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A Systematic Review on the Relationship Between Attachment Styles and Chronic Pain

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Pepperdine University
Graduate School of Education and Psychology

A SYSTEMATIC REVIEW ON THE RELATIONSHIP BETWEEN ATTACHMENT STYLES
AND CHRONIC PAIN

A clinical dissertation submitted in partial satisfaction of the requirements for the degree of
Doctor of Psychology

by

Samantha M. Cohen

April, 2023

LaTonya Wood, Ph.D. - Dissertation Chairperson

This clinical dissertation, written by

Samantha Cohen

under the guidance of a Faculty Committee and approved by its members, has been submitted to and accepted by the Graduate Faculty in partial fulfillment of the requirements for the degree of

DOCTOR OF PSYCHOLOGY

Doctoral Committee:

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TABLE OF CONTENTS

	Page
LIST OF FIGURES.....	v
VITA.....	vi
ABSTRACT.....	xi
Chapter 1: Introduction.....	1
Statement of the Problem.....	1
Background.....	3
Rationale.....	9
Chapter 2: Methodology.....	10
Systematic Review Approach.....	10
Reviewers.....	10
Eligibility Criteria.....	11
Search, Screening and Selection Process.....	12
Data Collection and Extraction.....	13
Data Management, Data Analysis and Synthesis.....	14
Chapter 3: Results.....	15
Search and Selection Eligibility Criteria Revisions.....	15
Search Results.....	16
Study Characteristics.....	16
Research Question 1: What is the Relationship Between Attachment Styles and CP?.....	17
Research Question 2: Which Attachment Styles Pose the Greatest Risk for CP and How is CP Expressed Based Upon Particular Attachment Styles?.....	19
Research Question 3: How Can Research Concerning the Relationship Between Attachment Styles and CP Provide Insight Regarding One’s Approach to the Treatment of CP?.....	29
Chapter 4: Discussion.....	39
Limitations and Potential Contributions.....	45
Recommendations for Future Research.....	47
Conclusions.....	48
REFERENCES.....	49
FIGURES.....	56
APPENDIX A: Comprehensive List of Search Terms.....	57

APPENDIX B: Comprehensive Search Plan..... 59

APPENDIX C: Search Documentation Record..... 61

APPENDIX D: Screening and Selection Record..... 63

APPENDIX E: Data Collection and Extraction Form..... 66

APPENDIX F: Evidence Table Record..... 69

LIST OF FIGURES

Figure 1. PRISMA Flow Diagram..... 56

VITA

EDUCATION**Doctor of Psychology (Psy.D.)**

Pepperdine University Graduate School of Education and Psychology
Expected May 2023

Master of Arts in Psychology (M.A.)

Pepperdine University Graduate School of Education and Psychology
2018

Bachelor of Arts in Psychology (B.A.)

Touro College Los Angeles
2016

HONORS AND AWARDS

Psi Chi International Honor Society Membership
Glen and Gloria Holden Scholarship Recipient, Pepperdine University
Excellence in Psychology Award Recipient, Touro College Los Angeles

DOCTORAL CLINICAL EXPERIENCE**California State University, Fullerton, CA**

Pre-Doctoral Intern

Setting: Counseling and Psychological Services (CAPS)/University Counseling Center
August 2022-July 2023

- Provide brief and long-term psychotherapy to students presenting with clinical issues such as mood disorders, anxiety disorders, eating disorders, trauma, relational difficulties, grief and loss, phase of life challenges and general life distress, in order to enhance quality of life across multiple areas of functioning.
- Conduct comprehensive initial consultations/intake evaluations, develop case conceptualizations, generate and execute evidence-based treatment plans.
- Utilize assessment measures, such as the CCAPS, to inform psychotherapy and assess progress towards treatment goals.
- Co-facilitate Grief, Loss and Healing weekly process group.
- Co-facilitate support group for survivors of trauma.
- Conduct wellness workshops on mental health and wellbeing.
- Conduct weekly triage services and risk assessments, provide referrals for adjunctive services and facilitate interventions appropriate for identified level of risk in students presenting in crisis with suicidal ideation, self-harm and high levels of distress.
- Participate in campus outreach and provide psychoeducational presentations to university students.
- Engage collaboratively with in-house psychiatric staff, medical staff and case management staff during the course of client care.
- Participate in liaison program with Violence Prevention and Advocacy Services, dedicated to sexual violence prevention and education, advocacy for students impacted by sexual violence and the direct provision of care to affected students.

- Provide clinical supervision to co-interns.
- Participate in weekly individual supervision, group supervision, supervision of the provision of supervision, and supervision of group therapy.
- Participate in weekly specialty supervision focusing on the provision of assessment and psychotherapy to students presenting with eating disorders.
- Participate in clinical staff meetings, professional practice seminars, multicultural competence seminars and case consultations to inform psychotherapy and enhance cultural awareness and competency.
- Specialized trainings: Foster Friendly Ally Training for the provision of care for foster youth; Single Session Therapy for University Counseling Centers.

Cedars-Sinai Medical Center, Los Angeles, CA

Psychology Extern

Setting: Medical/Hospital

September 2021-May 2022

- Conducted bedside psychiatric consultation, assessment and treatment for patients in the hospital.
- Conducted cognitive assessment of patients in the hospital.
- Provided supportive psychotherapy and cognitive behavioral therapy (CBT) to patients in the hospital with medical issues such as cancer, chronic pain and trauma, as well as psychiatric issues such as depression, anxiety, suicidal ideation and substance abuse.
- Provided outpatient, individual cognitive-behavioral therapy (CBT).
- Facilitated Virtual Reality (VR) for hospital patients with chronic/acute pain and physical/emotional distress.
- Participated in clinical team meetings, rounds and case conferences with the consultation-liaison psychiatry department.
- Participated in weekly didactic instruction and seminars that provided training in topics such as neuropsychology, reproductive psychology, pain management, psychiatric assessment, neurological disorders, substance abuse and psychotherapy.
- Participated in weekly individual supervision to inform patient assessment and treatment.
- Co-led support group for pre-bariatric surgery patients.
- Co-led support group for post-bariatric surgery patients.

West Los Angeles Pepperdine Counseling Clinic, Los Angeles, CA

Psychology Extern

Setting: Community Mental Health

September 2019-June 2022

- Provided individual, short and long-term treatment for individuals from the community with presenting problems including mood disorders, anxiety disorders, eating disorders, trauma, relational difficulties, personality disorders, and general life distress, in order to enhance quality of life across multiple areas of functioning.
- Completed comprehensive intake evaluations, developed case conceptualizations, generated and executed evidence-based treatment plans.
- Utilized standardized assessment measures to inform psychotherapy and assess progress

towards treatment goals.

- Participated in weekly individual and group supervision to inform psychotherapy and enhance cultural awareness and competency.
- Participated in managing the emergency on-call pager for clients in crisis.

Airport Marina Counseling Service, Los Angeles, CA

Psychology Extern

Setting: Community Mental Health

August 2020-August 2021

- Provided individual, short and long-term psychodynamic treatment for individuals with presenting problems including mood disorders, anxiety disorders, grief, trauma, relational difficulties, personality disorders and general life distress, in order to enhance quality of life across multiple areas of functioning.
- Participated in weekly individual and group supervision, to inform psychotherapy practice and enhance cultural awareness and competency.
- Participated in weekly didactic instruction and seminars that provided training in psychoanalytic, psychodynamic, developmental and family systems psychotherapy and case conceptualization.

WORK EXPERIENCE

Psychometrist

Pacific Psychological Associates

April 2019-September 2019

- Administered, scored and interpreted neuropsychological and psychological tests, including, but not limited to, MMPI-2, WAIS-IV, Woodcock Johnson (WJ IV), Nelson Denny, TONI-3, MoCA, Trail Making Test A & B, Wechsler Memory Scale, WRAT-4, Thematic Apperception Test, Boston Naming Test, Mini Mental Status Exam, and Beck Depression Inventory.
- Duties also included utilizing SPSS for research and data entry, assisting with intakes, and generating reports for patients with an array of neurological, psychological and educational issues (neurodevelopmental disorders, neurocognitive disorders, and psychiatric disorders).

RESEARCH EXPERIENCE

Research Team Member

Department of Psychiatry

Cedars-Sinai Medical Center, Los Angeles, CA

June 2016-present

- Research projects: Potential Cannabis Antagonists for Marijuana Intoxication (co-author), The Personalized Wellness Life Plan In The Handbook of Wellness Medicine (co-author), Atlas of Psychiatry: the first Atlas in the field (co-author), Weight and Health-Related Quality of Life in Children and Adolescents: A Systematic Review (co-author).

Research & Clinical Intern

Department of Psychiatry

Cedars-Sinai Medical Center, Los Angeles, CA

June 2015 - January 2016

- Assisted with writing of article entitled, "Determining the Impact of Borderline Personality Disorder in the Treatment Outcome of Depression" (co-author).
- Responsibilities included literature review, compiling/summarizing data, and writing/editing article.
- Conducted literature search/review of Bulimia Nervosa and Quality of Life Measures.
- Participated in clinical team meetings and bedside psychiatric consultation/treatment in the hospital.

CLINICAL VOLUNTEER EXPERIENCE

Youth Mentor

Chai Lifeline, Los Angeles, CA

January 2017 – February 2019

- Conducted weekly one-on-one mentoring sessions with chronically ill children.

Domestic Violence Counselor Volunteer

Ocean Park Community Center, *Sojourn Division*, Santa Monica, CA

April 2016 - June 2016

- Trained in 66-hour Domestic Violence counseling program.

Youth Mentor

Los Angeles Youth Network (*LAYN*), Los Angeles, CA

June 2014 – January 2016

- Conducted weekly one-on-one mentoring meetings with foster youth struggling with poverty, familial issues, drug abuse, sexual violence, eating and mood disorders.

RESEARCH PUBLICATIONS

Peselow, ED., Mangsatabam, R., Smith, K., Becker, B., Lopez, E., Farokhnia, M., Hanna, M., Cohen, S., Ganjian, S., Dang, J., & IsHak, WW. (2016). Determining the Impact of Borderline Personality Disorder in the Treatment Outcome of Depression. *British Journal of Medicine and Medical Research*, 18(3): 1-8.

Ishak WW, Dang J, Clevenger S, Ganjian S, Cohen S, et al. (2018). Potential Cannabis Antagonists for Marijuana Intoxication. *Journal of Pharmacology and Clinical Toxicology*, 6(5):1120.

IsHak, WW, Bart R, Gohar Y, Lorea N, Eskander L, Chang T, Cohen S, DeBonis K. The Personalized Wellness Life Plan. In: IsHak WW, ed. *The Handbook of Wellness Medicine*. Cambridge, UK: Cambridge University Press; 2020 [In Press].

Pizano D, Hedrick R, Clevenger S, Cohen S, IsHak WW. (2021). Weight and Health-Related Quality of Life in Children and Adolescents: A Systematic Review. *International Journal of Healthcare and Medical Sciences*, 7(3):41-52. DOI:doi.org/10.32861/ijhms.73.41.52.

Ngor A, Steiner AJ, Pakhdikian S, Okikawa D, Pizano D, Younan L, Cohen S, IsHak WW. (2023). Bipolar and Related Disorders. In: IsHak, W.W. (eds) *Atlas of Psychiatry*. Springer, Cham. https://doi.org/10.1007/978-3-031-15401-0_16

ABSTRACT

Chronic pain (CP), a leading cause of disability, is associated with addiction, physical and psychosocial impairment and tremendous financial burden. Childhood experiences contribute to the genesis of different attachment styles. Attachment theory offers a useful framework for the conceptualization of CP, with different attachment styles impacting the experience and clinical manifestations of CP. This systematic review aims to evaluate the relationship between attachment styles and CP, to investigate which attachment styles pose the greatest risk for CP, to examine how CP is expressed in the context of different attachment styles, and to gain insight regarding the treatment approach to CP. This systematic review utilized a quantitative approach and included 29 studies relating to the relationship between attachment styles and CP. The studies yielded results indicating that an insecure attachment style is more prevalent among those suffering from CP when compared with healthy subjects. Attachment insecurity was noted to be a predisposing factor with respect to various dimensions of the CP experience. A secure attachment style served as a protective factor vis-a-vis the genesis and clinical manifestations of CP. The studies highlighted the necessity of an attachment-based, customized treatment approach for CP patients with varying attachment styles. Future research should inform healthcare providers about vulnerable populations, early intervention strategies and efficacious treatment modalities.

Keywords: attachment, attachment style, attachment theory, insecure attachment, secure attachment, anxious attachment, avoidant attachment, disorganized attachment, chronic pain, pain, pain appraisal, pain tolerance, pain intensity

Chapter 1: Introduction

Statement of the Problem

Chronic pain (CP) is a common and burdensome issue that can have a devastating impact upon individuals and society. CP is one of the leading causes of disability globally. It is estimated that the encumbrance of CP worldwide is drastically escalating to become one of the leading reasons for adults to seek medical attention (Mills et al., 2019). In addition to the severe physical discomfort associated with CP, this condition has been strongly linked to addiction and dependence on opioids, increased medical expenses, limitations in physical mobility, decreased involvement in daily activities, impaired productivity, overall reduced quality of life, as well as mood and anxiety disorders. Indeed, the personal, financial and emotional stress imposed by CP may serve to further exacerbate CP-related symptoms due to the intertwining of CP and chronic stress (Abdallah & Geha, 2017). Remarkably, CP conditions have contributed to an approximated 560 billion dollars per year in direct medical expenses, lowered productivity and pain-related disability programs (Dahlhamer et al., 2018).

CP often manifests as a result of injury or a variety of health conditions. Of note, CP has now emerged as a distinct medical condition, with its own medical explanations and associated negative consequences. CP is defined as pain persisting beyond the usual healing time, lasting or recurring for a period greater than three months. The International Association for the Study of Pain (IASP) further classifies CP for inclusion in the International Classification of Diseases (ICD-11) using seven categories which include chronic primary pain, chronic cancer-related pain, chronic postsurgical and posttraumatic pain, chronic neuropathic pain, chronic secondary headache or orofacial pain, chronic secondary visceral pain and chronic secondary

musculoskeletal pain (Barke et al., 2018). In 2016, the Center for Disease Control and Prevention (CDC) estimated that a staggering 20.4% of adults (approximately 50 million) in the United States had chronic pain (Dahlhamer et al., 2018). These overwhelming statistics shed light on the importance of understanding the underlying causes and mechanisms at play with CP. Given that physicians and mental health professionals are encountering patients who suffer from unrelenting CP, understanding its causes is crucial for the development of multidimensional early-prevention strategies and effective treatment plans. Woods et al. (2019) highlight the importance of healthcare providers complementing the biological approach to pain management with a focus upon family relationships and interpersonal factors.

Attachment theory proposes an interesting framework for understanding and conceptualizing CP. Early life experiences contribute to the formation of different attachment styles, which may play a strong role in the manifestation and experience of individuals with CP. Thus, childhood experiences and attachment styles may impact an individual's perceived pain intensity, level of disability, level of distress, tendency to catastrophize, degree of depression, and utilization of health care services in adulthood. A conceptualization of CP through this lens may serve to facilitate an approach to the prevention and treatment of those suffering with CP. Attachment theory suggests that when an individual faces a threat, his or her evaluation of the threat will stimulate the attachment system and attachment-related behaviors in order to increase closeness to an attachment figure. The experience of physical pain can be classified as a threat which activates underlying attachment schemas and interacts with the early attachment experiences and styles that are developed during early childhood (Meredith et al., 2005). An understanding of the different attachment styles and their impact upon the genesis and course of CP may contribute to the therapeutic approach of individuals with CP.

Background

In order to understand how attachment styles and their underlying mechanisms may be affecting the experience and presentation of CP, it is important to fully understand attachment theory and its significance throughout one's lifespan. Attachment theory proposes that individuals need to cultivate a relationship with at least one primary caregiver during early childhood in order to sustain normative emotional, social and cognitive development (Bretherton, 1992). Attachment can be understood as an enduring emotional connection that bonds one individual to another and provides a sense of safety and security to the child. Attachment is characterized by particular behaviors, such as seeking proximity to an attachment figure when distressed or facing threat. Bowlby and Ainsworth suggest that infants engage in attachment behaviors, such as crying and clinging, when separated from a parent or when reunifying with a parent. Bowlby believes that these attachment behaviors are considered innate reactions to the perceived threat of a child losing the nurturance of a primary caregiver (Bretherton, 1992). Based upon the responses that a child receives from his or her caregiver during early childhood, the child acquires particular schemas regarding self-perception and perception of others that foster the foundation for affect regulation. These mental models, also known as attachment styles, tend to remain steady throughout life and impact a person's emotions, cognitions and behaviors in nearly all realms of life. Bowlby proposes the internal working model of attachment which describes the self and others; the model of the self centers upon the individual's self-perception and it plays a significant role in determining the extent to which a person considers himself or herself worthy of receiving support and closeness from another individual. The model of others involves the individual's perception of other persons in his or her life; this model impacts the individual's ability to trust that he or she can and will

receive support from others (McWilliams & Asmundson, 2007; Romeo et al., 2017). Overall, Bowlby's research is rooted in the belief that family and early life experiences have a strong impact on one's emotional and physical wellbeing.

Sachs-Ericsson et al. (2018) cite adverse childhood experiences (ACEs) such as physical, sexual and verbal abuse as significant factors in the development of CP and poor health outcomes in adults. They postulate that ACEs modify behavioral and physiological reactions to later-life stress, possibly via autoimmune mechanisms and the hypothalamic-pituitary-adrenal (HPA) axis, predisposing affected individuals to a higher likelihood of anxiety, depression and CP. While these psychophysiological changes commence during childhood, the impacts upon physical and psychological wellbeing may extend many years later into adulthood. Exposure to ACEs may impair the establishment of coping mechanisms and is associated with a higher risk of painful medical conditions including arthritis, rheumatism, headaches, back pain and neck pain (Sachs-Ericsson et al., 2018). Early life experiences and exposure to ACEs play a significant role in the development of individuals' attachment styles and impact the development of CP syndromes during adulthood.

Attachment theory researchers have classified distinct attachment styles. These attachment styles, of which four main types have been delineated, include the secure pattern and three insecure patterns known as anxious, avoidant and disorganized (Rholes et al., 2016). These attachment styles primarily differ across two domains: attachment avoidance, which involves distress surrounding intimacy and dependence on others, and attachment anxiety, which involves apprehension surrounding the accessibility and receptiveness of others (Porter et al., 2007). Individuals with a secure attachment style have low attachment anxiety and avoidance, generally perceive that one or more individuals are reliably available to them, and tend to make the most

accurate assessment of threats. These individuals also tend to experience good outcomes and show greater optimism and self-efficacy concerning the outcomes of perceived threats.

Conversely, individuals with insecure attachment styles display higher degrees of attachment avoidance and attachment anxiety, and tend to have a greater likelihood of exhibiting negative emotionality and unhealthy behaviors (Porter et al., 2007; Rholes et al., 2016). Individuals with an avoidant attachment style, also known as a dismissive attachment style, tend to be self-reliant and shun close relationships, thereby defeating the possibility of a close-knit support system. Those with an anxious attachment style, also known as a preoccupied attachment style, are often regarded as needy, as they fail to be reassured or comforted even in the presence of doting friends and relatives. Finally, individuals with a disorganized attachment style, also known as a fearful attachment style, lack the coping strategies needed to address adversity and experience high levels of both anxiety and avoidance (Porter et al., 2007; Rholes et al., 2016).

Attachment anxiety is correlated with threat hypervigilance, exaggerated evaluations of perceived threat, heightened and sustained emotional distress, rumination, difficulty coping with distress, excessive dependence on others, and overall negative outcomes (Porter et al., 2007). Attachment anxiety is also linked with greater levels of mood instability, such as anxiety and depression (Macdonald & Kingsbury, 2006). Attachment avoidance, however, is related to strategies that tend to minimize threat appraisals; these include downplaying potential hints of threat, avoidant coping strategies, excessive reliance on self, and the lack of engagement in social support (Porter et al., 2007).

Utilizing attachment theory to analyze how internal representations of attachment may impact physiology, health, affective states, and overall health prognosis has contributed to the understanding of the relationship between attachment styles and CP. A neuroimaging study

conducted with young adults found that physical pain and emotional pain connected to social rejection shared related neurological mechanisms, signifying that the attachment system and physical pain may share a similar biological origin (Meredith et al., 2008). Securely attached individuals engage in more problem-solving coping mechanisms whereas individuals with an insecure attachment style utilize more emotion-focused coping mechanisms, such as catastrophizing (Meredith et al., 2008). Moreover, insecurely attached individuals appear to portray their pain as more threatening, describe themselves as less equipped to cope with their pain, and report a greater degree of disability and higher pain intensity. Individuals with an insecure attachment style tend to report more pain-related distress, greater physical symptomatology, reduced pain self-efficacy, and greater levels of pain-related emotional dysfunction, such as anxiety, depression and the tendency to catastrophize (Meredith et al., 2008). Indeed, the literature suggests that an insecure attachment style is a possible contributor to the development of CP; in particular, the statistical correlation between CP and insecure attachment style may be explained on the basis that factors relevant to the development of CP, such as lower pain thresholds, more pain-related fear, catastrophizing about pain, hypervigilance to pain and less pain control are indeed known to be associated with an insecure attachment style, even among pain-free individuals (Davies et al., 2009).

Evidence derived from the literature regarding attachment theory suggests that insecure attachment may serve as a diathesis in the etiology of somatic issues and disease, setting a foundation for the Attachment-Diathesis Model of Chronic Pain (Meredith et al., 2008). This model proposes that the experience of pain activates an individual's attachment-related cognitive, behavioral, and emotional mechanisms. An insecure attachment, which serves as the diathesis, may trigger different mechanisms that impact both the experience of pain and one's

adjustment to pain. This model suggests that a relationship exists between attachment style and cognitive appraisals of the pain, the self, and one's social support. These cognitive appraisals are activated in response to the physical pain (i.e., the stressor) and consequently impact the reactions of individuals, including their choice of coping strategies, their decision to seek support, their affective states, and their overall adjustment to the pain. These appraisals of threat in response to pain activate one's attachment system and mobilize attachment behaviors. Heightened threat appraisals of pain, as well as perceptions of reduced control over pain and diminished capacity to decrease pain, are most likely to be demonstrated by less secure individuals and those with high relationship anxiety (Meredith et al., 2008).

A variable to consider in the relationship between attachment styles and chronic pain is the mediating role of emotion regulation. Adverse early life events, and the failure to form nurturing and consistent relationships with caregivers in childhood, engender insecure attachment. A feature of insecure attachment relates to the inconsistency of a caregiver's responsiveness and availability to regulate the affective states of the child. Children who grow up with this dynamic may often display an inflation of their emotional reactions in order to attract a caregiver's attention or impact a caregiver's response (Mikail et al., 1994). Research suggests that individuals who have an insecure attachment style may possess dysfunction in emotional self-regulation, leading to a higher likelihood of negative health outcomes; difficulty with emotional regulation seen in individuals with insecure attachment styles is a contributor to higher levels of health symptoms (Lewczuk et al., 2018). Individuals with emotional dysregulation are more prone to experience higher levels of anxiety and distress, which can contribute to overall poorer health outcomes as well as an intensified and more distressing pain experience. Moreover, those with emotional dysregulation may find pain more distressing than those without difficulties

in this realm because of their inability to self-soothe and their poorer coping skills (Lewczuk et al., 2018).

Attachment theory research proposes that patterns of interpersonal relating may be a significant factor in health behavior, health-care treatment seeking, and response to treatment in individuals with CP (Ciechanowski et al., 2003). Studies suggest that attachment style impacts an individual's adjustment to CP and response to cognitive behavioral therapy (CBT). Those with a secure attachment style endorse lower levels of depression before treatment and one year following treatment. In contrast, those with an avoidant attachment style show higher levels of depression as well as catastrophizing one year post treatment. The link between catastrophizing, depression and an insecure attachment style demonstrates a tendency for those with this attachment style to have a more negative affect and engage in less adaptive coping mechanisms (Ciechanowski et al., 2003).

Research also suggests that CP patients with different attachment styles show different treatment outcomes following the termination of their treatment. A study by Pfeifer et al. (2018) shows that although pain levels decrease with treatment in all patients, regardless of their attachment style, the pain level increases again in patients with high attachment anxiety at 6 months post treatment. This suggests that patients with an insecure attachment style may endorse increased levels of pain after losing the emotional security related to the assistance of their team of health care professionals. Those with a secure attachment style tend to have close friends or relatives they can rely upon; however, insecurely attached individuals tend to have insufficient and inconsistent support available to them. When treatment is complete, insecurely attached patients no longer have their "secure base," triggering an increased perception of threat and pain intensity. Individuals with an insecure attachment style do not follow the instructions of their

treatment regimen as well as securely attached patients (Pfeifer et al., 2018). Moreover, those with an insecure attachment style are less likely to adopt effective pain management strategies following the end of treatment. In contrast, those with a secure attachment style tend to comply with their treatment regimen and utilize the techniques learned in treatment following the termination of their treatment course (Pfeifer et al., 2018). Thus, individuals with an insecure attachment style are less able to sustain the positive impact of treatment over an extended period of time. In CP patients, attachment style appears to have a pronounced impact on treatment outcomes 6 months following the conclusion of treatment and thereafter. An attachment-based approach to treatment, with which one could configure a comprehensive pain management program in accordance with a patient's particular attachment style, may be a promising way to improve the outcome and prognosis for patients who suffer from pain (Pfeifer et al., 2018).

Rationale

This systematic review will be a comprehensive summary and synthesis of existing literature regarding the relationship between CP and attachment styles. This review aims to answer the following primary questions with regard to CP and attachment theory. The first research question is: What is the relationship between attachment styles and CP? The second research question is: Which attachment styles pose the greatest risk for CP and how is CP expressed based upon particular attachment styles? The third research question is: How can research concerning the relationship between attachment styles and CP provide insight regarding one's approach to the treatment of CP? It is hoped that this review will provide valuable information and resources for physicians and mental health professionals rendering medical and psychological care to patients suffering from CP and will encourage future research on this topic.

Chapter 2: Methodology

Systematic Review Approach

This systematic review was conducted by utilizing a narrative synthesis approach. A narrative synthesis analysis using quantitative studies was conducted in order to describe and examine the trends observed from the existing literature surrounding attachment styles and chronic pain. Synthesizing these studies provided a clearer understanding of the relationship between these two areas of study. This systematic review followed the guidelines from the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P), which was informed by the review standards, guidelines, and recommendations from the Cochrane Collaborative, the Campbell Collaborative, the U.S. Department of Health and Human Services, and the National Academy of Sciences (Moher et al., 2009).

Reviewers

This systematic review was conducted as part of a doctoral-level dissertation project. The primary reviewer was Samantha Cohen, M.A., a doctoral-level student enrolled in the Doctorate of Psychology (Psy.D.) program at Pepperdine University Graduate School of Education and Psychology. Research assistants, Joseph Tresk, M.S., graduate of the Master of Science in Applied Behavior Analysis program at Pepperdine University Graduate School of Education and Psychology, and Christine Evans, B.F.A., enrolled in the Master of Art in Psychology program at Pepperdine University Graduate School of Education and Psychology, both assisted the primary reviewer with the article search, screening and data extraction process. The secondary reviewer was the researcher's faculty dissertation chairperson, LaTonya Wood, Ph.D. The primary researcher reviewed the research assistants' work throughout the article search, screening and

data extraction process. The faculty dissertation chairperson reviewed the primary researcher's work to screen for bias in the articles selected for inclusion in this systematic review.

Eligibility Criteria

The studies had to meet the following criteria in order to be included. Publication sources eligible for inclusion included peer reviewed scientific journal articles published between 1990-2022. This time frame was chosen as it encompasses the years in which studies have been conducted on this topic. Studies must have been published in a peer-reviewed publication journal, as this systematic review is meant to help inform clinicians treating patients with chronic pain, and peer reviewed published journals serve as the gold standard to inform practice. Both peer reviewed national and international journals were eligible and all studies were required to be in English.

Only quantitative studies were eligible for inclusion in this systematic review in order to enhance objectivity, accuracy and sample size. Primary data collection, as well as secondary data analysis, could be included in the sample of selected studies. All measures of attachment style and chronic pain could be included in the final sample of selected studies. Studies were not limited based on statistical power or sample size.

Studies were required to involve the examination of attachment styles as they relate to chronic pain. Study participants could include individuals who identify as male, female and non-binary who were 18 years or older at the time the study was conducted. Studies conducted in all settings were eligible for inclusion. This review excluded studies that had participants with severe psychopathology (e.g. schizophrenia) and developmental disabilities (e.g. intellectual disability). The reason for this criterion is that individuals with severe psychopathology or intellectual disability may have limited ability to accurately report their pain symptoms and

diminished capacity to manage their overall health. Moreover, these individuals may have substantially altered attachment schemas as a result of these diagnoses.

Search, Screening and Selection Process

Relevant studies were identified through electronic searches of the following databases: PsychINFO and PsycARTICLES. These databases were utilized to locate studies as they contain research on the relationship between attachment styles and chronic pain.

A comprehensive list of search terms (Appendix A) was selected for use in identifying appropriate studies to be included in this review. Suitable synonyms for most terms were named and were used to strengthen the search capacity of each database. The identified terms were: Attachment, Attachment Style, Attachment Theory, Insecure Attachment, Secure Attachment, Anxious Attachment, Avoidant Attachment, Disorganized Attachment, Chronic Pain, Pain, Pain Appraisal, Pain Tolerance, and Pain Intensity. Each term was given an identification (ID) number, and variations of the pairing of the terms were provided in the search plan.

The comprehensive search plan (Appendix B) is another spreadsheet which includes the search type, database or source used, search term ID numbers, search syntax or instructions, fields to search and specifiers. This comprehensive search plan was used to gather the articles considered for inclusion or exclusion of the current review. The search documentation record (Appendix C) is another spreadsheet which includes the different variations of the search syntax used to gather the articles. The information for each variation recorded includes the database source, the search term ID numbers used, the search syntax, the fields that were searched, the specified publication year range, methodology, language, publication type and the number of articles appearing for that search.

The screening and selection record (Appendix D) is another spreadsheet which was used to document the articles that were reviewed for consideration for inclusion in the study. They are divided into distinct phases. The first phase involves the screening of the title/keywords/abstract of each study. The second phase includes a full text review for eligibility. The third phase includes the final decision regarding whether to include the study for data extraction. The phases hold a set of criteria that must be met to proceed, including analysis of the author, year, title of the article, database/sources, title/keyword screen, abstract screen decision, full text screen, inclusionary criteria, exclusionary criteria, research assistant's decision, primary reviewer's decision, chairperson's decision and final decision. The full text of the remaining articles were reviewed to make a final determination of eligibility. Any articles that were questionable for inclusion were reviewed by the chairperson and a collaborative determination was made. After the screening and selection process was complete, a PRISMA Flow Diagram was constructed (Figure 1) to provide a transparent summary of the process of selecting the final set of studies for this systematic review.

Data Collection and Extraction

A data collection and extraction form (Appendix E) is another spreadsheet that was utilized to gather information for the selected articles. The following categories were evaluated: general information (authors, year, title, date of data extraction, publication type), design characteristics and methodological features (aim of the study, study design or specific research approach), assessment of research variables, study participant characteristics (population of interest, method of recruitment, sample size, age, gender, race and ethnicity, diagnosis if applicable), setting characteristics (study location, data collection settings), analyses conducted

and measures used, results, conclusions and follow-up (key conclusions of study authors, recommendations for future research and study limitations).

Data Management, Data Analysis and Synthesis

A central database was created to gather and store the data collected from all included studies into a single document. This database was created by using an Excel spreadsheet with the variables from the Data Extraction form to allow the author to easily view all data points across all selected studies. This primary database is an extensive and comprehensive spreadsheet that holds all of the extracted data and appraisal information from all the studies.

The Evidence Table Record (Appendix F) is meant to serve as a presentation of the results of the systematic review, reporting the findings from the studies analyzed. The Evidence Table reports the following information from each study that was reviewed: 1) authors(s), 2) publication year, 3) study aim, 4) methods design, 5) population of interest, 6) sample size, 7) age, 8) gender, 9) race/ethnicity, 10) diagnoses, 11) measures used, 12) research variables, 13) main findings. The Evidence Table served as the author's primary mode of reporting results and major findings for this systematic review.

Chapter 3: Results

Search and Selection Eligibility Criteria Revisions

Upon conducting the search and selection process, it became apparent that the search criteria initially set forth required certain modifications. Initially, the proposed search criteria yielded several articles that were not specifically relevant to individuals who have experienced chronic pain. In fact, several articles included participants who were free of chronic pain but were subjected to experimentally-induced acute pain for the purpose of the studies. Although the findings in these studies were robust, they unfortunately did not directly address the specific research questions posed in this study. For this reason, it became necessary to explicitly exclude all articles that did not contain participants with chronic pain.

As the search and selection process progressed, it also became evident that the initial exclusion criteria set forth in this study required further clarification. Initially, the exclusion criteria stated that studies comprised of individuals with severe psychopathology or developmental disabilities would be excluded. However, as the review of articles commenced, it became clear that many studies were comprised of individuals with a history of psychopathology, such as borderline personality disorder and depression. Therefore, there was a need to explicitly define severe psychopathology for the purpose of exclusion. It was then determined that studies including individuals with a history or current episode of psychosis would be excluded. However, studies including individuals with other forms of psychopathology could be included.

Another aspect of the methodology requiring modification and further characterization relates to the participants eligible for inclusion in this study. Initially, the search criteria stated that studies comprised of male, female and non-binary individuals who were 18 years or older

could be included. However, as the screening process progressed, it became clear that several studies contained non-human participants, such as rats and dogs. Therefore, it became necessary to exclude any studies that were conducted using non-human participants.

Search Results

The database search, which was facilitated by utilizing the advanced search specification options on PsycINFO and PsycARTICLES, with respect to publication type, language, methodology and peer-review status, yielded a total of 263 articles (PsycINFO: 249; PsycARTICLES: 14). After screening for duplicate articles, of which there were 14, articles were screened for eligibility by analyzing the title, key terms and abstract of each study. Upon screening for eligibility, the full texts of 249 articles were examined. After excluding articles based upon the eligibility criteria, 29 articles were selected to be included in this systematic review (See Figure 1, Prisma Flow Diagram).

Study Characteristics

The methodological design utilized in all of the selected articles for this study was quantitative. All of the 29 chosen articles were empirical studies. Several of the articles also incorporated interview ($n = 2$), qualitative ($n = 1$), prospective ($n = 3$) and longitudinal ($n = 4$) designs in their methodological approaches.

The selected studies were conducted in various settings. The majority of the studies were conducted by utilizing participants in a range of inpatient and outpatient medical settings. In some of the studies, however, data was collected remotely via questionnaires. The selected studies were conducted in Spain, Italy, United Kingdom, Australia, Canada, Germany, Denmark, Portugal and the United States.

The selected studies included male and female participants above the age of eighteen years. Of the selected studies, 18 articles did not specify the race/ethnicity of the participants. Eleven studies, however, included data regarding race/ethnicity, identifying study participants as Caucasian, African-American, Native American or “Other.”

Research Question 1: What is the Relationship Between Attachment Styles and CP?

In order to examine this research question, the selected 29 articles were examined for correlations between attachment styles and CP. All of the selected articles provided meaningful data with regard to the relationship between attachment style and CP. Peñacoba et al. (2017) and Romeo et al. (2020) noted a significant correlation between fibromyalgia and an insecure attachment style. McWilliams (2017) found a significant relationship between medically unexplained CP and aspects of an insecure attachment style. Davies et al. (2009), in a study of chronic widespread pain, likewise noted a significant relationship with an insecure attachment style. Specifically, a higher number of pain sites and pain-related disability were correlated with different dimensions of insecure attachment. Forsythe et al. (2012) noted a significant relationship between an insecure attachment style and patient-reported pain, pain behavior, disability, and depressive symptoms. Hicks et al. (2019) found a significant correlation among early life experiences, a current insecure attachment style and pain experienced by individuals with scleroderma.

Andrews et al. (2014) noted a significant relationship between an insecure attachment style and dysfunctional approaches to activity engagement in those with CP. Charbonneau-Lefebvre et al. (2019) demonstrated a significant relationship between attachment anxiety and pain intensity in those with provoked vestibulodynia (PVD). Ciechanowski et al. (2003) found a significant correlation between attachment style and the adjustment to CP. Meredith et al. (2006)

noted a significant correlation between depression and CP, but attachment variables were not correlated with pain intensity. Nacak et al. (2017) demonstrated a significant correlation between an insecure attachment style and somatoform pain disorder (SPD). Sechi et al. (2021) noted a significant relationship between an insecure attachment style and quality of life in those with fibromyalgia. Meredith et al. (2006) demonstrated a significant relationship between an anxious attachment style and pain self-efficacy, pain intensity, anxiety and disability. Meredith et al. (2005) found a significant correlation between attachment security and the cognitive appraisal of pain.

MacDonald and Kingsbury (2006) noted a significant correlation between pain affect, pain perception, anxiety, depression and an anxious attachment style. Gregory et al. (2005) found a significant relationship among attachment style, personality traits, psychological factors and CP bodily locations. McWilliams and Bailey (2010) demonstrated a significant relationship between an insecure attachment style and a variety of both health conditions and pain-related conditions. Sirois and Gick (2016) noted a significant correlation between attachment style, appraisals of arthritis-specific stress, perceived social support and coping efficacy. Kowal et al. (2012) found a significant relationship between attachment style and self-perceived burden, pain symptoms and coping with CP. Kratz et al. (2012) noted a significant relationship among catastrophizing, coping and attachment style. Andersen et al. (2018) found a significant correlation between attachment anxiety, pain and pain behaviors. Gauthier et al. (2012) demonstrated a significant relationship among pain catastrophizing, attachment anxiety and attachment avoidance. Leclerc et al. (2015) found a significant relationship among attachment style, sexual satisfaction and sexual function in patients suffering from provoked vestibulodynia (PVD).

Kowal et al. (2015) noted a significant correlation between attachment insecurity, cognitive and emotional reactions to pain, post-treatment pain catastrophizing, post-treatment pain self-efficacy, and depressive symptoms. Andersen et al. (2019) found a significant relationship between attachment style, disability post-injury, pain intensity, catastrophizing and depression in a study of the development of CP and disability after whiplash injury. Smith et al. (2018), in a study of pain experienced by women following breast cancer treatment, demonstrated a significant relationship between attachment anxiety and pain intensity, effectiveness of pain management and catastrophizing. Savi et al. (2005) found a significant relationship between attachment style and the development of headaches. In a study of fibromyalgia patients, Oliveira and Costa (2009) noted a significant correlation between attachment style dimensions, coping strategies and the adjustment to CP. Andersen (2012) demonstrated a significant relationship between attachment insecurity and the use of opioids, depression and anxiety in those receiving treatment at a pain management program. The relationships between attachment styles and various aspects of CP, as noted above, are elaborated upon in Research Question 2.

Research Question 2: Which Attachment Styles Pose the Greatest Risk for CP and How is CP Expressed Based Upon Particular Attachment Styles?

In order to examine Research Question 2, the selected 29 studies were analyzed to determine which attachment styles pose the greatest risk for the development of CP. Moreover, each study was reviewed for data regarding the particular expressions of CP based upon different attachment styles. Peñacoba et al. (2017) discovered that most fibromyalgia patients possessed a secure attachment style; however, an insecure attachment style was more prevalent in this

population when compared with healthy women. Fibromyalgia patients in this study were noted to have higher measures of insecure attachment factors related to fear of rejection, higher need of approval and low self-esteem. In comparison with healthy women, fibromyalgia patients in this study had lower percentages of secure attachment style (69.9% vs. 86%), higher percentages of avoidant attachment style (19.8% vs. 7.4%), and higher percentages of anxious–ambivalent attachment style (10.3% vs. 6.6%). Romeo et al. (2020) found that patients with fibromyalgia also demonstrated higher scores, when compared with healthy controls, of anxious-ambivalent attachment style dimensions, such as higher need of approval, fear of rejection and low self-esteem, as well as avoidant attachment style factors, such as increased discomfort with intimacy and excessive emotional self-reliance.

According to McWilliams (2017), avoidant attachment style was positively correlated with medically unexplained chronic pain (MUCP) during the prior year, even after statistically accounting for anxiety and depressive disorders and other demographic factors. There was a 27% increase of prior-year MUCP for each unit increase on the avoidant attachment style rating when the authors analyzed the avoidant attachment odds ratio. These results imply that an insecure attachment style is correlated with MUCP; in particular, the avoidant attachment style may predispose one to MUCP. According to Davies et al. (2009), the prevalence of chronic widespread pain (CWP) in those with an insecure attachment style was almost twice that of patients with a secure attachment style; persons with CWP were 70% more likely to endorse an insecure attachment style, in comparison with pain free individuals, after adjusting for gender and age. Notably, the occurrence of CWP was most strongly correlated with a preoccupied attachment style, while fearful and dismissing attachment styles were associated with CWP to a lesser degree. Patients with insecure attachment suffering from CWP did not have a higher

intensity of pain when compared to those with a secure attachment style; however, patients with dismissing and preoccupied attachment styles had a higher number of pain sites, and those with a preoccupied attachment style had greater pain-associated disability.

In a study of individuals with CP, Forsythe et al. (2012) found that those with a secure attachment style presented with significantly reduced levels of self-reported disability, pain, depressive symptoms, and pain behavior. Preoccupied and fearful insecure attachment styles, distinguished by negative models of self, were correlated with higher levels of self-reported disability, pain, depressive symptoms and pain behavior. According to Hicks et al. (2019), patients with scleroderma, a painful rheumatologic disease, had greater levels of pain if they possessed a dismissive insecure attachment style and experienced emotional distress at a young age. The authors noted that adverse early life experiences and inadequate emotional regulation with low self-compassion correlated with hyperarousal and higher pain levels. Andrews et al. (2014), in a study of CP patients, were the first to demonstrate empirical support for correlations between an insecure attachment style and dysfunctional approaches to activity engagement. They noted that higher degrees of secure attachment were not correlated with overactivity and were rather associated with lesser degrees of activity avoidance and catastrophizing. The authors observed that patients with a secure attachment style were less inclined to have catastrophizing thoughts about their pain, thereby reducing avoidance of daily activities. The authors also noted an association between preoccupied attachment and a greater degree of catastrophizing, activity avoidance and overactivity; they indicated that the correlation between a preoccupied attachment style and activity avoidance was affected by catastrophizing. Further analysis demonstrated a correlation between preoccupied attachment and both high overactivity and high activity

avoidance, suggesting that the preoccupied attachment style leads simultaneously to both overactivity and activity avoidance.

Charbonneau-Lefebvre et al. (2019) noted that women with greater attachment anxiety have increased hypervigilance, greater catastrophizing, lower pain self-efficacy, hyperactivated responses to stress, and increased fear of pain, contributing to higher pain intensity in those with provoked vestibulodynia (PVD), a chronic pain condition. The authors found that both attachment anxiety and attachment avoidance at baseline were correlated with pain intensity at the 2-year follow-up. A higher degree of attachment anxiety at baseline correlated with poorer pain self-efficacy at the 2-year follow-up, and reduced pain self-efficacy at baseline was associated with greater pain intensity after two years. A study by Ciechanowski et al. (2003) indicated a positive correlation between attachment style and adjustment to CP. A preoccupied attachment style correlated with more than weekly pain-related health care appointments, even after accounting for factors such as gender, age, catastrophizing, baseline utilization, and depression. A fearful attachment style correlated with more than monthly pain-related appointments. The study found no correlation between attachment style and pain intensity or physical dysfunction.

Meredith et al. (2007) discussed the occurrence of depression prior to the onset of pain and as a sequela of pain, as well as the impact of depression upon the experience of pain. While depression impacted the pain experience, no definite correlation was noted between attachment style and pain intensity. However, a secure attachment served as a protective factor against depression in those suffering from CP, while fearful attachment was a significant risk factor for depression in the subject population. Nacak et al. (2017) noted that patients with SPD were more

likely to have an insecure attachment style compared to healthy subjects. An insecure attachment style conferred an eleven-fold risk of suffering from SPD, in comparison with those possessing a secure attachment style. Specifically, 60% of the SPD patients had an insecure attachment style, with dismissive attachment style being the most common, followed by a preoccupied or fearful attachment style. In comparison, 80% of the healthy subjects had a secure attachment style.

In a study of women with fibromyalgia, Sechi et al. (2021) found that women with fearful, preoccupied, and dismissive attachment styles sustained lower levels of quality of life compared to those with a secure attachment style. In addition, the authors noted that avoidant/dismissing and preoccupied attachment styles were correlated with depressive symptoms and low quality of life. Meredith et al. (2006) correlated low pain self-efficacy with fearful and preoccupied (anxious) attachment styles, while high pain self-efficacy was associated with high scores on the dimension of comfort with closeness, especially for males. An insecure attachment style was correlated with higher anxiety levels. Pain self-efficacy, in comparison with anxiety, was a more robust predictor of both pain intensity and disability. The relationships of pain self-efficacy and disability, pain self-efficacy and pain intensity, as well as anxiety and disability, were favorably impacted by higher degrees of comfort with closeness. Higher perceived levels of disability were associated with low comfort with closeness (avoidance) in combination with either low pain self-efficacy or high anxiety levels. Higher pain intensity levels were noted in patients with both low pain self-efficacy and low comfort with closeness.

Meredith et al. (2005) found that those with relationship anxiety were more likely to perceive pain as threatening, while those with secure attachment were less inclined to do so. In addition, those with a fearful and dismissing (avoidant) attachment style had a greater likelihood

of perceiving their pain as threatening, even though such individuals may generally downplay their pain. In comparison with individuals with insecure (especially fearful and dismissing) attachment styles, those with a secure attachment style scored higher in comfort and challenge appraisal, and had lower measures of anxiety, stress, catastrophizing and depression. Among patients with an insecure attachment style, resilience-related factors of challenge appraisal and attachment comfort were slightly higher in the preoccupied group. MacDonald and Kingsbury (2006) found that higher levels of pain affect were correlated with higher levels of anxious attachment. The authors noted that patients reporting greater distress and reduced tolerance of pain also expressed greater worry about being rejected by others. The authors found that an anxious attachment style was correlated with higher degrees of anxiety and depression, which were in turn correlated with increased pain affect.

Gregory et al. (2005) evaluated 45 patients with no chronic pain (NP), 49 individuals with CP confined to their back and/or extremities (BE), and 46 patients with pain in other bodily regions (OP). Individuals in the BE category tended to have a secure attachment style with low dependence. The OP group was comprised of individuals more likely to possess an insecure attachment style, with marked fearfulness, high avoidance, alexithymia traits, high emotional distress levels and somatosensory amplification. McWilliams and Bailey (2010) found that an insecure attachment style was correlated with approximately 50% of the medical conditions reviewed in their paper. Anxious attachment, in comparison with avoidant attachment, was more robustly correlated with overall bad health. Avoidant attachment was associated with ailments characterized predominantly by pain, such as headaches, back or neck issues, arthritis and other conditions with CP. Anxious attachment, on the other hand, was correlated with a multiplicity of conditions, such as hypertension, stroke and cardiovascular disease. Sirois and Gick (2016)

found that both avoidant and anxious attachment styles were correlated with greater reporting of arthritis-related stress, lower coping efficacy and lower perceived social support. Avoidant and anxious attachment styles were also correlated with feelings of inadequacy related to coping with the symptoms, emotional aspects, and daily challenges of arthritis. The impact of insecure attachment upon coping ability remained significant even after consideration of perceived threat to wellbeing from illness-related stressors.

Kowal et al. (2012) found that more than 70% of subjects with CP reported increased levels of self-perceived burden (SPB). In turn, SPB was associated with attachment anxiety, increased pain intensity ratings, depressive symptoms, anxiety, caregiver burden, functional limitations and pain self-efficacy. In addition, CP patients with low attachment avoidance scores demonstrated a significant correlation between attachment anxiety and SPB scores. The authors pointed out that patients with a preoccupied attachment style, with high anxiety and low avoidance, had higher SPB scores, in comparison with other attachment groups, such as secure, dismissing, or fearful. Kratz et al. (2012) found that attachment anxiety was highly relevant in CP patients, as the experience of increased pain was associated with a greater degree of pain catastrophizing in anxiously attached women, compared to non-anxiously attached women. Those with higher attachment avoidance scores had greater degrees of pain intensity and pain catastrophizing, as well as lower degrees of social coping. Moreover, avoidantly attached patients compared with non-avoidantly attached individuals demonstrated lesser increases in the utilization of social coping mechanisms during periods of high catastrophizing. In comparison with securely attached patients, patients who reported an insecure anxious attachment style had the greatest “catastrophic response” during times of intense pain.

Andersen et al. (2018) addressed the relationship between pain intensity and pain behaviors, defined as “specific body movements enacted during the experience of pain” (p. 1) which serve to promote caring and supportive reactions from others. They noted that patients with high degrees of attachment anxiety had a weaker correlation between pain and pain behaviors. Patients with a more secure attachment style had a positive association between pain and pain behaviors, leading to improved pain communication skills. Gauthier et al. (2012) studied a group of 191 CP patients with advanced cancer. Those with a greater degree of pain catastrophizing received frequent distracting and solicitous reactions from others, rather than negative or punishing responses. Patients with an anxious attachment style who identified their partner or spouse as their significant other (SO) had higher pain catastrophizing associated with reduced frequency of punishing responses. On the other hand, pain catastrophizing was not statistically correlated with the occurrence of less frequent punishing responses in patients with a secure attachment style or patients with an anxious attachment style who identified their SO as other than their spouse or partner. In other words, patients with reduced attachment anxiety did not perceive differing degrees of punishing responses across varying magnitudes of pain catastrophizing. Leclerc et al. (2015) studied 101 couples involving women with provoked vestibulodynia (PVD) in order to examine the correlation between attachment styles, CP and sexual function. Their results indicated that attachment factors were not a predictor of pain intensity. Women with anxious or avoidant attachment styles, however, had lower degrees of sexual satisfaction.

Kowal et al. (2015) studied the impact of attachment insecurity upon patients’ responsiveness to interdisciplinary CP management. An insecure attachment style was noted in approximately two-thirds (65.5%) of the subjects. The authors found that attachment insecurity

was not correlated with pre- and post-treatment pain intensity or pain-associated disability. However, those with an insecure attachment style sustained less post-treatment improvement in depressive symptoms, pain self-efficacy and pain catastrophizing. The authors noted a positive correlation between attachment insecurity and pre- and post-treatment inefficacious emotional and cognitive responses to pain. While both anxious and avoidant attachment styles were associated with reduced post-treatment pain self-efficacy, only anxiously attached patients showed increased post-treatment depressive symptoms, and only avoidantly attached patients showed increased post-treatment pain catastrophizing. In a study about the development of CP and disability after whiplash injury, Andersen et al. (2019) found that both anxious and avoidant attachment styles were positively correlated with the degree of disability six months following injury. There was a positive relationship between pain intensity and pain-related disability in the presence of both avoidant and anxious attachment styles. In addition, high degrees of avoidant and anxious attachment predicted a positive correlation between depression and disability. Lastly, high degrees of attachment avoidance predicted a positive correlation between pain catastrophizing and psychosocial disability.

Smith et al. (2018) studied 335 women with non-metastatic breast cancer in order to discover the relationship between attachment styles and the occurrence of CP following breast cancer treatment. They noted that women with high degrees of attachment anxiety were more likely to experience persistent pain following breast cancer treatment. However, an avoidant attachment style was not correlated with the presence of post-treatment persistent pain. Women with greater degrees of attachment avoidance and anxiety were more likely to experience a higher degree of pain intensity. Further, patients with an insecure attachment style had a greater likelihood of engaging in catastrophizing. Women with both attachment anxiety and attachment

avoidance had reduced efficacy of pain treatment. Savi et al. (2005) studied 114 patients with primary headaches, including 68 with migraine, 23 with tension headaches and 23 with chronic daily headaches, as well as a control group of 57 patients. They investigated the relationship between attachment styles and the occurrence of headaches. There was a greater percentage of patients in the headache group with an insecure attachment style (38.6%) in comparison with the control group (15.8%). Specifically, the headache group was comprised of 25.4% of subjects possessing an avoidant insecure attachment style and 13.2% of patients with an anxious insecure attachment style. The corresponding percentages in the control group were 10.5% and 5.3% respectively.

Oliveira and Costa (2009), having reviewed empirical studies linking insecure attachment styles with higher reporting of psychological and physical symptoms, further examined these associations. In their study of 128 Portuguese female fibromyalgia patients, the interrelatedness of attachment styles and perceived health status was investigated. The authors studied the insecure attachment dimensions of dependence, ambivalence and avoidance. They noted that physical health status was inversely correlated with dependence, while mental health status showed a positive correlation with trust and a negative correlation with both ambivalence and dependence. Andersen (2012) studied 72 patients with non-malignant CP enrolled in a 13-week pain treatment program. The authors found no correlation between an insecure attachment style, disability and pain. While patients with both secure and insecure attachment styles benefited equally from the treatment program, those with an insecure attachment style, unlike those from the securely attached group, did not sustain a significant decrease in levels of depression and anxiety. Patients with an insecure attachment style had a significantly increased use of opioid analgesics when compared with the securely attached subjects. The increased use of opioids was

particularly correlated with the avoidant attachment dimension. Furthermore, although insecurely attached patients sustained symptomatic improvement to a degree that was equal to securely attached patients, the authors noted that insecurely attached patients maintained higher degrees of opioid consumption following the end of the treatment program.

Research Question 3: How Can Research Concerning the Relationship Between Attachment Styles and CP Provide Insight Regarding One's Approach to the Treatment of CP?

In order to address Research Question 3, the selected 29 studies were analyzed for data that may inform the treatment of CP. Peñacoba et al. (2017) propose the incorporation of research on attachment processes into the conceptualization and treatment of patients with fibromyalgia. The authors note that adopting an attachment framework to the treatment of pain may facilitate early intervention in order to impede the progression of pain from acute to chronic, as well as aid in addressing dysfunctional responses to pain. Specifically, the authors note that programs focused upon strengthening attachment security may not only improve the prognosis of those experiencing pain, or those with acute pain who are at risk of developing CP, but may also aid in identifying higher-risk fibromyalgia patients who utilize inefficacious coping strategies. Romeo et al. (2020) highlight the significance of addressing dysfunctional attachment processes and abnormal affect regulation, in addition to physical pain, in patients with fibromyalgia. The authors tout the potential benefits of therapeutic interventions, such as Attachment-Based Compassion Therapy (ABCT), which incorporates aspects of mindfulness, self-compassion and attachment processes developed in childhood. McWilliams (2017) emphasizes the need for further investigation into the relationship between insecure attachment and MUCP in order to more effectively target the mediating variables impacting this relationship during treatment.

Davies et al. (2009) propose that a greater understanding of attachment processes may aid in the treatment of patients with CWP. The authors note the potential value of assessing patients' attachment styles in order to identify patients at greater risk of maladaptive coping with CP, as well as to identify patients who are at increased risk of progressing from the acute phase of pain to pain chronicity. In addition, the authors highlight that attachment assessment may assist in identifying patients who may be less likely to effectively engage with healthcare personnel and treatment programs due to their style of attachment. The authors emphasize the significance of examining the psychosocial and neurodevelopmental factors that may be at play in the relationship between CP and attachment style. The authors also outline the need for attachment-based interventions that incorporate factors, such as education and support, for patients and those in a supportive role, including medical providers and caregivers. Adopting an attachment-based lens to the treatment of CP, according to the authors, may have a robust effect on treatment outcomes, such as overall distress levels, quality of life, degree of disability, involvement in treatment programs, and contentment with treatment.

Forsythe et al. (2012) highlight the potential benefits of investigating the impact of attachment and interpersonal processes on overall functioning in the context of CP. The authors note the significance of patients' daily interactions with their significant others and posit that these interactions may play an integral role in patients' adjustment to CP. Therefore, the authors propose the incorporation of patients' social environment into treatment, and highlight the significance of attempting to more congruently align therapeutic interventions with patients' attachment style, while taking into account the responses of others who are operating in a supportive role. Hicks et al. (2019) emphasize the importance of emotion regulation in those with CP. The authors highlight self-compassion as a regulatory mechanism for decreasing the

emotional and physical hyperarousal associated with high degrees of pain, and note that this practice could be a beneficial adjunctive treatment to traditional medical and psychological approaches. The authors also propose the potential benefits of healthcare providers conducting assessments of attachment processes and negative early life experiences, in order to assist patients who are struggling with emotional dysregulation in the context of CP.

Andrews et al. (2014) highlight the benefit of applying an attachment-informed approach to the assessment and treatment of patients with CP. The authors note that recognition of patients' attachment styles may allow for the development of customized treatment programs aimed at targeting patients' specific attachment needs, as well as provide opportunity for healthcare providers to delineate certain populations of CP patients that may be at increased risk of generating dysfunctional approaches to activity engagement. The authors emphasize the need for attachment-based intervention for patients with CP and note that the therapeutic relationship may serve to create a secure base for patients. The authors propose that a therapeutic secure base may very well promote an environment in which patients may develop alternative and more adaptive ways of viewing themselves and others. The authors discuss the potential benefits of family-based psychotherapy and attachment-informed couples therapy, both of which may facilitate increased awareness of interpersonal patterns and more effective interpersonal skills, as well as facilitate responsive and secure emotional engagement between patients and their support systems.

Charbonneau-Lefebvre et al. (2019) note the significance of incorporating an attachment framework in the assessment and treatment of PVD. The authors highlight the utility of CBT, proposing that this treatment modality may decrease pain intensity by bolstering pain self-

efficacy in patients with PVD. The authors also emphasize the potential usefulness of treatments that focus on attachment processes, such as emotion-focused therapy, as they have been shown to be effective at strengthening patients' ability to seek support and decreasing attachment insecurity. Ciechanowski et al. (2003) propose that incorporating research on attachment processes may be useful in increasing understanding of care-seeking patterns, responsiveness to treatment, and the clinical needs of patients with CP. Specifically, the authors highlight that a greater understanding of patients' attachment styles may assist healthcare providers in customizing unique treatment plans for patients' individual needs, inform treatment planning and clinical decisions, and aid healthcare personnel in providing education to patients about proper methods of seeking care. The authors note that adopting an attachment-informed approach to treatment may enhance the efficacy of CBT by including developmental and attachment-based concepts in treatment. The authors note, for example, that the recognition of a patient's preoccupied attachment style may inform the clinical strategy of fostering greater independence and self-efficacy during treatment. On the other hand, as noted by the authors, the recognition of a patient's fearful attachment style may underscore the importance of assisting patients in fostering secure relationships with their providers during the course of treatment.

Meredith et al. (2006) emphasize the significance of utilizing an attachment-based approach to pain rehabilitation with individuals who present with an insecure attachment style, and specifically, those who display a fearful attachment style. The authors note that current pain management programs may focus upon depression in CP patients rather than underlying attachment styles; they note, however, that more specialized treatment, incorporating attachment processes, is warranted in those with attachment insecurity, as such patients are at increased likelihood of developing depression and maladaptive responses to CP. Nacak et al. (2017)

highlight the need for further investigation into the causes of SPD. The authors note that greater insight into the causal factors of SPD, in the context of attachment insecurity, may advance SPD prevention efforts and facilitate more prompt identification of patients presenting with SPD symptomology. Furthermore, the authors emphasize that increased awareness surrounding the etiology of SPD may help facilitate innovative psychotherapy treatments that take into account attachment dimensions.

Sechi et al. (2021) note that factors such as depressive symptomology and an insecure attachment style increase the risk of physiological and psychosocial discomfort and disability in subjects with fibromyalgia. Therefore, the authors emphasize the importance of incorporating measures of depression and attachment style into the assessment and treatment of patients with fibromyalgia. The authors note that providing attachment-informed care may provide patients with increased awareness of the impact of their attachment processes upon their ability to utilize healthy coping strategies, as well as regulate negative or uncomfortable emotions. Moreover, the authors highlight that attachment-informed care may foster increased resiliency in patients who must navigate the complex difficulties of fibromyalgia. Meredith et al. (2006) highlight the significance of applying an attachment-informed framework to the treatment of patients with CP. The authors note that individuals who possess an anxious or avoidant insecure attachment style and experience CP are more prone to reduced self-efficacy and increased anxiety. The authors further note that fostering a secure base during treatment, as well as incorporating secure-base priming techniques, may serve as useful treatment strategies in addition to the provision of CBT for patients with CP. Moreover, the authors highlight the utility of relational and emotion-focused psychotherapy models which may serve to address the individual needs of CP patients presenting with different attachment orientations.

Meredith et al. (2005) note the importance of addressing attachment processes in the treatment of patients with noncancer pain. The authors highlight the benefits of applying attachment theory to the assessment and treatment of CP in order to inform clinicians as they address patients' pain appraisal and generate patient-specific behavioral, cognitive and emotional strategies. MacDonald and Kingsbury (2006) emphasize that patients with an anxious attachment style have heightened, maladaptive emotional responses to physical pain, with anxiously attached CP patients perceiving increased social rejection. This data, according to the authors, may inform one regarding the need to focus upon the perceived social threat consequences of physical pain. Gregory et al. (2005), in their study of patients experiencing pain in the back or extremities versus other bodily regions, highlight the significance of customizing the treatment approach for patients experiencing CP. On the basis of their findings, which suggest that attachment style, personality traits and psychological factors impact the bodily location in which CP manifests, the authors propose that a treatment approach, which accounts for patients' attachment style, psychological characteristics and personality traits, should be adopted.

McWilliams and Bailey (2010) emphasize that research on attachment insecurity and its role in increasing the likelihood of developing certain diseases and chronic illnesses may be useful in conceptualizing the etiology of health and pain-related conditions. This data may inform healthcare providers in their approach to the formulation and execution of treatment programs. Sirois and Gick (2016) highlight the significant impact of attachment processes upon coping efficacy in patients receiving treatment for arthritis. The authors note that therapeutic interventions aimed at bolstering coping efficacy in patients with attachment insecurity may play an integral role in their adjustment to arthritis-associated CP. For example, the authors note that the provision of CBT interventions aimed at increasing patients' perceptions of being able to

manage arthritis-related issues, such as the functional limitations due to CP, may be useful. Furthermore, the authors propose that incorporating therapeutic interventions focused upon relationships, such as interpersonal therapy and attachment-informed therapy, may serve to increase the efficacy of arthritis treatment in those with attachment insecurity. The authors note the importance of focusing upon coping appraisal in patients with attachment insecurity and customizing treatment to address the needs of this particular subgroup of patients managing arthritis.

Kowal et al. (2012) highlight the importance of applying an attachment framework to the treatment of CP. Based on their findings, which suggest that attachment style impacts patients' sense of self-perceived burden (SPB), the authors emphasize the importance of addressing attachment and interpersonal issues during the course of treatment. The authors note that addressing interpersonal processes may contribute to improved psychosocial functioning and decreased levels of pain. Kratz et al. (2012) emphasize the impact of an insecure attachment style upon the development of increased pain catastrophizing in CP patients. As insecurely attached patients may express increased pain catastrophizing in order to elicit attention and social support, the authors stress the need to develop treatment programs that enhance attachment security in adults and provide social skills training. Given that an important focus of intervention in CBT is the reduction of pain catastrophizing, the authors highlight the need to supplement CBT with a social developmental approach that incorporates interpersonal processes among patients' families and partners. The authors posit that an attachment-informed approach may help to identify patients at increased risk for developing CP and provide early intervention to prevent maladaptive coping and pain chronicity.

Andersen et al. (2018) noted that significant attachment anxiety may reduce the observable displays of pain when patients encounter painful stimuli in the presence of others unknown to them, thereby creating difficulties for healthcare professionals undertaking clinical assessments of pain. The authors highlight, therefore, the importance of addressing attachment style when evaluating CP patients, in order to reach accurate diagnostic conclusions and embark upon appropriate clinical interventions. According to Gauthier et al. (2012), who studied cancer patients with CP, it is important to account for patients' attachment styles. Attachment styles may inform healthcare providers about patients' perception of support during the course of their pain catastrophizing. An attachment-based approach may provide insight as to which patients are predisposed to manifesting with maladaptive pain responses, leading to increased pain, disability and overall negative outcomes. The authors emphasize that their data may facilitate patient-specific interventions that address pain catastrophizing and improve quality of life.

Leclerc et al. (2015) highlight the role of interpersonal dynamics in couples navigating the difficulties associated with PVD. The authors emphasize the need to address attachment processes and the impact of attachment avoidance and attachment anxiety upon sexual interactions and functioning during the course of treatment. Kowal et al. (2015), in their study of pre- and post-treatment patients with CP, undergoing a month-long pain rehabilitation program, noted the impact of attachment insecurity upon the success of treatment. Given that attachment insecurity correlated with reduced improvement in pain self-efficacy, depression and pain catastrophizing, the authors emphasize the need to further study the mechanisms by which attachment dimensions affect the responses of CP patients to pain management programs. For example, the authors propose that patients who are insecurely attached may require a treatment program that more thoroughly focuses upon attachment processes and interpersonal factors.

Andersen et al. (2019) studied the occurrence of increased disability and CP following a whiplash injury, finding a positive correlation with anxious and avoidant attachment styles. They therefore propose that attachment insecurity, as a pre-injury variable predictive of suboptimal recovery, should be addressed with an attachment-based framework in order to prevent the development of CP.

Smith et al. (2018), in their study of breast cancer patients with persistent pain, highlight the impact of attachment insecurity upon the perception of higher pain intensity and reduced quality of life. The authors propose that anxiously attached breast cancer patients may require an attachment-informed treatment plan that fosters improved support and relationships with healthcare providers. On the other hand, patients with avoidant attachment styles may require psychoeducation that fosters independence and self-efficacy. The authors emphasize the importance of identifying patients' attachment styles in order to optimally customize patient-specific treatment programs. Savi et al. (2005) noted the increased prevalence of an insecure attachment style among those suffering from headaches in comparison with healthy controls. The authors therefore highlight the potential benefits of adopting an attachment-informed approach during the course of treatment.

Oliveira and Costa (2009), in their study of fibromyalgia patients, highlight the impact of insecure attachment upon psychological and physical health parameters. The authors emphasize the need to further investigate the roles of attachment dimensions, health status and coping mechanisms in fibromyalgia patients, in order to generate effective, personalized treatment programs. Andersen (2012), in his study linking increased opioid use with attachment insecurity, questions whether the increased consumption of opioid medication in insecurely attached

patients serves to address unmet attachment needs. If so, the author highlights the need for attachment-informed treatments in order to reduce opioid usage in patients with high attachment insecurity. As insecurely attached patients have greater degrees of pain symptomology before and after treatment, these patients may benefit from treatment that includes an attachment-based framework. The author further advises primary care healthcare providers to be vigilant about the possibility of underlying insecure attachment in patients complaining of pain. Thus, the author recommends supplementing traditional treatment modalities, such as physical therapy and pharmacotherapeutic intervention, with a multidisciplinary approach that addresses insecure attachment processes.

Chapter 4: Discussion

This study aimed to examine the relationship between the various attachment styles and CP. This systematic review also served to examine which attachment styles pose the greatest risk for the development of CP and how CP manifests based upon different attachment styles. Further, the existing research on CP and attachment styles was reviewed in order to gather insights regarding treatment approaches for CP. Previous research studies have investigated the associations between attachment styles and factors related to the experience of pain. Given that CP has become one of the leading causes of disability and has resulted in significant emotional, financial, medical and personal consequences for CP sufferers, it appeared appropriate to contribute to the existing body of literature surrounding this issue. Therefore, this quantitative systematic review was conducted in order to provide further data on the relationship between attachment styles and CP in the adult population and provide clinically useful information to healthcare professionals who are treating individuals managing CP.

This systematic review yielded robust data concerning the relationship between attachment styles and CP. The reviewed studies provided meaningful information regarding the specific attachment styles that pose the greatest risk for CP and offered insight regarding the manifestations of CP in patients presenting with particular attachment styles. The studies included in this systematic review examined subjects suffering from CP and highlighted a heterogeneous group of CP conditions, including fibromyalgia, arthritis, medically unexplained chronic pain, non-cancer related chronic pain, chronic widespread pain, provoked vestibulodynia, somatoform pain disorder, cancer-related pain, chronic whiplash injury, headache-related pain, and various other health conditions.

This review, consistent with previous research, revealed that the prevalence of an insecure attachment style was greater among those suffering from CP when compared with healthy subjects. All of the 29 articles analyzed in this study emphasized insecure attachment as a predisposing factor for various aspects of the CP experience. However, the studies differed as to the particular factors, such as pain intensity, disability, pain catastrophizing or depression, upon which the authors focused their attention. A secure attachment style was more typically identified in healthy and pain-free subjects and was noted to be a protective factor with respect to the development and clinical features of CP.

While a number of studies dealt with the relationship between attachment styles and CP in general, others focused upon attachment styles in relation to specific health ailments associated with CP. Among the studies addressing CP associated with fibromyalgia, a higher prevalence of avoidant and anxious attachment styles was noted in fibromyalgia patients. Moreover, avoidant and anxious subjects had lower quality of life scores and greater degrees of depressive symptoms (Oliveira & Costa, 2009; Peñacoba et al., 2017; Romeo et al., 2020; Sechi et al., 2021). An insecure attachment style was more prevalent than a secure attachment pattern in diagnostically difficult patients, such as medically unexplained CP and somatoform pain disorder, with an avoidant attachment style particularly noted in these conditions (McWilliams, 2017; Nacak et al., 2017). Studies of rheumatologic conditions yielded mixed results, with scleroderma patients demonstrating increased levels of pain intensity in association with a dismissive-avoidant attachment style and a history of early emotional distress, while a study of arthritis patients highlighted that patients with both avoidant and anxious attachment styles had decreased coping efficacy and diminished self-perception of social support (Hicks et al., 2019; Sirois & Gick, 2016). In studies that addressed life-threatening conditions associated with CP, an

anxious attachment style was correlated with increased pain catastrophizing in patients with advanced cancer and the presence of persistent pain following breast cancer treatment. In the latter group, both anxious and avoidant attachment styles were associated with increased pain intensity, reduced pain treatment efficacy and increased pain catastrophizing (Gauthier et al., 2012; Smith et al., 2018).

Studies of CP have demonstrated the relevance of attachment styles in relation to pain syndromes afflicting different bodily regions. Among patients with CP in the head and neck region, chronic headache patients were more likely to possess an insecure attachment style when compared with healthy subjects; anxious and avoidant attachment styles were predictive of increased disability following neck injury in those with chronic whiplash (Andersen et al., 2019; Savi et al., 2005). A study of patients with chronic widespread pain noted a particularly high prevalence of a preoccupied-anxious attachment style, with increasing dimensions of attachment insecurity correlating positively with the number of pain sites and pain-related disability (Davies et al., 2009). In contrast, CP patients with back and extremity pain had a higher prevalence of secure attachment and those with pain in other bodily regions, such as the head, abdomen and pelvis, were more likely to have insecure attachment styles with prominent avoidance, fearfulness and somatosensory amplification (Gregory et al., 2005). In patients with provoked vestibulodynia, anxious and avoidant attachment styles were correlated with increased pain intensity and diminished sexual satisfaction, while the anxiously attached patients, in particular, were noted to have heightened hypervigilance and pain catastrophizing (Charbonneau-Lefebvre et al., 2019; Leclerc et al., 2015).

A number of studies in this review addressed the relationship between insecure attachment and pain-related factors in CP patients, without focusing upon specific disease

entities or bodily locations. An insecure attachment style was associated with increased pain, disability and depression (Forsythe et al., 2012). Further, those with an insecure attachment style sustained less benefit, post treatment, with respect to depression, anxiety, pain catastrophizing and pain self-efficacy (Andersen, 2012; Kowal et al., 2015). Several studies found that a preoccupied-anxious attachment style predisposed CP patients to increased pain catastrophizing, lower pain self-efficacy, increased anxiety, worsened depression, increased self-perceived burden and heightened pain intensity (Andrews et al., 2014; Kowal et al., 2012; Kratz et al., 2012; MacDonald & Kingsbury, 2006; Meredith et al., 2006). Attachment style was noted to impact healthcare utilization, with preoccupied-anxiously attached patients attending pain-related healthcare appointments more than once per week (Ciechanowski et al., 2003).

Other studies, addressing the relationship between an insecure attachment style and CP, highlighted the impact of avoidant attachment upon the experience of CP. Patients with an avoidant attachment style demonstrated increased pain catastrophizing, perceived levels of disability and pain intensity, with the exaggerated perception of pain as threatening, despite a tendency of such patients to downplay their pain (Kratz et al., 2012; Meredith et al., 2005, 2006). While an anxious attachment style was associated with generally poorer health status, including conditions such as stroke, hypertension and cardiovascular disease, those with an avoidant attachment style were more likely to have ailments characterized predominantly by pain (McWilliams et al., 2010). Further, avoidantly attached patients were more likely to have significantly increased opioid analgesic use and diminished social coping skills (Andersen, 2012; Kratz et al., 2012). In contrast, certain studies highlighted the benefits of a secure attachment style, which was noted to serve as a protective factor for depression and a predisposing factor for

improved pain self-efficacy and enhanced pain communication skills (Andersen et al., 2018; Meredith et al., 2006).

The reviewed studies provided significant insight regarding the treatment approach to CP. These studies emphasized the need for applying an attachment-informed approach to the assessment and treatment of CP patients. The importance of assessing patients' attachment styles upon initial presentation may facilitate the identification of at-risk patients with maladaptive coping mechanisms. Several of the reviewed studies emphasized the importance of performing an assessment of patients' attachment styles in order to generate customized treatment plans directed to patients' unique attachment needs. For example, avoidantly attached patients may require considerable encouragement and close follow-up to ensure treatment compliance and effectiveness. On the other hand, anxiously attached patients may benefit from treatment that emphasizes the need for increased self-reliance and independence. A holistic approach to CP patients should include an evaluation of patients' developmental histories which may have a significant bearing upon attachment security. Moreover, an assessment of attachment style may aid clinicians in the diagnosis and treatment of pain syndromes with complex or unknown causes, such as SPD, given the preponderance of an insecure attachment style in SPD patients. As different attachment styles were correlated with pain syndromes in different bodily locations, clinicians should be vigilant regarding the need to assess patients' attachment orientations during the planning of a comprehensive, individualized treatment approach. As noted in the reviewed studies, the outward manifestations of pain may be downplayed or exaggerated based upon particular attachment styles. Therefore, it is essential that clinicians perform assessments of attachment style in order to accurately assess patients' experiences of CP.

The studies highlighted the value of incorporating interventions that strengthen attachment security in patients suffering from CP. Treatment programs enhancing attachment security may serve to identify high-risk patients with inadequate coping skills and may improve the prognosis of patients with acute pain who are vulnerable to the development of CP, as well as those with established CP. Abnormal affect regulation in patients with insecure attachment may be responsive to certain interventions, such as Attachment-Based Compassion Therapy (ABCT), which addresses attachment processes, mindfulness and self-compassion. In addition, an attachment framework of treatment should incorporate patients' social environments and include the support and education of patients, their significant others and caregivers in order to improve treatment outcomes and reduce distress and disability. Treatment incorporating self-compassion may target the hypervigilance, hyperarousal and emotional dysregulation associated with CP in insecurely attached patients. Several studies highlight the potential value of attachment-informed treatment as a way to promote increased resiliency, strengthen psychosocial functioning, reduce self-perceived burden and improve patients' self-awareness regarding the impact of attachment mechanisms upon their coping strategies.

As attachment insecurity is implicated as an adverse predisposing factor with respect to CP, the establishment of a secure base vis-à-vis the therapeutic relationship during treatment may facilitate improved attachment security, thereby promoting more adaptive mechanisms of managing pain. Attachment-informed couples psychotherapy and family-based psychotherapy were noted in the studies as potential treatment modalities which may enhance interpersonal skills and secure improved engagement with patients' support systems. In addition, cognitive-behavioral therapy (CBT) was proposed as an effective treatment approach which may reduce pain intensity, decrease pain catastrophizing and improve pain self-efficacy. In addition, several

studies recommended complementing CBT with a social-developmental approach that emphasizes interpersonal dynamics among patients' family members and partners. Emotion-focused and relational psychotherapy were also recommended, in the reviewed studies, as effective tools that may reduce attachment insecurity and encourage patients to seek support and treatment.

In a reviewed study concerning opioid use in CP patients, attachment insecurity was linked with increased opioid administration, raising the possibility that patients seek to satisfy unmet attachment needs by increasing opioid use. The author opined that attachment insecurity may predispose patients to excessive opioid use, as insecurely attached patients may lack natural activation of endogenous opioid mechanisms during the course of daily social interactions. The author, therefore, emphasized the need to pursue an attachment-informed strategy that targets the needs of insecurely attached patients, thereby minimizing the likelihood of opioid abuse in at-risk patients. Further, the author highlighted the importance of attachment-informed treatment, as insecure attachment mechanisms during the early, acute stages of pain may promote dysfunctional coping, prolonged pain, heightened distress and the ultimate development of CP.

Limitations and Potential Contributions

This systematic review has certain limitations. The decision to include studies in this review, while excluding others, was made by the primary author, making the data vulnerable to unintentional bias. Moreover, the subjective nature of this review, rather than a rigorous statistical methodology, may have resulted in author bias, as the results of certain studies may have been unduly emphasized in relation to others. In addition, the studies varied with respect to the analysis of attachment styles in different CP syndromes. Some studies focused upon specific ailments, such as scleroderma, arthritis or fibromyalgia, raising the prospect that unique

biological factors attached to these conditions may preclude generalizability to all CP conditions. Further, CP associated with posttraumatic conditions, such as chronic whiplash injury, may present a unique set of biophysical and psychosocial factors that are inherently different from non-traumatically induced pain conditions, thereby preventing one from reaching conclusions that apply to all CP patients. Moreover, this review included studies of CP in life-threatening conditions, such as advanced cancer and breast cancer; such conditions may uniquely impact patients' responses to pain, such as pain catastrophizing, and may not offer generalizable data to those suffering from non life-threatening conditions, such as headache or whiplash. Another limitation in this review may relate to the study of CP affecting different bodily locations, such as widespread pain or pain affecting the back or abdomen, as biological differences among these conditions may result in data that cannot be applied from one condition to another. Although this review focused upon CP in adults, there was a wide variation in the demographic characteristics of the study subjects. For example, one study featured only female breast cancer patients while other studies included male subjects. Such demographic disparities, and inadequate data addressing the influence of gender, age, race, ethnicity and economic factors limit the generalizability of this data to all CP patients.

Despite certain limitations, this systematic review has the potential to offer valuable contributions to the existing literature and provide helpful information to mental health clinicians as well as medical providers treating individuals suffering from CP. The current medical system is endowed with numerous pain management clinics attached to both academic centers and private medical practices. It is hoped that this review highlights the importance of attachment-informed treatment during the assessment and management of CP patients. The early identification of attachment insecurity and the institution of attachment-based strategies may

identify patients at risk for developing CP and may improve the prognosis of CP patients. Moreover, as attachment insecurity has been noted to impact the risk of opioid abuse in CP patients, it is hoped that this review highlights the need to perform attachment style assessment in all patients presenting with pain.

Recommendations for Future Research

Future research concerning the role of attachment styles in CP could address different modalities of treatment. For example, certain attachment styles may lend themselves to inpatient rather than outpatient treatment. Avoidantly attached patients may shun the notion of inpatient therapy, preferring to limit engagement with healthcare providers while undergoing outpatient treatments. Anxiously attached patients, however, may thrive in an inpatient setting as they continuously seek validation, reassurance and support from others. Studies that measure the relative benefits of such programs in patients with different attachment styles may result in more efficacious, cost effective treatment programs. In addition, the relative benefits of ancillary treatment modalities, such as acupuncture, physical therapy, massage therapy and biofeedback, could be evaluated in CP patients with different attachment styles. Such studies may help to inform providers about the likelihood of success in different patient populations. For example, research studies might determine whether anxiously attached patients with pain hypervigilance and increased pain catastrophizing may experience distress from the placement of acupuncture needles, while more securely attached patients might derive benefit from this modality. In addition, future studies may inform healthcare providers by generating data regarding the impact of gender, age, race, ethnicity, and economic factors, upon the experience of CP in patients with different attachment styles, thereby facilitating the tailoring of individualized attachment-based treatment programs.

Conclusions

This review highlights the relationship between attachment styles and the experience of CP. The reviewed studies note that the prevalence of an insecure attachment style is greater among those suffering from CP when compared with healthy controls. Attachment insecurity serves as a predisposing factor for various dimensions of CP, such as pain-related disability and coping efficacy. A secure attachment style was identified as a protective factor with respect to the development and manifestations of CP. The studies emphasize the importance of an attachment-informed, individualized treatment approach for CP patients with different attachment styles. Future research should inform clinicians about at-risk populations, early intervention and optimal treatment strategies.

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9

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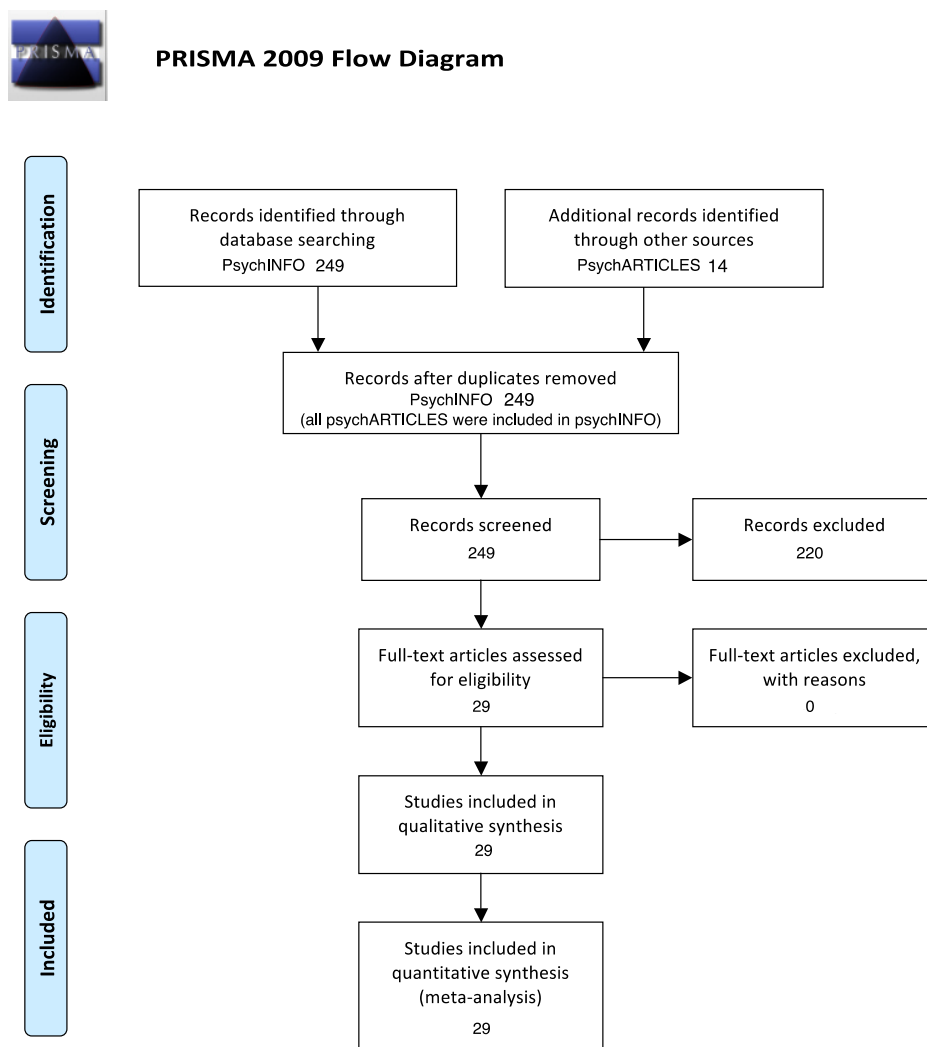
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FIGURES

Figure 1

PRISMA Flow Diagram



From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit www.prisma-statement.org.

APPENDIX A

Comprehensive List of Search Terms

Comprehensive List of Search Terms

Comprehensive List of Search Terms		
<u>Search Term ID#</u>	<u>Primary Term</u>	<u>Synonyms/Alternate Forms</u>
1	attachment styles	"attachment," "attachment style," "attachment theory," "insecure attachment," "secure attachment," "anxious attachment," "avoidant attachment," "disorganized attachment"
2	chronic pain	"chronic pain," "pain," "pain appraisal," "pain tolerance," "pain intensity"

APPENDIX B

Comprehensive Search Plan

Comprehensive Search Plan

Comprehensive Search Plan					
<u>Search Type</u>	<u>Databases or Sources</u>	<u>Search Term ID(s)</u>	<u>Search Syntax or Instructions</u>	<u>Fields to Search</u>	<u>Specifiers</u>
Electronic Database	PsychINFO	01, 02	"attachment" OR "attachment style" OR "attachment theory" OR "insecure attachment" OR "secure attachment" OR "anxious attachment" OR "avoidant attachment" OR "disorganized attachment" AND "chronic pain" OR "pain" OR "pain appraisal" OR "pain tolerance" OR "pain intensity"	Title, Keywords, Abstract	*Years: 1990-2022 *Peer reviewed articles *English *Quantitative studies
Electronic Database	PsycARTICLES	01, 02	"attachment" OR "attachment style" OR "attachment theory" OR "insecure attachment" OR "secure attachment" OR "anxious attachment" OR "avoidant attachment" OR "disorganized attachment" AND "chronic pain" OR "pain" OR "pain appraisal" OR "pain tolerance" OR "pain intensity"	Title, Keywords, Abstract	*Years: 1990-2022 *Peer reviewed articles *English *Quantitative studies

APPENDIX C

Search Documentation Record

Search Documentation Record

<u>DATABASE</u>	<u>SEARCH TERM ID NUMBERS</u>	<u>SEARCH SYNTAX OR OTHER GUIDELINES FOR THE SEARCH</u>	<u>FIELDS SEARCHED</u>	<u>SEARCH SPECIFIER: Years</u>	<u>SEARCH SPECIFIER: Methodology</u>	<u>SEARCH SPECIFIER: Language</u>	<u>SEARCH SPECIFIER: Publication Type</u>	<u># of Articles</u>
PsychINFO	01, 02	"attachment" OR "attachment style" OR "attachment theory" OR "insecure attachment" OR "secure attachment" OR "anxious attachment" OR "avoidant attachment" OR "disorganized attachment" AND "chronic pain" OR "pain" OR "pain appraisal" OR "pain tolerance" OR "pain intensity"	Title, Keywords, Abstract	1990-2022	Quantitative	English	Peer reviewed articles only	243
PsycARTICLES	01, 02	"attachment" OR "attachment style" OR "attachment theory" OR "insecure attachment" OR "secure attachment" OR "anxious attachment" OR "avoidant attachment" OR "disorganized attachment" AND "chronic pain" OR "pain" OR "pain appraisal" OR "pain tolerance" OR "pain intensity"	Title, Keywords, Abstract	1990-2022	Quantitative	English	Peer reviewed articles only	13

APPENDIX D

Screening and Selection Record

APPENDIX E

Data Collection and Extraction Form

Data Collection and Extraction Form

Data Extraction Form				General Information		Design Characteristics and Methodological Features		Assessment of Research Variables	
Article Number	Authors	Year	Title	Date Extraction Completed	Primary/Secondary Data Analysis	Aim of Study	Study Design, Research Approach, and Methodology	Variable 1: Attachment Styles	Variable 2: Chronic Pain

Study Participant Characteristics						
Population of Interest	Recruitment Methods	Sample Size	Age	Gender	Race/Ethnicity	Diagnoses

APPENDIX F

Evidence Table Record

Evidence Table Record

Author(s)	Publication Year	Study Aim	Methods Design	Population of Interest	Sample Size	Age

Gender	Race/Ethnicity	Diagnoses	Measures Used	Variable 1: Attachment Styles	Variable 2: Chronic Pain	Results: Main Findings