) than females ($M = 1.78$, $SEM = 0.59$). This finding suggested that the male participants used cognitive distraction to manage pain more often than the female participants.

A statistically significant difference was found between the gender groups for the mean scores of the coping skill of internalizing/catastrophizing, $F\ (1,42) = 9.89$, $p = .003$, $\eta_p^2 = .210$. A review of the estimated marginal means of the two gender groups indicated that females had significantly greater mean scores for internalizing/catastrophizing ($M = 3.26$, $SEM = 0.63$) than males ($M = 2.71$, $SEM = 0.48$). This finding suggested that the female participants used internalizing/catastrophizing to manage pain more often than the male participants.

A statistically significant difference was found between the gender groups for the mean scores of the coping skill of externalizing, $F\ (1,42) = 11.18$, $p = .002$, $\eta_p^2 = .191$. A review of the estimated marginal means of the two gender groups indicated that females had significantly greater mean scores for externalizing ($M = 1.83$, $SEM = 0.47$) than males ($M = 1.40$, $SEM = 0.34$). This finding suggested that the female participants used externalizing to manage pain more often than the male participants.

Statistically significant means differences were found between the gender groups for the coping sub-scales of (a) problem solving, (b) seeking social support, (c) behavioral distraction, (d) cognitive distraction, (e) internalizing/catastrophizing, and (f) externalizing. Therefore, reject Null Hypothesis 3. There is sufficient evidence to indicate that African American children with chronic pain differ in coping strategies by gender.

Table 5

Results of the Between-Subjects Effects of the MANOVA Performed to Investigate Effects for Gender as Relates to each Coping-Subscale Dependent Variables (N = 44)

Dependent Variable	Type III Sum of Squares	*df*	*F*	*p*	η_p^2	Power
Information seeking	0.16	1	0.29	.596	.007	.082
Problem solving	11.87	1	21.23	<.0005	.336	.994
Seeking social support	31.80	1	67.39	<.0005	.616	1.00
Positive self-statements	0.59	1	1.45	.235	.033	.218
Behavioral distraction	25.68	1	52.60	<.0005	.556	1.00
Cognitive distraction	10.49	1	30.98	<.0005	.424	1.00
Internalizing/Catastrophizing	3.22	1	9.89	.003	.191	.867
Externalizing	1.97	1	11.18	.002	.210	.904

Note. df = Degrees of Freedom; *F* = F-Statistic; *p* = p-value; η_p^2 = Partial Eta Squared.

Table 6

Estimated Marginal Means for Gender Groups According to each of the Coping-Subscale Dependent Variables (N = 44)

Variable	*M*	*SE*	95% C.I. Lower Bound	95% C.I. Upper Bound
Information seeking				
Female	3.35	0.15	3.05	3.65
Male	3.22	0.18	2.86	3.58
Problem solving				
Female	3.18	0.15	2.88	3.47
Male	4.23	0.18	3.88	4.59
Seeking social support				
Female	4.19	0.14	3.91	4.46
Male	2.46	0.16	2.13	2.78
Positive self-statements				
Female	3.03	0.13	2.78	3.28
Male	3.27	0.15	2.96	3.57
Behavioral distraction				
Female	2.65	0.14	2.37	2.92
Male	4.20	0.17	3.87	4.53
Cognitive distraction				
Female	1.79	0.11	1.55	2.01
Male	2.78	0.14	2.50	3.06
Internalizing/Catastrophizing				
Female	3.26	0.11	3.04	3.49
Male	2.71	0.14	2.44	2.98
Externalizing				
Female	1.83	0.08	1.66	2.00
Male	1.40	0.10	1.20	1.60

Note. M_{Est} = Estimated Marginal Mean; *SE* = Standard Error of the Mean; 95% C.I. = 95% Confidence Interval.

Summary

Chapter 4 began with a brief description of the study purpose and presentation of the research questions and hypotheses. Changes and deviations from the proposed methods were then presented. Descriptive finding of the study participants was then presented. The study results section included descriptive measures and reliability testing of the coping scales of the PCQ instrument. Assumptions for the inferential analyses were then presented and discussed. Following the descriptive and assumption sections, the results of hypothesis tests were presented according to each of the three research questions.

The Null Hypothesis for Research Question 1 was tested with a RM-ANOVA model to investigate if the higher-order coping skill of emotion-focused was used more often than the coping skills of approach and distraction. The higher-order coping skill of emotion-focused had the lowest mean score of all three of the tested coping skills. Since higher scores of a coping skill are associated with greater use of a coping strategy, it was determined that the higher-order coping strategy of emotion-focused was not used more than the other two higher-order coping strategies. Therefore, Null Hypothesis 1 was not rejected, and Research Question 1 was not supported.

The Null Hypothesis for Research Question 2 was tested with a series of Pearson's product moment correlation analyses to investigate if the variable of age relates to coping strategies of African American children with chronic pain. The variable of age was significantly directly correlated with the coping subscale of cognitive distraction (r =

.331, $p = .028$). Therefore, Null Hypothesis 2 was rejected, and Research Question 2 was supported.

The Null Hypothesis for Research Question 3 was tested with a MANOVA analysis to investigate if the coping strategies of African American children with chronic pain differed by gender. Statistically significant means differences were found between the gender groups for the coping sub-scales of (a) problem solving, (b) seeking social support, (c) behavioral distraction, (d) cognitive distraction, (e) internalizing/catastrophizing, and (f) externalizing. Therefore, Null Hypothesis 3 was rejected, and Research Question 3 was supported. Discussions of the results as well as implications of the findings as they relate to the literature review and further research are presented in Chapter 5.

Chapter 5: Discussion, Conclusions, and Recommendations

This quantitative, correlational, cross-sectional study addressed the relationship between gender and age (independent variables) and coping strategies (dependent variable) in a group of 44 male and female African American children and adolescents ages 11 through 18 with chronic pain. Gender and age differences have been reported in adult pain and coping literature (Gibson & Chambers, 2004; Kotzer, 2000; Rahim-Williams et al., 2007); however, little attention had been given to possible differences in coping strategies in African American children. Studies that addressed chronic pain coping strategies of minority children, especially African American children, compared to the more prevalent research on pain in adults and White populations are scarce. A recent study of coping strategies of African American children indicated that boys used avoidant coping strategies such as distraction more often than girls, and girls used approach coping strategies such as support seeking more often than boys (Flannery, Vannucci, & Ohannessian, 2018). An earlier study of African American children indicated the same findings (Gaylord-Harden et al., 2008).

The literature that is available noted some of these differences can be attributed to different research designs and various measures of coping (Buser, 2009; Gaylord-Harden et al., 2008; Gibson & Chambers, 2004). The lack of research on minority populations has raised concerns that there may be strategies of coping that are specific to minority groups that have not been identified. For this reason, the present study focused on filling the gap in the literature on pain coping strategies of African American children.

Research findings detailed in chapter 4 answered the following research questions: (a) What are the most frequently used coping strategies to deal with pain by African American children who experience chronic pain? (b) Do the coping strategies of African American children with chronic pain differ by age? (c) Do the coping strategies of African American children with chronic pain differ by gender?

Interpretation of the Findings

In Research Question 1, I sought to identify the most commonly used coping strategy. I compared approach, distraction, and emotion-focused coping. Approach coping, which includes information seeking, problem-solving, seeking social support, and positive self-statements subscales, refers to the direct attempt to deal with the pain and the use of active methods to regulate feelings when in pain (Zimmer-Gembeck & Skinner, 2015). Distraction coping, which includes behavioral distraction and cognitive distraction, refers to the attempt to disengage from the stressor. Emotion-focused coping, which includes internalizing/catastrophizing and externalizing, refers to the free expression of emotion and lack of effort to regulate feelings when in pain (Lynch, Kashikar-Zuck, Goldschneider, & Jones, 2007).

In this sample of African American children with chronic pain, approach coping was the most used strategy, and emotion-focused coping was the least used strategy. Prior studies indicated support for the approach coping strategies such as support seeking (Ayers, 2011; Landis et al., 2007). Support seeking is typically seen as an adaptive type of coping for children (Compas et al., 2006). My findings were consistent with those of Leipold, Munz, and Michéle-Malkowsky (2018) who examined three general types of

coping in transitioning from early adolescence to adulthood. Leipold et al. focused on problem-focused coping, social support-seeking, and meaning-focused coping in relationship to age difference, their interdependence, and their adaptive function in respect to resilience, which was defined as academic work-related stress. In a cross-sectional study of 1,608 pupils between 14 and 30 years of age, Leipold et al. found that problem-focused coping and seeking social support positively correlated with age. Pronounced associations were found between problem-focused coping and support-seeking in adolescence through age-moderated analyses.

For Research Question 2, I examined whether African American children with chronic pain differed in their coping by age, as indicated in prior studies (see Gaylord-Harden et al., 2008; Gaylord-Harden et al., 2011; Gibson & Chambers, 2004). I examined all subscales instead of combining them into the three higher-order coping styles. Age was positively correlated with the use of cognitive distraction; this coping strategy increased as the participants' age increased. None of the other coping subscales were significantly correlated with age. This was not a surprising finding because cognitive abilities increase with age; therefore, older children should be able to use cognitive skills as coping mechanisms better than younger children. Normally, children's conceptions of pain become more refined and sophisticated as they grow older (Page & Blanchette, 2009; Palmer & Shepard, 2008). Gibson and Chambers (2004) reported that older children tend to use cognitive-base coping strategies more often than younger children. However, Page and Blanchette (2009) found that adolescents engage in more emotion-

centered coping, specifically in terms of employing avoidance as a strategy, than is seen in children in their middle years (ages 8 through 12).

Zimmer-Gembeck and Skinner (2008) noted that regardless of age, most people rely on distraction to cope with stress. Playing with toys, reading, or other behavioral distractions apply to young children. Adolescents continue to rely on behavioral distraction, but the use of cognitive distraction strategies increases at about age 6 and continues until about age 14 (Zimmer-Gembeck & Skinner, 2008). Distraction is used to supplement other coping strategies, and the ability to shift between strategies becomes more advance throughout adolescence and into early adulthood (Skinner & Zimmer-Gembeck, 2007). Kotzer (2000) suggested that chronological age and developmental level or lived experiences play a more meaningful role in shaping pain responses and perceptions. Lynch et al. (2007) also observed increases in use of cognitive strategies with advancing age. Lynch et al. found that older children are more likely to use cognitive coping strategies, including positive self-statements and cognitive distraction.

Research Question 3 addressed whether African American children with chronic pain differ in coping strategies by gender. Differences between boys and girls were found; male participants used problem-solving more often than female participants. Female participants sought out social support and used internalizing/catastrophizing more often than male participants. Both problem-solving and seeking social support are approach forms of coping. Internalizing/catastrophizing is an emotion-focused form of coping.

These differences by gender observed in my sample do not match findings from earlier studies. Previous studies of White and African American children indicated that boys used avoidant strategies more often than girls, and girls used approach strategies such as support seeking more often than boys (Carlson & Grant, 2008; Chandra & Batada, 2006; Landis et al., 2007). By focusing on the subscales within the larger coping styles, the present study revealed more nuanced differences by gender.

Generally speaking, female adolescents use a wider range of coping strategies than their male counterparts (Grant et al., 2004; Landis et al., 2007). Kort-Butler (2009) emphasized the role of gender socialization in coping styles and explained that society's gender roles may affect the way an individual copes with stressors. Traditional gender roles may not apply or be adhered to in African American families where African American men are more accepting of and willing to take on traditional female duties (Kort-Butler, 2009).

Some of the research on coping suggested that boys and girls engage in different coping strategies according to conditions and circumstances (Kaczynski et al., 2009). African American children are more likely than children in other groups to be exposed to uncontrollable stressors such as poverty, malnutrition, inadequate education, family disruptions, and racial discrimination (Gaylord-Harden et al., 2008). As a result, African American youth find avoidance-oriented coping strategies to be adaptive in dealing with these uncontrollable stressors.

Gender differences in coping were supported in previous studies. Girls score higher in social support seeking and problem solving, while boys score higher in avoidant

coping (Eschenbeck, Schmid, Schröder, Wasserfall, & Kohlmann, 2018). Girls are more likely to use coping strategies that involve relationships, such as seeking social support (Eschenbeck, Kohlmann, & Lohaus, 2007; Lynch et al., 2007) than boys who tend to use others, such as distraction. Girls are more sensitive to relationship stress but are also more likely to use coping strategies that maintain relationships (Brougham, Zail, Mendoza, & Miller, 2009; Rose & Rudolph, 2006). Girls tend to be better sources of support because they tend to use more emotional support strategies than boys (Eschenbeck et al., 2007; Lynch et al., 2007), and emotional support is the most appreciated kind of support (Brougham et al., 2009).

The relative dearth of research on children's pain experience rendered comparative statements about differences in age group, gender, and nature of pain difficult. Researchers and practitioners have expressed concern that applying adult models of pain and coping to the experience of children may not be effective in identifying or describing children's experience (Bryson, Read, Bush, & Edwards, 2015). How children at different stages of development differ from adults, and how young and middle-aged adults differ from elderly adults in their perception of pain and the way they ascribe meaning to their pain experiences, requires further study. There may be a misunderstanding about the importance of age and gender and that children's developmental level or lived experiences may play a meaningful role in shaping their pain responses and perception. More research on children's pain experience and coping is indicated.

Limitations of the Study

There were several limitations to this study. One limitation was the cross-sectional design provided no data as to how the relationships change over time. A longitudinal study would be appropriate to assess changes in coping preferences that might occur over time. All data were collected by an online survey through SurveyMonkey. This limited access to individuals who lacked access to devices with Internet capabilities.

Another limitation of this study was that the participants who volunteered had the option to answer or not answer any question. Given that the data were self-reported, some participants may not have given honest answers or may have skipped a question. This could have altered the results. Self-report bias is possible in survey studies, as participants may want to respond in a way that makes them look as good as possible. There is a tendency to underreport behaviors deemed inappropriate by the researcher, and a tendency to overreport behaviors viewed as appropriate. Because of the small sample size, the power analysis requirements were not met, and findings may not have been statistically significant.

Recommendations

Identifying pain coping strategies in general and gender and age differences in African American children's coping with chronic pain is needed to permit both assessment and management. Existing coping studies are based mainly on coping behaviors of White, middle-class samples; many measures of coping studies may not encompass all of the strategies employed by African American children, failing to

account for culture-specific strategies. Practitioners need to help kids cope appropriately, the best way to do that is to identify how they are coping and know how to move them toward better coping. For this, future research should study interventions aimed at modifying ineffective coping toward effective coping like problem solving and seeking social support. The scarcity of research exploring pain coping for children still leaves many clinicians extrapolating from findings on adult populations (Luffy & Grove, 2003; Palmer & Shepard, 2008).

Future research should be conducted with larger samples to increase the generalizability of the findings. Having co-researchers in several locations could help to gather a more extensive study with participants evenly distributed across the country. Qualitative study may contribute more information regarding the impact of the association between pain beliefs, coping strategies, and social support in relationship in individuals with chronic pain. Longitudinal research across the child's pain trajectory would be beneficial for exploring if or how coping strategies changed if the individual's symptoms changed. Further research would benefit from inclusion of multiple sources (family, teachers) to ensure a much broader perspective on the research variables.

Implications

Many models and theories have been applied to the study of the physiological, psychological, psychosocial, and cultural aspects of coping with pain (Gibson & Chambers, 2004; Eccleston et al., 2006). Coping plays an important role in behaviors and strategies to manage pain. Coping has multiple functions, including but not limited to, the regulation of distress and the management of the problem causing the distress (Folkman,

& Moskowitz, 2000). Previous research has suggested that factors of age and gender have proven difficult to assess for its significance in pain research. Kotzer (2000) cited a number of studies that had shown significant and non-significant age-related effects for children experiencing pain however the researcher observed that, as with research on gender effects, the findings turned up inconsistencies.

This study was designed to add to the existing knowledge of how age and gender factors may shape the African American child and adolescent pain experience. It is intended to possibly further future research, leading to better assessing and managing of chronic pain in this group, creating strategies and ideas to encourage research and development of additional classifications and strategies for the population. The results of this study will lead to social change because it will provide mental health professionals and doctors that treat chronic pain a greater understanding of African American children and adolescents coping strategies related to chronic pain and how they are applied in daily situations. It is intended to possibly further research, leading to better assessing and managing of chronic pain in this group.

Conclusion

The sample of participants ($N = 44$) of African American children and adolescents, male and female, between the ages of 11 through 18, experiencing chronic pain completed this online survey. Gender and age were examined. A total of 98 participants were planned for the study to meet power analysis calculations for sufficient sample size however only 44 participants volunteered, and no more could be recruited. After conducting inferential analyses of the 44 records, it was determined that of the three

coping strategies, emotion focused avoidance would not be used by African American children and adolescents any more than the other two. Age also proved to be a significant variable to at least one coping strategy (distraction) for this demographic. Further, there was sufficient evidence found to indicate significant differences in coping strategies by gender.

Despite the prevalence of pain in children, many researchers and clinicians recognize that the phenomenon of pain in children remains under investigated (Kotzer, 2000). Kotzer (2000) suggested that it might be the sheer complexity of the pain experience that has confounded research efforts with children. Aside from the ethical and cultural imperatives that American society places on caring for and protecting children, there is recognition that the experience of pain, and particularly chronic pain, has serious ramifications. The hypotheses were confirmed by the results of this study; the results add to the existing body of knowledge regarding this subject.

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Appendix A: Demographics Questionnaire

The information provided in this questionnaire is confidential and only used for the purposes for this study.

Date of Survey: _____

About yourself:

1. Age: _____

2. Gender: Male _____ Female _____

3. What grade are you currently in? _____

4. Choose what you feel best represents your race: African-American____ Caucasian___ Hispanic____ Other___

5. Type of pain?

6. How long has pain existed?

7. Location of pain?

Appendix B: Permission to Use SurveyMonkey

Re: Permission to Conduct Research Using SurveyMonkey

To whom it may concern:

This letter is being produced in response to a request by a student at your institution who wishes to conduct a survey using SurveyMonkey in order to support their research. The student has indicated that they require a letter from SurveyMonkey granting them permission to do this. Please accept this letter as evidence of such permission. Students are permitted to conduct research via the SurveyMonkey platform provided that they abide by our Terms of Use, a copy of which is available on our website.

SurveyMonkey is a self-serve survey platform on which our users can, by themselves, create, deploy and analyze surveys through an online interface. We have users in many different industries who use surveys for many different purposes. One of our most common use cases is students and other types of researchers using our online tools to conduct academic research.

If you have any questions about this letter, please contact us through our Help Center at help.surveymonkey.com.

Sincerely,

SurveyMonkey Inc.

SurveyMonkey Inc.

www.surveymonkey.com

For questions, visit our Help Center

help.surveymonkey.com