A MIXED-METHOD EXPLORATORY STUDY OF LUCID DREAMING FOR CHRONIC PAIN RELIEF

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Approval of the Dissertation

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Abstract

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Researchers have explored various applications of lucid dreaming, but the application of healing has received little attention (Stumbrys & Erlacher, 2016). Chronic pain is a widespread health issue (Wilkerson, Kim, Windsor, & Mareiniss, 2016) and one case study purports substantial chronic pain relief from a single lucid dream (Zappaterra, Jim, & Pangarkar, 2014). The purpose of this study was to investigate the self-reported influence of lucid dreaming on chronic pain, as well as learn more about the individuals who claim to have had such an experience by examining the relationship of certain personality characteristics.

A mixed-method approach was utilized in a retrospective manner. Recruitment consisted of individuals who have experienced the phenomenon of relieving or attempting to relieve chronic pain through lucid dreaming. Participants (N = 10) filled out the Tellegen Absorption Scale (TAS) and Plymouth Sensory Imagery Questionnaire (Psi-Q) using an online survey. Additionally, each participant completed a semi-structured interview to gather qualitative data about their subjective experience, as well as measure pain, expectation, and dream vividness using a Numeric Rating Scale-11 (NRS-11).

A Wilcoxon signed rank test found a significant reduction in pain when comparing scores before the lucid dream experience (*Mdn* = 6.63) to after the lucid dream experience (*Mdn* = 1.25) (T = 45, z = -2.67, p = .004). Spearman's rho was used to test the relationship of the pain

differential (i.e., pain before - pain after) and several variables: trait absorption, expectation, dream vividness, and mental imagery ability. None of these variables had a statistically significant relationship with the pain differential. Interviews were transcribed verbatim and coded using thematic analysis (Braun & Clarke, 2006). Five themes emerged: beliefs, expectations, demographics prior to experience, characteristics of the lucid dream, and positive outcomes.

This study demonstrated evidence in support of using lucid dreams for chronic pain relief. Lucid dreaming abilities, such as remembering intentions and dream control, were found to be an integral component of many participants' experiences. Future research should also look at the variable of expectation, as well as intention, positive affect, and insight.

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They say it takes a village to raise a child and I think this can be said of completing a doctorate program as well. There are a great many people whose support made this accomplishment possible and I would like to take this opportunity to thank them.

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CHAPTER 1: INTRODUCTION

Purpose

The focus of this study was to investigate the purported experience of persons relieving chronic pain through lucid dreaming. This study investigated individuals who have experienced relieving or at least attempting to relieve chronic pain using lucid dreaming. The individuals and their experiences will be examined using a combination of quantitative measures and qualitative inquiry. Aims of this study included the following: 1) to investigate the perceived impact of lucid dreams on chronic pain management; 2) to examine potential personality variables hypothesized to be associated with the use and success of lucid dreaming to relieve chronic pain, including absorption, expectation, dream vividness, mental imagery ability; and 3) to identify patterns in the experience of relieving chronic pain through lucid dreaming as these might point to other mechanisms influencing the outcome.

Background

Researchers have explored various applications of lucid dreaming in the literature, including nightmare therapy (Spoormaker & van den Bout, 2006; Zadra & Pihl, 1997), motor-skill improvement (Erlacher & Schredl, 2010; Stumbrys, Erlacher, & Schredl, 2016), problem-solving (Stumbrys & Daniels, 2010), and creativity (Stumbrys & Daunytė, 2018). However, healing with lucid dreams has been given little attention, despite numerous people using it for this purpose. Gackenbach (1988) found 15% of 587 people had experienced some type of healing through lucid dreams, and another survey found 23% had attempted healing themselves through lucid dreaming (Gackenbach & LaBerge, 1989). The latter survey also found 77% of people introduced to the idea of healing through lucid dreams reported success with the technique. Schädlich and Elracher (2012) asked people how they use their lucid dreams and the

researchers received so many reports of healing that they advised adding “healing” as a category to any future investigations into the topic. A later study included this category and found 40% of lucid dreamers had used their experience for healing purposes (Stumbrys & Erlacher, 2016).

It appears that many people use lucid dreaming for healing, but little is known about the ailments being healed. Gackenbach (1988) asked participants about which ailments they tried to heal and found a wide-ranging list: hives, skin cancer, torn ligaments, menstrual cramps, pulled muscles, and recurring headaches, among others. Other ailments are found in anecdotal reports, including: warts, bursitis, bronchitis, cysts, ear infections, and pain (D’Urso, 2005; Kellogg, 1999; Morley, 2015). Further research is necessary as to which ailments can be improved through lucid dreaming, the degree of improvement, and how long improvement persists. The current study takes a close look at one of these ailments (i.e., chronic pain) and measures the degree of improvement using quantitative analysis. This study also goes beyond previous studies by investigating variables that might be influencing the degree of improvement attained (i.e., absorption, expectation, dream vividness, & mental imagery ability). Using anecdotal reports, Waggoner (2009) has recognized some patterns that seem to lead to more successful attempts at healing with lucid dreams (e.g., optimistic expectation) but there has not been any formal research into this specific subject.

The nascency of research into the use of lucid dreaming for healing means it fits aptly into the realm of exploratory inquiry. This nascency also means qualitative methods can provide meaningful insights about the topic through their inductive approach to the data. By incorporating a qualitative method, this study also aimed to uncover novel information about experiences of healing or attempted healing using lucid dreaming and/or the individuals who

have these experiences. This mixed-method approach provided a more substantive understanding than could be gleaned from either singular approach.

Rationale

Chronic pain affects roughly 1 in 5 people (Wilkerson, Kim, Windsor, & Mareiniss, 2016), but treatment options are fairly limited even though it is a prevalent health problem. Treatment options have become even more limited recently because the opioid abuse epidemic has led to policy changes that restrict physicians from writing opioid prescriptions, leaving many people in pain and struggling to find alternative solutions. Researchers must explore other possible treatment options to help address this common health issue, especially options that may have few negative side effects. Mental imagery interventions have demonstrated some efficacy for pain relief with few side effects, but this tool has yielded limited potency and persistence (Zach et al., 2018). Anecdotal reports of people using lucid dreams to help reduce their pain have claimed potent effects (Kellogg, 1999; Zappaterra, Jim, & Pangarkar, 2014), suggesting this treatment option needs further exploration.

Recent evidence also supports the idea of using lucid dreams to facilitate healing, especially for conditions of pain (Banerji, 2017). Approximately 50% of people have experienced a lucid dream and only about 20% of people experience them on a regular basis (Saunders, Roe, Smith, & Clegg, 2016), so this potential treatment option is not for everyone. However, for those who already utilize lucid dreams, the application of lucid dreams for chronic pain relief deserves further scientific investigation. Furthermore, lucid dreaming is a learnable skill (LaBerge, 1980b, Schredl, 2013) so, if further research shows lucid dreaming to help with chronic pain, then it is feasible chronic pain suffers could be taught how to induce lucid dreams and use them as a primary or adjunctive treatment method.

Research Questions

While this study sought to answer several research questions, the primary concern is the following: what is the impact of lucid dreaming on self-reported chronic pain upon waking compared to pre-dream pain levels? Other research questions revolved around factors hypothesized to contribute, including: absorption, expectation, dream vividness, and mental imagery abilities. Regarding these additional variables, this study considered the following question for each: is there a correlational relationship between the self-reported change in chronic pain from lucid dreaming and the variable? Given the study of lucid dreaming on health outcomes is in its infancy, additional qualitative inquiry helped explore nuances in the individuals' experiences which might have contributed to the outcome. Therefore, this study explored the following questions: what are the similarities between lucid dream experiences that increase chronic pain? What are the similarities between lucid dream experiences that decrease chronic pain? What are the differences between lucid dream experiences that increase chronic pain and lucid dream experiences that decrease chronic pain?

Hypotheses

A. Pain scores after the experience will be lower than pain scores before the experience.
B. Absorption scores will be positively correlated with pain differential scores.
C. Expectation of success will be positively correlated with pain differential scores.
D. Dream vividness scores will be positively correlated with pain differential scores.
E. Mental imagery ability scores will not be strongly correlated with pain differential scores.

CHAPTER 2: REVIEW OF THE LITERATURE

For millennia, people have recognized connections between dreams and health, particularly indigenous peoples (Laughlin, 2011). Occasionally, a person will spontaneously receive information about his/her health through dreams, such as warnings of an impending illness. Other times, a person or community-designated healer will intentionally use dreams to seek out health information, such as a diagnosis or remedy (Krippner, 1993). Besides health information, dreams can also contain healing whereby there is a reduction of symptoms and/or improvement of health upon awakening (Barasch, 2000; Garfield, 1991). Banerji (2017) succinctly summarizes these different ways of healing through dreams by organizing them into three categories: insight, prescriptive, and experiential. Healing dreams demonstrate how personally-relevant information can be attained through dreaming and how dreams can provide more than just meaningful interpretations of random brain activity, as proposed by some dream theories (Hobson, 2009b).

According to the cross-cultural work of Krippner and Faith (2001), healing dreams are classified as a type of exotic dream. Other exotic dreams include, but are not limited to: precognitive dreams, telepathic dreams, mutual dreams, visitation dreams, and lucid dreams. Krippner and Faith (2001) also state an exotic dream can fall into two or more of these categories; for example, it might be both a healing dream and a lucid dream. A dissertation on healing dreams demonstrated this possible combination by finding some of the healing dreams were also lucid dreams (Banerji, 2017). However, researchers need more data to understand how lucid dreaming influences the outcome of healing dreams when these two types of exotic dreams occur simultaneously.

Lucid Dreaming

A lucid dream is defined as a dream in which the dreamer is aware that he/she is dreaming (Saunders, Roe, Smith, & Clegg, 2016). This is the operational definition used by many researchers when investigating the phenomenon of lucid dreaming (LaBerge, LaMarca, & Baird, 2018; Stumbrys & Erlacher, 2017a) and it was utilized for the current study. However, it should be noted there is a large degree of variability within this definition because individual differences of the lucid dream experience can vary quite considerably, both between-sessions and within-sessions (LaBerge & DeGracia, 2000). Some have argued it would be more accurate to consider dream lucidity as a continuum rather than a dichotomy (Barrett, 1992). Nevertheless, the above definition works well for this study because it provides the distinction and standardization necessary for an exploratory investigation.

Awareness is the primary difference between a non-lucid dream and a lucid dream. This awareness of dreaming typically, but not necessarily, leads to an increase in dream control. Dream control lacks a standardized definition (Stumbrys & Erlacher, 2017b) but it can be described as the ability to manipulate various aspects of the dream, including the dream environment and one's own body. Dream lucidity and dream control usually coincide with one another, but they are separate phenomena and can manifest independently from each other. In other words, lucid dreams can occur with or without dream control (Schredl, Rieger, & Göritz, 2018; Shafiei, 2019). Still, many people induce lucid dreaming as a means to access more dream control because they want to manipulate the experience into a desired outcome (Stumbrys & Erlacher, 2016). Thus, a lucid dream involves the dreamer sometimes, but not always, being an active agent and having influence over his/her own mental/physical states in a manner not available during waking.

Mind-Body Connection

Scientific debates about the relationship between the mind and the body are ongoing. There are still many unknown factors, but one idea gaining momentum is how the mind and the body are intertwined to the point of being inseparable. This philosophy is summarized by referring to the mind and the body as one entity: the mind-body. Some even believe that Descartes' original proposal of dualism included this feature of interaction between the mind and body (Duncan, 2000). The rise of this philosophy is evidenced by an increase in scientific literature surrounding psychosomatic illness and neuroplasticity, as well as the advent of psychoneuroimmunology. All of these concepts acknowledge an interactional relationship between psychological and physiological systems.

A couple examples within the context of dreaming can help elucidate this reciprocal relationship of the mind-body. Nightmares exemplify the mind's ability to impact the body because they demonstrate that fear-provoking images within a dream can produce physiological effects (e.g., sweaty palms or racing heart). Nearly everyone has experienced a nightmare at some point in his/her life (Nielsen & Zadra, 2005), so many can relate to this notion of the mind's contents being able to influence the body. A less-common phenomenon, pain in dreams, demonstrates the opposite: the body's ability to influence the mind. Burn victims in pain report dreams which also contain the experience of pain (Raymond, Nielsen, Lavigne, & Choinière, 2002). Additionally, somatosensory stimulation applied during the REM stage of sleep can result in the experience of pain while dreaming (Nielsen, et al., 1993). In other words, dream content can be influenced by what is happening in and/or to the body. These examples give further credence to the idea that physiological changes can produce psychological effects and vice versa.

When it comes to health, there are at least two sources of influence: top-down causation and bottom-up causation. The former refers to the mind's ability to influence the body, and the latter refers to the body's ability to influence the mind. Contextual examples within the realm of dreams were given in the previous paragraph, but two more well-known examples are neuroplasticity and auto-immune diseases. Neuroplasticity demonstrates how the mind's content can influence the body's development, while auto-immune diseases demonstrate how deterioration of the body can result in deterioration of the mind. One possible model that provides an explanation for this bi-directional relationship is the philosophy of mind known as emergent dualism. This position posits that two substances exist (i.e., mind & body) and a mind emerges as the result of specific configurations within a body (e.g., having a nervous system) (Hasker, 2000).

Using this model of emergent dualism resolves certain philosophical quandaries with which other models struggle when explaining health. A central issue for any monist philosophy is trying to account for both of these sources of causation: top-down and bottom-up. Emergent dualism bypasses this argument by claiming there are indeed two substances, body and mind, each with the ability to influence the other. Major issues arise for dualist philosophies when they try to explain how these two substances are originally connected, and how they can continuously influence one another. Emergent dualism resolves these issues by claiming that specific configurations of physical matter produce a mind, such as a nervous system within a body. Thus, the mind is inherently bound to any changes made within the specific configuration of matter that produced it (e.g., brain damage impacting mental faculties). There are flaws within emergent dualism just like any other philosophy of mind, but this view does help explain various health factors without running into major philosophical issues. For example, stress seems to play a role

in the progression of cancer (Moreno-Smith, Lutgendorf, & Sood, 2010) but the idea of stress as a causal health factor produces problems for various philosophies of mind. On the monist side, materialists have difficulty explaining how a mental event (i.e., stress) could impact physical processes (i.e., health) through top-down causation. On the dualist side, there is a struggle to answer why changes in one substance (i.e., stress in the mind) might lead to changes in the other substance (i.e., cancer growth in the body). Emergent dualism resolves these philosophical quandaries by explaining how the mind is intrinsically intertwined with the physical body and can play a causal role in one's health.

A new era of mind-body medicine is arriving and it seeks to include all the factors that influence people's health because this information will likely provide more effective treatment plans. One recent trend is the combination of psychological and physiological interventions to increase treatment efficacy while decreasing unwanted side effects from medications (So, Leung, & Hung, 2008). Interventions focusing on psychosocial factors have been applied to the ailment of pain with varying degrees of success (Hoffman, Papas, Chatkoff, & Kerns, 2007). As the research literature grows, it is becoming progressively more evident that psychological factors play a role in one's overall health. Science is just beginning to understand the mind and its precise mechanisms of actions on health (e.g., expectation's role in the placebo effect), but there is no doubt that future medical interventions will be incorporating more psychological elements than they did in the past. Lucid dreaming might be one of these psychological elements used as part of a health intervention in the future; preliminary studies of lucid dreaming report positive psychological effects so the idea is not too farfetched (Been & Garg, 2010; Holzinger, Klösch, & Saletu, 2015; Koesler, 2015; Stumbrys & Erlacher, 2016).

The future science of lucid dreaming is uncertain, but the past science of lucid dreaming is clearly rooted in the mind-body connection. In fact, lucid dreaming was scientifically validated using one main tenet: there is a correlation between the mind and the body. Researchers demonstrated that dreamers can have the awareness they are dreaming while dreaming by using an electrooculogram (EOG) and a set of predetermined eye movements (Hearne, 1978; LaBerge, 1980a). When the dreamers became lucid, they signaled their awareness by shifting their eyes back and forth in the predetermined fashion. The eyes are one of the only muscles not paralyzed during Rapid-Eye-Movement (REM) sleep, so the researchers registered this signal on the EOG and thus lucid dreaming became scientifically validated. Since then, scientists have done numerous studies on the concept of measuring participants' bodies while the participants perform certain thoughts/actions in a lucid dream. All these studies found the same connection: experiences while lucid dreaming influence the body. Lucid dream researchers have measured muscle activity (LaBerge, 1980a), brain activity (LaBerge & Dement, 1982), breathing patterns (Oudiette et al., 2018), exercise (Erlacher & Schredl, 2008), eye movements (LaBerge & Zimbardo, 2000), and even sexual activity (LaBerge, Greenleaf, & Kedzierski, 1983). All of these studies showed similar physiological reactions between the activities performed while lucid dreaming and those same activities while awake.

If it is possible to influence one's physiology from inside a lucid dream, then it is hypothesized that people might also be able to influence their health through lucid dreaming as well. Many people have tried this strategy anecdotally and purport improving various ailments with the help of lucid dreaming (D'Urso, 2005; Gackenbach, 1988; Garfield, 1991; Kellogg, 1999; LaBerge & Rheingold, 1990; Waggoner, 2009; Waggoner, 2011). There has been limited formal investigation into this topic, but the results thus far are encouraging. One study involved a

case study of an individual who struggled with chronic pain for decades after surgical complications. He tried a wide variety of treatments, but nothing provided much relief. After a single lucid dream, he said his pain was completely relieved for the first time in decades and it stayed that way for approximately twenty days. When the pain came back, it was no longer debilitating and the man reported being more functional because he did not need as much pain medication as before the lucid dream (Zappaterra, Jim, & Pangarkar, 2014).

In another singular example of healing through lucid dreaming, a psychiatrist wanted to empirically test whether he could measurably impact his physiology by directing healing intent within a lucid dream. In this case study, the psychiatrist slept in a lab for five nights and, while he was sleeping, his blood was drawn every hour with the help of medical equipment. On one of the nights, he had a lucid dream in which he directed healing intentions to a part of his body that was causing him problems. He found his Natural Killer cell activity increased during this period associated with the lucid dream, indicating a stimulated immune response (Brylowksi, 1987). In another study, the researcher took a broader approach and looked at the healing dreams of >50 people, including healing lucid dreams. Of all the health conditions, muscular and joint pain showed the greatest improvement (Banerji, 2017). However, little is known about the underlying variables behind health improvement through lucid dreams. This study sought to learn more about these variables by measuring theoretically plausible factors associated with personality and cognition, including: dream vividness, mental imagery ability, absorption, and expectation. Before these variables are discussed, though, this review will address lucid dreaming as an altered state and the role of altered states in healing.

Altered States of Consciousness

The American Psychological Association defines an altered state of consciousness (ASC) as, “a state of psychological functioning that is significantly different from that experienced in ordinary states of consciousness. Reports of the experience of ASCs are highly subjective, but the phenomenon is susceptible to some degree of empirical study” (2018). Hobson (2009a) reasons lucid dreaming is an altered state of consciousness and part of the empirical evidence for this assertion comes from studies of the brain while it is in this unique state. These studies of lucid dreaming show brain activation patterns that are markedly different from ordinary waking and dreaming states, as well as other neuroimaging conducted since Hobson’s initial comments (Dresler et al., 2012). Besides differentiated neurophysiology, additional evidence for lucid dreaming as an altered state comes from the altered psychology that occurs during the experience.

According to the American Psychological Association (APA), an altered state of consciousness, “tends to be characterized by altered levels of self-awareness, affect, reality testing, orientation to time and place, wakefulness, responsiveness to external stimuli, or memorability, or by a sense of ecstasy, boundlessness, or unity with the universe” (2018). Lucid dreaming fulfills these characterizations, with an altered state of self-awareness being the defining feature of the phenomenon. Reality testing is also different while lucid dreaming because maintaining the experience, for many individuals, hinges on continually reminding oneself that one is in a state of lucid dreaming (Johnson, 2017). Orientation to time and place is certainly altered while lucid dreaming because the individual is aware his/her current experience is occurring in a dream while his/her physical body is asleep in another location. Several of the other characterizations of an ASC (i.e., altered affect, memorability, & sense of ecstasy or unity)

can be summed up by stating that many people consider some of their lucid dreams to be among the peak experiences in their life (Waggoner & McCready, 2015); the APA defines a peak experience as, “a moment of awe, ecstasy, or sudden insight into life as a powerful unity transcending space, time, and the self” (2018). Both physiologically and psychologically, lucid dreaming fits the criteria for being categorized as an altered state of consciousness.

For centuries, indigenous people have used altered states of consciousness for healing purposes and a growing number of modern citizens are doing the same (Kingsland, 2019). Community-designated healers (e.g., shamans) were likely among the first to develop their lucid dreaming abilities because these abilities would allow them to frequently enter an altered state which they could use for healing (Laughlin, 2011). Rolling Thunder, a modern-day Native American healer, says lucid dreaming is a more reliable method of entering altered states than hallucinatory plants because there is no need to depend on external substances and seasonal changes (Krippner, 2004). Not all altered states are alike, though, as some consist of confusion and paranoia while others are experienced as more euphoric and enlightening.

As an altered state, lucid dreaming has been described as promoting more growth than dissociation (Hunt, Dougan, Grant, & House, 2002). Other research supports this finding. For instance, lucid dream intensity is negatively correlated with several psychopathological symptoms (Aviram & Soffer-Dudek, 2018) and lucid dream frequency is positively correlated with resilience (Soffer-Dudek, Wertheim, & Shahar, 2011), as well as waking insight (Bourke & Shaw, 2014). Lucid dreaming has also been linked to more frequent positive moods and emotions (Koesler, 2015; Thomas, Pollak, & Kahan, 2015). As an add-on to therapy, lucid dreaming appears beneficial by way of nightmare reduction and increased sleep quality (Been &

Garg, 2010; Holzinger, Klösch, & Saletu, 2015). In terms of altered states, lucid dreaming contains many benefits that fall within the category of healing.

Hypnosis for Pain Relief

Another altered state with known healing properties is hypnosis. Hypnosis has consistently shown positive effects on pain (Tan, Alvarez, & Jensen, 2006) as well as many other health conditions (Ploeger et al., 2017). Autosuggestion (i.e., self-hypnosis) also appears to be beneficial across a wide range of ailments (Gruzelier, 2002), including pain (Delivet et al., 2018). Hypnosis assists with pain relief via two brain areas that also play a role in lucid dreaming: the prefrontal cortex and the precuneus (Dillworth, Mendoza, & Jensen, 2011; Dresler et al., 2012; Goffaux et al., 2014; Stumbrys, Erlacher & Schredl, 2013). These neurological overlaps give credence to the idea that lucid dreaming might be able to assist with pain relief through similar mechanisms.

Additionally, other connections exist between lucid dreaming and hypnosis beyond sharing certain brain activation patterns. Researchers examined hypnosis as a means to increase lucid dream frequency with some success (Dane, 1984; Purcell et al., 1986); however, other induction techniques are more effective (Stumbrys, Erlacher, Schädlich, & Schredl, 2012). For inducing lucid dreams, autosuggestion appears to be more effective than hypnosis, but no study has directly compared the two. One advantage of using autosuggestion over hypnosis is the ability to perform it by oneself. In other words, there is no need for additional people or audiotapes. Lucid dreaming possesses the same advantage: there is no need for outside resources to access the state. There are several characteristics of lucid dreaming that could make it better for pain relief than other interventions but, before discussing these characteristics, the discussion will address pain interventions that do not require being in an altered state.

Mental Imagery Interventions for Pain Relief

The Encyclopedia of Cognitive Science defines mental imagery as, “an internal representation that gives rise to the experience of perception in the absence of the appropriate sensory input” (Wraga & Kosslyn, 2002, p. 466). Mental imagery has a long lineage as a healing modality and was frequently utilized by medicine men/women of the community. They would use it as a means to focus their healing intentions as well as attaining information about the infirmity, such as its origins or a remedy. This strategy was sometimes used on themselves, but most of the time it was used to help others (Achterberg, 2002). Today, mental imagery is used by the general public for their own health benefits and not just by a select group of individuals. Research shows that imagery interventions are associated with a wide array of psychological and physiological health benefits, including: a lowering of blood pressure, nausea, pain, anxiety, depression, and stress, amongst others (Eller, 1999).

Exploring the different types of mental imagery interventions sheds some light on the mechanisms behind these interventions. One of the most common types of an imagery intervention is guided imagery, where the person is guided through different mental imagery scenarios with the help of another person or an audiotape. By helping the person imagine, this type of intervention emphasizes an element of relaxation and there is a great deal of evidence for the health benefits of relaxation (Ohtsu et al., 2012). Guided imagery involves inducing a relaxed state and following the provided suggestions, a process that is akin to hypnosis which also has many health benefits (Ploeger et al., 2017). Besides relaxation, another potential mechanism behind mental imagery for health is positive affect.

The APA defines positive affect as, “the internal feeling state that occurs when a goal has been attained, a source of threat has been avoided, or the individual is satisfied with the present

state of affairs" (2018). Positive affect is another element that is often incorporated into imagery interventions. In fact, it has been incorporated so often that there is even a type of imagery intervention labeled *positive mental imagery* that focuses on imagery with uplifting connotations (Grol, Vanlessen, & De Raedt, 2017). Another demonstration of positive affect influencing health comes from the placebo effect which occurs when positive expectations impact one's health for the better. It is likely there are many mechanisms behind the effectiveness of mental imagery as a health intervention, but there is little doubt that relaxation and positive affect contribute to its outcomes.

Possible Advantages of Lucid Dreaming for Pain Relief

Like mental imagery interventions, relaxation and positive affect could play a role in the experience under investigation: relieving chronic pain through lucid dreaming. Relaxation is part of both mental imagery and hypnosis interventions, but the relaxation required for lucid dreaming is deeper because one needs to be asleep for the experience to occur. Thus, lucid dreaming might be an optimal time to focus healing intentions given the deep relaxation of the mind-body while asleep. As previously discussed, lucid dreaming has several correlations to positive affect and positive affect has been shown to be helpful for pain, even outside of mental imagery interventions (Finan & Garland, 2015), so a propensity toward positive affect could be another possible advantage of utilizing lucid dreams for pain management. Relaxation and positive affect will not be measured quantitatively in this study, but there are several variables of the experience that will be accounted for using statistical analysis: mental imagery ability, dream vividness, absorption, and expectation. These variables are discussed below and relate to possible advantages of using lucid dreaming for chronic pain relief.

Mental Imagery Ability and Dream Vividness

One possible advantage of lucid dreaming for pain relief is imagery vividness. Studies show people vary in their ability to generate mental imagery (Kosslyn, Brunn, Cave, & Wallach, 1984; Pearson et al., 2013); some people can imagine an object vividly without much effort, while others struggle to generate an image at all. There is some evidence suggesting people with higher mental imagery abilities get more benefits from imagery interventions than those with low mental imagery ability (Eremin, et al., 2009). This finding implies the vividness of imagery can influence results obtained from a mental imagery intervention and that is the reason why dream vividness is being measured in this study. Currently, there is not a standardized definition of dream vividness so this study will define it as a dream's clarity of detail. By measuring dream vividness, this study hopes to get a better understanding of how vividness plays a role in the experience, especially since lucid dreams are known for being particularly vivid.

Lucid dreams are characterized as having a high degree of detail, especially when compared to non-lucid dreams (Voss et al., 2013). Several authors have written about the detailed vividness they encounter during their lucid dreams, likening it to the vividness of waking life (Johnson, 2017; LaBerge & Rheingold, 1990). In fact, details within lucid dreams are so clear and immersive that the eyes behave physiologically as if the experience was occurring in waking life and not just in one's imagination (LaBerge & Zimbardo, 2000). Since lucid dreams are inherently vivid and lifelike in detail, their imagery might be more potent than imagery experienced during other pain interventions, such as hypnosis or guided imagery. Therefore, this study will measure dream vividness to get a better understanding of whether or not this variable plays a role in the process of relieving chronic pain with lucid dreams.

This study will also measure mental imagery ability to learn more about its possible role in the experience. However, mental imagery ability is not needed to have a particularly vivid lucid dream because lucid dreams are naturally vivid. Thus, it is unlikely that mental imagery ability plays a major role in the experience of relieving pain through lucid dreams. Still, this study will measure mental imagery ability because it is a predictor of lucid dream frequency (Denis & Poerio, 2017) and it is correlated with dream recall (Okada, Matsuoka, & Hatakeyama, 2000) so it might be a factor in the experience. Besides imagery vividness, imagery control is another reason why lucid dreaming might be more beneficial than other interventions for pain that involve mental imagery.

As previously mentioned, lucid dreaming can occur with or without dream control. When present, dream control can be used while lucid dreaming to steer the experience into desired directions. For instance, a lucid dreamer might direct the experience to become a healing dream. Taking the example further, a lucid dreamer might change the direction of the healing dream from prescriptive healing to experiential healing. Other pain interventions, such as hypnosis and guided imagery, do not possess this level of imagery control so lucid dreaming might be advantageous because of the degree to which imagery can be controlled by the person experiencing it. With hypnosis, the person performing the hypnotization controls some of the experience of the person being hypnotized. With lucid dreaming, it is the lucid dreamer who has a great degree of control over the experience.

Lucid dream control can also be utilized to increase dream vividness. Many lucid dreamers claim they can increase the vividness of their experiences through dream control (Johnson, 2017; LaBerge & Rheingold, 1990). If the outcome of certain interventions is tied to imagery vividness, as previously discussed, then it is an advantage for lucid dreaming to be able

to increase the vividness of imagery during the experience. Even if people do not use dream control to manipulate the vividness of their lucid dreams, lucid dreaming might be a state conducive to healing because of its inherent vividness. Additionally, further research is needed to ascertain whether or not dream control is even necessary for chronic pain relief through lucid dreaming. This question of the necessity of dream control is exemplified in the case study mentioned above where a man claimed substantial chronic pain relief through lucid dreaming (Zappaterra, Jim, & Pangarkar, 2014). In this case study, the participant says he was "interactive" during the lucid dream but the dream report does not show indications of dream control being explicitly exercised.

It is likely that dream control plays a role in chronic pain relief through lucid dreaming. Many notable applications of lucid dreaming involve dream control to some degree: nightmare resolution (Spoormaker & van den Bout, 2006), skill improvement (Erlacher & Schredl, 2010), wish fulfillment (Stumbrys & Erlacher, 2016), creative inspiration (Stumbrys & Daniels, 2010; Stumbrys & Daunytė, 2018), as well as alleviation of anxiety and fears (Frith, 1998). Thus, it follows logically that mental/physical healing, which is another popular application of lucid dreaming (Stumbrys & Erlacher, 2016), would also involve dream control to some degree. Further support for this idea comes from Waggoner (2009) who has read many anecdotal reports of healing through lucid dreams and noticed some patterns; one pattern he noticed was more success amongst lucid dreamers who were active in the process (i.e., exercised dream control) compared to lucid dreamers who were passive during the experience. The question of whether or not imagery/dream control makes a difference will be addressed using qualitative analysis.

Absorption

Another possible advantage of using lucid dreaming for pain relief comes from the concept of absorption. Roche and McConkey (1990) define absorption as, "a characteristic that involves an openness to experience emotional and cognitive alterations across a variety of situations" (p. 91). Absorption levels differ depending on the person (i.e., trait absorption) and depending on the situation (i.e., state absorption). Playing video games can increase a person's state absorption, as well as being in an immersive environment such as virtual reality (Glicksohn & Avnon, 1997). Lucid dreaming is an immersive experience, so it is likely state absorption also increases while lucid dreaming. This high level of absorption could be another possible advantage of lucid dreaming because absorption is a consistent variable in mind-body interventions, with higher levels generally corresponding to more results (Menzies, Taylor, & Bourguignon, 2008). Absorption is also particularly influential in regards to the condition of pain (Jameson, Trevena, & Swain, 2011), so it likely plays a role in the experience under investigation and that is why it is being measured in this study. Additionally, multiple studies have found a positive correlation between absorption and lucid dream frequency, with higher absorption levels connected to more lucid dreams (Gackenbach, Cranson, & Alexander, 1986; Schredl & Erlacher, 2004).

Expectation

Given its central role in the placebo effect, expectation and its measurement were considered of great import for this study. In the scientific literature, though, expectation lacks a standardized definition. One way to define expectation in healthcare is "the general belief a clinical outcome will occur" (Bialosky, Bishop, & Cleland, 2010, p. 1346). This definition will also be utilized by the current study. Expectation is a major mechanism behind the placebo effect

(Kirsch, 2018), so expectation has repeatedly shown influence over many health outcomes. Pain is one of these health outcomes and the placebo effect has consistently shown an impact on this particular ailment (Colloca, Enck, & DeGrazia, 2016). Since expectation has consistently shown effects on health outcomes, particularly pain, it is likely that expectation also plays a role in the experience of relieving chronic pain through lucid dreaming. Thus, expectation was one of the variables measured in this study to learn more about its relationship to the experience.

Response expectancy theory states what people experience depends, in part, on what they expect to experience (Kirsch, 2018). This same theory can also be applied to the lucid dreaming experience. Experts in the field of lucid dreaming agree: expectation is one of the main components underlying dream control (Johnson, 2017; LaBerge & Rheingold, 1990). As a consequence, many lucid dreamers are familiar with manipulating their expectations as a means of dream control. This ability to manipulate expectations might also translate to expectations regarding healing through lucid dreams. For example, a lucid dreamer might manipulate their expectation of pain relief to be more optimistic than usual and this optimistic expectation might lead to more favorable outcomes. Being able to change one's expectations could be another advantage lucid dreamers use to improve their odds of healing with the state. However, research is needed to test this assumption as the current study will not address this angle of expectation. Nevertheless, expectation plays an important part in health, pain, and lucid dreaming, so this study included it to gain a better understanding of its role in the experience under investigation.

Pain Differential

The pain differential is not a variable based on possible advantages of lucid dreaming, but it does help answer several of the research questions of this study. The main research question of this study is: what is the impact of lucid dreaming on self-reported chronic pain upon waking

compared to pre-dream pain levels? However, many of the remaining research questions revolve around other possible variables: mental imagery ability, dream vividness, absorption, and expectation. This study examined these variables by comparing each one of them to the pain differential (i.e., pain before - pain after = pain differential). The pain differential variable is important because it demonstrates the degree of pain relief attained, or not attained, for each experience of each participant. By comparing the scores of each variable to the pain differential data, this study learned more about the strength and direction of their individual relationships. In other words, this setup allowed for the testing of many the remaining research questions. Is there any relationship between experiencing chronic pain relief through lucid dreaming and the following variables: absorption, expectation, dream vividness, and mental imagery ability? What kind of relationship do each of these variables possess with the pain differential?

CHAPTER 3: METHODOLOGY

Choice of Method

This study utilized a mixed-method approach because the research questions could be more effectively answered using both quantitative and qualitative approaches. Quantitative methods help test hypotheses, such as whether pain increased or decreased after the experience and, if so, how much? The quantitative approach also helped measure relationships between variables that might play a role in the experience (i.e., absorption, expectation, dream vividness, & mental imagery ability). Along with a quantitative angle, this study used a qualitative approach as well due to the subjective nature of lucid dreaming. Qualitative approaches are ideal for capturing the subjective experience and its complexities. Broader uncertainties exist regarding the subjective experience of persons using or attempting to use lucid dreams to impact their chronic pain, so this study used a qualitative component to obtain more information on the subjective experience of the participants, such as their beliefs and what the pain felt like (e.g., throbbing, stabbing, burning). A quantitative method by itself is too reductive to attain this type of open-ended, descriptive data and a qualitative method by itself cannot answer some of the pointed research questions this study sought to elucidate. Thus, this study used a mixed-method approach to get both a broad understanding of the phenomenon as well as a more specific understanding about certain variables related to the experience.

The primary research question of this study was: what is the impact of lucid dreaming on self-reported chronic pain upon waking compared to pre-dream pain levels? There are two basic strategies for answering this question: 1) teach people with chronic pain how to lucid dream and observe the effects, or 2) find people who have claimed to affect their chronic pain through lucid dreaming and investigate their self-reported experiences. The former option was not ideal

because novice lucid dreamers often find it difficult to induce the state (Saunders, Roe, Smith, & Clegg, 2016) as well as accomplish predetermined tasks within it (Schredl, Rieger, & Göritz, 2018). Additionally, induction difficulties would likely be made worse by the fact that people with chronic pain might be on medications that influence their sleeping and dreaming. The main problem with choosing option two was finding people who are willing to participate that have had this relatively rare experience of attempting to relieve chronic pain through lucid dreaming. Due to the lack of a developed method for training lucid dreaming, this researcher chose option two: a study of participants' retrospective perceptions of the effect of lucid dreaming on chronic pain relief, in addition to measuring variables that are possibly associated with the experience.

The topic of this study is relatively new to scientific research so it fit appropriately into the exploratory category. Being exploratory permitted the study to change based on new information and this aspect was helpful for a novel topic because the data could have led in many different directions. Exploratory studies are data-driven and function primarily through inductive logic so they are an excellent means of beginning a line of inquiry because they help set up future studies to formulate/test hypotheses (Yin, 2014). On the qualitative side, this study remained open in order to integrate new information through the use of semi-structured interviews. For example, data from the first participant's interview might have provided insights that influence questions in subsequent interviews with other participants. However, the quantitative side of this study was not open to change based on emergent data because it tested several hypotheses.

This researcher considered a structured interview for the study, but the lack of flexibility did not allow for follow-up questions which were important for exploring this under-researched phenomenon. On the other hand, the extreme flexibility of an unstructured interview extreme did

not allow for a series of pre-formulated questions which this study sought to answer either. Consequently, this researcher chose the semi-structured interview as the qualitative method for this study because it affords a guided process to investigate as of yet unexamined factors associated with lucid dreaming and its relationship to healing, most specifically chronic pain relief. This process yielded novel information about the phenomenon in question, such as the role of beliefs, expectations, and other possible mitigating factors behind the experience.

Several research questions from this study revolved around recognizing patterns within the experiences of the participants: what are the similarities between lucid dream experiences that result in chronic pain relief, and what are the differences? What are the similarities between the lucid dream experiences that do not result in chronic pain relief? Thus, this study chose thematic analysis as the method for analyzing qualitative data because this method involves identifying themes or patterns within a dataset (Braun & Clarke, 2006). Identifying patterns is an important part of researching a novel topic because it allows one to better understand the phenomenon. These patterns also provide direction for future scientific endeavors and lay the groundwork for further hypothesis-testing. This is precisely what the current study is trying to accomplish in the qualitative analysis portion of this mixed-methods approach: explore a phenomenon, identify patterns around it, and lay groundwork for future research. Hence, thematic analysis was an ideal choice for this study.

Thematic analysis was also ideal because it mainly uses inductive logic as the means for generating knowledge. The present study used inductive logic because it uses specific statements to draw general conclusions so it is helpful when there is not much information on a topic. These general conclusions can then be used to provide direction for future research and hypothesis-testing. Researchers use deductive logic to draw specific conclusions from the general data so it

is helpful when information already exists on a topic. For example, researchers use the findings of previous studies with deductive logic to formulate ideas about what to look for during an investigation. Thematic analysis is primarily inductive in its reasoning, but it can also incorporate deductive logic and that is another reason this researcher chose the qualitative method for the present study. The incorporation of deductive logic was important because deductive logic was used through hypothesis testing, as well as through the use of provisional codes established prior to the interviews which were based on previous research. This study was informed by prior research, but there is still much to learn about the phenomenon so being able to use both inductive and deductive logic was ideal for this exploratory investigation.

A case series approach was also considered for this study due to the novelty of the topic and relative rarity of the experience. However, case series designs are not conducive to hypothesis testing (Yin, 2014) and this study contained several hypotheses. The mixed-method approach worked well for this study because its research questions could not be adequately answered using solely qualitative methods or solely quantitative methods. The qualitative method provided thorough descriptions of the subjective experience that explored its patterns and nuances, while the quantitative method provided more precise data on the impact of the experience as well as certain variables that could play a role. Mixed-method integrates the strengths of both types of research and therefore constructs a more comprehensive understanding of the phenomenon than either method alone.

Power Analysis and Sample Size Determination

An appropriate sample size was determined using a priori power analysis with the program G*power 3.1.9 (Faul, Erdfelder, Buchner, & Lang, 2009). The Wilcoxon signed rank test was chosen because it does not require normative distribution and the sample was likely to

be small. Due to the exploratory nature of the study, the alpha was set high ($\alpha = 0.1$), the power was set low (0.8), and the effect size was large ($dz = 0.8$). These settings increase the probability of a Type II Error, where the null hypothesis is falsely accepted, but are considered acceptable in the realm of exploratory investigations (Menard, 2009). According to the power analysis, a sample size of 9-20 participants was needed to use a Wilcoxon signed rank test (one-tailed) with the parameters stated above.

Participants

Recruitment took place through advertisements placed on three Facebook forums with a focus on lucid dreaming. Additionally, this researcher sent direct email solicitations to a handful of people who experienced the phenomenon under investigation (i.e., relieving, or attempting to relieve, chronic pain with lucid dreaming). Snowball sampling was also utilized to recruit participants of other studies who potentially had the experience in question. Inclusion criteria consisted of being at least 18 years of age, fluency in the English language, and having experienced the phenomenon of relieving or attempting to relieve chronic pain with lucid dreaming. This study did not have any exclusion criteria. Before beginning the study, informed consent documents were electronically signed by anyone who qualified and wanted to participate. Then, potentials participants were screened via email exchanges with the researcher to ensure inclusion criteria was met prior to taking the online survey and setting up a phone interview.

Research Setting

This study collected data through two avenues: 1) a self-report survey completed online, and 2) a semi-structured interview completed over the telephone with the researcher. After completion of the informed consent process, the researcher sent participants a link to the online

survey via email. Once the survey was complete, the participant and the researcher set up a telephone interview through an exchange of emails. The telephone interview was audio-recorded so the researcher could transcribe and code it afterward. After the thematic analysis was completed, this researcher shared the themes with the participants via email to ensure they matched the participants' experiences.

Research Design

The design of this study was, in part, retrospective because the primary research question concerns an experience that already occurred for the participants (Jacobsen, 2012). The study was also correlational because all the hypotheses involved measuring relationships between two variables (Creswell, 2009). This researcher obtained scores for absorption and mental imagery ability for each participant at the beginning of the study using a self-report survey conducted online. This study collected all other data (i.e., pain scores, dream vividness scores, & expectation scores) from participants using a semi-structured interview conducted over the phone with the researcher. Afterward, this researcher transcribed and coded these interviews using thematic analysis. Transcript coding was done using deductive and inductive strategies in an attempt to capture all possible variables of the experience (Saldaña, 2015). Codes were consolidated into themes and these themes were sent to participants to review. This follow-up review process improved the validity of the study by ensuring that participants' experiences agree with conclusions drawn by the researcher (Robson, 2011). Any disagreements were processed and integrated into the final analysis. These themes helped answer research questions that required qualitative data, such as exploring similarities between experiences that resulted in chronic pain relief and those that did not result in chronic pain relief.

Hypotheses of this study were tested using the quantitative data obtained from each participant. The primary hypothesis was tested using a one group, pre-test post-test design where chronic pain scores before the lucid dream experience were compared to chronic pain scores after the experience. The rest of the hypotheses required a bit more calculation because they involved the use of a variable known as the pain differential (i.e., pain score before the experience subtracted by pain score after the experience). Participants had a pain differential score for each one of their experiences, so if they had multiple experiences then they had multiple pain differential scores. Due to the statistical problem of multiple observations from individual participants, those participants who reported multiple experiences had their pain differential scores averaged into a single pain differential score. Pain differential scores were then tested for correlations with scores obtained on measures of absorption, expectation, dream vividness, and mental imagery ability to determine the strength/direction of these relationships.

Instruments

Absorption Instrument

Absorption was measured using a 34-item true/false self-report questionnaire that examines a person's level of trait absorption, known as the Tellegen Absorption Scale (TAS) (Tellegen & Atkinson, 1974). The TAS is one of the most widely used measures of absorption and has demonstrated high levels of internal consistency (r = .88) as well as high levels of test-retest reliability (r = .85-.91) (Kihlstrom et al., 1989; Tellegen, 1982). Finke and MacDonald (1978) compared the TAS to another instrument that measured receptivity to trancelike experiences occurring in everyday life and found the instruments correlated (r = .66), thus providing some construct validity. Criticisms of the TAS include measuring both state and trait

absorption, a lack of psychometric and normative data (Roche & McConkey, 1990), and its lack of coherency into a single higher-order factor (Jamieson, 2005).

Mental Imagery Ability Instrument

For this study, the instrument chosen to measure mental imagery ability was the Plymouth Sensory Imagery Questionnaire (Psi-Q). This instrument measures the vividness of an individual's imagined sights, sounds, smells, tastes, touches, emotions, and chronic sensations using five items for each category. Answers are given using an 11-point scale with the anchors of 0 meaning "no image at all" and 10 meaning "as vivid as real life" (Andrade et al., 2014). The Psi-Q has shown excellent internal reliability (r = .97) and a good test-retest reliability (r = .71). It has also shown construct validity when correlated against other measures of mental imagery, such as the Vividness of Visual Imagery Questionnaire (r = .67) and Spontaneous Use of Imagery Scale (r = .40) (Andrade et al., 2014).

Pain Instrument

Williams and Craig (2016) define pain as, "a distressing experience associated with actual or potential tissue damage with sensory, emotional, cognitive and social components" (p. 2421). The current study measured pain before and after the lucid dream experience using a numeric rating scale ranging from 0 to 10 where 0 stands for "no pain at all" and 10 stands for "worst pain of your life." This is a pain assessment tool known as a Numeric Rating Scale-11 (NRS-11) and it has shown high correlations with other standardized pain assessment tools across several studies, demonstrating good construct validity (Haefeli & Elfering, 2006). This instrument also shows excellent test-retest reliability (r = .96, Ferraz et al., 1990). One concern for this study is this instrument's reliability when used retrospectively. However, studies do show numeric pain scales are reliable when used retrospectively (Brauer, Thomsen, Loft, & Mikkelsen,

2003; Hjermstad et al., 2011; Singer, Kowalska, & Thode Jr, 2001), so readers can accept the pain results of this study with a fair degree of confidence.

The NRS-11 measures subjective pain intensity and this is an important variable for predicting a participant's quality of life. Pain duration, on the other hand, does not predict quality of life well (Yazdi-Ravandi et al., 2013) but it was still measured in this study as a means of understanding the chronic nature of participants' pain. Pain descriptors were also utilized to get a better sense of the subjective experience of the pain and to determine if certain types of pain received more relief than others. The pain descriptor list includes: burning, stabbing, shooting, tingling, aching, throbbing, crushing, nauseating, sharp, dull, and any other adjectives that the participant felt was accurate. Several of these descriptors overlap with those in another popular pain assessment tool: the short-form McGill pain questionnaire (Melzack, 1987). The current study also inquired about diagnoses associated with the pain to explore possible of patterns across participants.

Expectation Instrument

Validated measurements of expectation appear non-existent, but one common practice is utilizing the Numeric Rating Scales (NRS) (George & Robinson, 2010). This type of instrument takes a variety of forms, but a prevalent one for measuring expectation ranges from 0-10 (NRS-11) (Bialosky, Bishop, & Cleland, 2010). These NRS-11 expectation studies rarely use the same question or anchors, though, and this creates problems for validity as well as reliability (Hudson, McCormick, Zalucki, & Moseley, 2006; Matsuoka et al., 2017). The question and anchors chosen for this study include: On a scale of 0-10, with 0 being no expectation that it will succeed and 10 being 100% confident it will succeed, what was your expectation of success in terms of pain relief? This is similar to other NRS-11 studies which asked "What are you expecting to

experience?" (0 = no improvement to 10 = full improvement) and "How much do you think your pain will get better?" (0 = no pain to 10 = worst possible pain) (Hudson, McCormick, Zalucki, & Moseley, 2006; Matsuoka et al., 2017). However, the current study was much different from other studies because it measured expectation retrospectively. There is some evidence showing performance influences expectation when measured retrospectively (Oliver & Burke, 1999), so readers should take the results of this variable with caution.

Dream Vividness Instrument

Dream vividness lacks an operational definition and standardized form of measurement. A common practice when measuring dream vividness is to embed the questions into a larger questionnaire. This is precisely the case with the Dream Intensity Inventory (Yu, 2009) and the Multidimensional Dream Inventory (Kallmeyer & Chang, 1997). Both of these inventories measure dream vividness using three questions answered in a NRS-5 format ranging from 0 (never) to 4 (very frequently) and from 1 (strongly disagree) to 5 (strongly agree), respectively. Recent studies have asked participants to measure dream vividness using a NRS-11 format with anchors of 0 (not at all) to 10 (extremely) (Aspy, Madden, & Delfabbro, 2018; Ebben, Lequerica, & Spielman, 2002). The current study used this same format of NRS-11, but with different anchors: 0 (vague/blurry/dark) to 10 (as clear and detailed as waking life). Unfortunately, there is not yet any information on the validity and reliability for this type of measurement when used to assess dream vividness.

Lucid Dreaming Measurement

A basic definition of lucid dreaming is a dream in which the dreamer is aware that he/she is dreaming. This is also the most commonly used operational definition for researchers investigating the phenomenon (Stumbrys, Erlacher, Schädlich, & Schredl, 2012) as well as being

the one used for this study. Semi-structured interviews captured the subjective experience of lucid dreaming. Lucid dream researchers found an increase in internal validity when they provided participants with the definition they used for lucid dreaming (Snyder & Gackenbach, 1988), so the current study utilized this same strategy. At the beginning of the interview, the researcher discussed with participants how scientists define lucid dreaming and then the researcher asked if their experience(s) matched the definition. All participants had to confirm their experience(s) met this definition of lucid dreaming before the rest of the interview proceeded. If participants did not confirm their experience(s) aligned with this definition, then this researcher eliminated them from the study. To further ensure validity of the lucid dreaming variable, secondary verification occurred during the interview by this researcher who searched for an awareness of dreaming while dreaming amongst the participants' responses about their experiences. Participants whose experiences did not conform to the required criteria were removed from the study.

Procedures

1) Participants were recruited through direct email solicitation, as well as online advertising across three different Facebook groups with a focus on lucid dreaming.
2) People who wanted to participate reached out to the researcher via email. The researcher responded via email with an informed consent document for them to review and sign electronically. Inclusion criteria was part of both the advertising and the informed consent process, so verification of eligibility for participation happened at this stage.
3) After a participant signed the informed consent document, this researcher sent a link containing the online survey to the participant's email.

4) Once this researcher confirmed completion of the survey, this researcher emailed the participant to set up a date/time for the phone interview. Following completion of the phone interview, the researcher compensated participants with a $20 electronic Visa gift card.
5) The researcher transcribed the interviews verbatim with minimal editing for clarity to prepare them for thematic analysis.
6) This researcher read the interview transcriptions and coded them using concept-driven and data-driven strategies (referenced below in Qualitative Data section). Then, the most common codes were consolidated into a smaller group of themes. All codes and themes were established subjectively by this researcher using a psychological lens.
7) To test the hypotheses, statistical analyses were used on the quantitative data from the surveys (absorption & mental imagery ability) as well as the quantitative data gathered from the interviews (i.e., pain scores, expectation, & dream vividness).
8) Themes were sent to participants to ensure agreement with their experiences. Disagreements were processed and integrated into the final analysis which was used to answer the remaining research questions.

Data Analysis

Quantitative Data

Due to the small sample size, there was no assumption of normative distribution and thus non-parametric analyses was utilized. A Wilcoxon signed rank test (one-tail) was used to test the primary hypothesis regarding pain scores decreasing from before the experience to afterward. This statistical test was chosen because the sample is dependent, the variables (i.e., NRS-11 pain scores) are at least ordinal, and it is non-parametric in nature (Robson, 2011). Since this is an

exploratory study, the alpha is set high ($\alpha = 0.1$) and the power is set low (0.8) (Menard, 2009). Consequently, this study looked for a larger effect size ($dz = 0.8$). To determine sufficient sample size, a power analysis was conducted with the G*Power program for a Wilcoxon signed-rank test using the previously mentioned parameters. The result was a desired sample size of >9 participants.

Spearman's rho was used for the remaining four hypotheses because they were all concerned with measuring relationships; each hypothesis looked at the relationship between the pain differential variable and a co-variable (absorption, expectation, dream vividness, & mental imagery ability). The Spearman's rho test was also chosen because of its minimal requirements: the variables must be at least ordinal and possess a monotonic relationship (Robson, 2011). All of the variables for the final four hypotheses are at least ordinal (TAS scores, Psi-Q scores, NRS-11 for pain diff scores, NRS-11 for expectation, NRS-11 for dream vividness) and possessed monotonic relationships with the pain differential. If a participant had multiple lucid dream experiences, then the data was averaged for several of the variables (i.e., expectation, dream vividness, & pain before/after) in order to not violate the assumption of independent observations. Results from these statistical analyses determined whether or not to reject the proposed hypotheses.

Qualitative Data

The qualitative data of this study were the interview transcripts that were analyzed using Thematic Analysis. Thematic analysis extracts meaning from qualitative data and the researcher establishes this meaning through his/her own subjective lens. Since this method acknowledges the role of the researcher in the analysis, so it is important for researchers to outline their assumptions and clearly describe how they analyzed their data. One assumption held by this

researcher is the belief that certain health factors can be manipulated through actions taken in the lucid dream state. Another assumption held by this researcher is a belief that lucid dreaming has few negative side effects and is a safe activity for mentally-healthy people to explore. These assumptions carry a positive connotation of lucid dreaming, so there is a possibility of reporting bias from the researcher where only positive outcomes are reported. This researcher attempted to bracket these assumptions by reporting the entirety of the experiences, including the parts which would be considered contradictory to research on expectation, such as the instances when pain increased after the lucid dream. The researcher also sent final themes to participants to ensure the conclusions matched their experiences, because this process further validated findings by helping bracket the researcher's personal biases.

To clearly describe the analysis portion, this researcher identified themes by coding the qualitative data literally and interpretively (Saldaña, 2015). In other words, this researcher took data from the interviews at face-value as well as interpreted them in an attempt to capture content below the semantic surface. For example, a participant might explicitly state, "the mind and the body are connected" and the researcher codes this literally as a belief in the mind-body connection. On the interpretive level, a participant might state, "the power of my mind helped to heal my body" and this was also coded as a belief in the mind-body connection because it is implied in the statement. This literal and interpretive coding provided a rich description of the data which helped to identify themes.

Both inductive and deductive logic were used to generate codes for this study. Insights came from concepts identified before the study as well as data generated from the study itself (Saldaña, 2015). This researcher developed most of the codes inductively using the study's own qualitative data. This means the researcher examined the interview transcripts and developed

codes based on the specific content of each interview. For example, if a participant stated his/her lucid dream consisted of, “being at a doctor’s office” then this would be coded as “environment with healing connotations” using an inductive, interpretive approach. However, a follow-up question might have revealed this particular participant does not see a doctor’s office as a healing environment, but instead as a place of illness and negative news about one’s health. Everyone views the world through his/her own unique perspective so the same scenario can result in different experiences for different people. This researcher attempted to capture these nuances by asking open-ended follow-up questions, such as: does being in a doctor’s office hold any significance for you?

Deductive logic was used in this study through the use of a psychological lens and provisional coding. Provisional codes were generated prior to interviews and they were used to inform the coding process as well as the interview process. The provisional codes for this study were based on psychological principles stemming from theories, hypotheses, prior research, and anecdotal reports. The recommended range of provisional codes is between six and sixty (Saldaña, 2015). This study used seven provisional codes (Appendix A). One such code stemmed from the response expectancy theory which states that people’s experiences are based, in part, by what they expect to experience (Kirsch, 2018). “Expectation of success” is the name of this provisional code and it was used whenever a participant indicates an expectation regarding the health outcome of his/her lucid dream experience.

Another psychological principle that informed follow-up questions and provisional coding originates from the continuity hypothesis of dreaming. This hypothesis states dream content is largely reflective of waking life experiences (Schredl & Hofmann, 2003) so someone with chronic pain while awake will likely experience pain while dreaming, too. However, a

participant might not have mentioned pain occurred during his/her lucid dream experience and this created an opportunity for follow-up questions stemming from the continuity hypothesis. For example, this researcher might have asked: did you feel any pain during this lucid dream experience? How does the pain you felt while dreaming compare to the pain you feel while awake? As a provisional code, its label was "pain while dreaming" and the researcher used this code when a participant talks about feeling pain during his/her lucid dream experience. Modifiers to the provisional code were used when relevant, such as "no pain while dreaming" when no pain was felt or "decreased pain while dreaming" if participants felt less pain while dreaming than awake.

Additional guidance for provisional coding and follow-up questions came from previous research. Banerji (2017) examined healing dreams, including healing lucid dreams, and he organized these dreams into three different types: insight, prescriptive, and/or experiential. Experiential healing refers to, "a healing experience within the dream state itself" (p. 65) and this category is different than prescriptive or insight healing dreams because they simply provide information about the ailment. This author has noticed a pattern in the anecdotal reports of healing through lucid dreaming: many of them contain experiential healing, but not much insight or prescriptive healing. The present study used the provisional codes of "experiential healing" and "insight healing" and "prescriptive healing" to track this aspect of participants' experiences.

This researcher used anecdotes of healing through lucid dreams to inform follow-up questions during the interview and provisional codes developed before the interview. Waggoner (2009) has read a great deal of these anecdotes and mentions a couple of patterns he noticed. One pattern is the role of the dreamer; dreamers who take a more active role in the process tend to have better health outcomes. This provisional code was labeled "role of the dreamer" and was

modified with an “active” or “passive” depending on the circumstance. Another pattern Waggoner (2009) noticed is the presence of light, typically of a certain color, manifesting at some point during the experience. This provisional code was labeled “presence of light” and follow-up questions inquired about the color if not already indicated by the participant. See Appendix A for a full list of the provisional codes used in this study.

Questions of the semi-structured interview were organized in such a way as to reduce respondent biases (Robson, 2011). For example, any questions regarding the pre-established provisional codes were placed at the end of the interview so participants would not be primed toward ideas already developed deductively by the researcher. Questions stemming from inductive logic (i.e., questions seeking information about the participants’ experiences) were put before questions stemming from deductive logic in order to elicit a more genuine, unfiltered response. To further reduce respondent bias, the wording of questions was chosen mindfully to make them more open-ended. The interview began with questions regarding demographics and moved on to attributes of the participant’s lucid dream experiences in general as well as specifics about his/her chronic pain and treatments. The researcher organized these questions in a way to build rapport with the participant in addition to priming the participant to think about his/her experiences with lucid dreaming and chronic pain (Brinkmann & Kvale, 2015).

After the interviews were conducted, the researcher transcribed the interviews verbatim with editing for clarity (Saldaña, 2015). This type of transcription is ideal for theoretical analyses where researchers seek out patterns within the data (Brinkmann & Kvale, 2015). Once the researcher transcribed an interview, he coded it using the inductive and deductive strategies described earlier. This researcher coded each transcript one at a time so that any insights generated from the transcript could be used when analyzing subsequent transcripts. The first

round of coding consisted of initial codes where this researcher was open to all possible codes and theoretical directions. This includes the coding of ideas, descriptions, processes, values, emotions, beliefs, attitudes, and attributes, among others (Saldaña, 2015). During this first round, the list of pre-established provisional codes was also utilized and applied when pertinent.

After the first round of coding, there were a large number of codes and this required a second round of pattern coding which grouped them into a smaller number of categorical codes. The researcher refined these categorical codes into five overarching themes and sent them to participants to ensure agreement with their experiences. The researcher processed any disagreements and integrated them into the final analysis. Final themes were used to answer research questions surrounding the subjective experience, such as what are the similarities/differences between lucid dream experiences resulting in pain relief and those that do not result in pain relief?

Ethical Assurances

The researcher designed this study to comply with the ethical standards set forth by the National Institute of Health, as well as Saybrook University's policies and procedures. The Institutional Review Board of Saybrook reviewed and approved the study, declaring it to be of minimal risk to participants. An informed consent process was used to notify participants of what was to be expected, how their confidentiality would be protected, as well as their rights to decline to answer any questions and their ability to withdraw at any time. Prior to participation, this researcher obtained informed consent via electronic signature using an online DocuSign form that outlined the ethical considerations and risks involved. Identities of all participants were concealed using aliases and random number assignment. All data was kept secure through the use of a password-encrypted file on a USB drive.

CHAPTER 4: RESULTS

Descriptive Data of Participants

All participants (N=10) completed the study which consisted of an online survey and a phone interview. Seven of the participants reported having multiple experiences, for a total of 19 experiences, but several of these experiences were excluded because they did not fit the inclusion criteria. Two experiences did not contain pain relief or an attempt at pain relief, two experiences did not happen while lucid dreaming, and one experience had pain relief appearing to be from lucid dreaming but the participant did not attribute any of the pain relief to the experience. Of the 19 experiences shared, a total of 14 were included in the analyses of this study.

The gender of participants was split with 6 males and 4 females. Many participants (N=7) were born and lived in the United States before turning 18 years old, while the rest were spread across three countries: Switzerland, United Arab Emirates, and Argentina. Most participants (N=9) completed some form of higher education: one technical degree, five bachelor's degrees, one master's degree, and two doctoral degrees. Age of participants ranged from 25 to 63 with an average of 42.4, with the age range for when they experienced the lucid dreaming event(s) in question nearly the same at 25-62. Elapsed time since the lucid dream experience ranged from 1 week to 13 years, with an average of 2.93 years.

Participants experienced their first lucid dream anywhere from age 5 to age 53, with the average being 19.8 years old. Some people naturally discover how to induce lucid dreaming on their own, known as natural lucid dreamers, while others learn about this possibility through others and are known as learned lucid dreamers (Stumbrys & Erlacher, 2014). The sample of this study was split between natural lucid dreamers (N=6) and learned lucid dreamers (N=4). This sample was also split in terms of familiarity with lucid dreaming prior to their experience(s) with

chronic pain relief. Some participants were novice lucid dreamers (N=4) with <100 lucid dreams in their life, some participants were intermediate lucid dreamers (N=4) having experienced 100-500 lucid dreams in their life, and a couple of participants were advanced lucid dreamers (N=2) with >1000 lucid dreams in their life.

Several studies define a frequent lucid dreamer as someone who has at least one lucid dream per month (Saunders, Roe, Smith, & Clegg, 2016; Snyder & Gackenbach, 1988). According to this definition, all participants within the current study were frequent lucid dreamers at the time of their experience(s). The participant with the lowest frequency had 1 lucid dream/week, or 4/month, while the person with the highest frequency ranged from 2-8 lucid dreams/week. Approximately half of the participants were also not acquainted with the idea of using lucid dreams for healing purposes prior to their experience(s) with chronic pain relief: some of them knew about this concept (N=6) but others did not know about it (N=4). Of the six participants with previous knowledge, all of them mentioned Waggoner's book, *Lucid Dreaming: Gateway to the Inner Self*, as being a source of this idea to try healing through lucid dreams.

Many of the participants (N=6) had pain conditions lasting >10 years, and half (N=5) experienced spontaneous relief where the pain subsided for various reasons (e.g., weather, inactivity, dietary changes). Almost all participants (N=9) were experiencing pain every day at the time of their experience(s). Three participants had multiple pain conditions, making it difficult to distinguish which pain condition the lucid dream experience impacted and that is why Table 1 reports many of them together. The only exception was Participant 05 who had two conditions (shoulder/neck injury & ankle weakness) and two lucid dream experiences, but there was enough time in between the experiences that they could be distinguished from one another.

Table 1. *Characteristics of Participants' Chronic Pain and Relief*

Condition	Pain Length	Pain Location	Type of Pain	Relief from LD
damaged vertebrae	>3 months	lower back	burning, stabbing, shooting, aching, throbbing, crushing, sharp, debilitating	instant, temporary, 2-5 minutes
heel spur	10-15 years (occasionally subsides)	heel	motion pain: burning, stinging, shooting, aching, "like a hurtful wart"	instant, gradual, lasting, "for years"
gastroesophageal reflux disease	>30 years (occasionally), ~everyday last year	esophagus area, throat, upper chest area	aching, throbbing, sometimes, nauseating, dull	1) instant, gradual, temporary, for months 2) instant, gradual, lasting, for months
diagnosed unknown	~10 years	hands, wrists, knees, back, feet	stabbing, shooting, aching, throbbing, crushing, nauseating, sharp, dull	1) instant, temporary, ~half a day 2) no relief
unknown shoulder/neck injury (falling during headstand)	1-2 years	left shoulder, area near clavicle	"in the joint, dull ache", occasional shooting, tingling, aching, occasionally sharp, sore, weakness	instant, temporary, <1 month
unknown ankle weakness	>1 year	left ankle	"sore, stiff", occasional shooting, tingling, aching, throbbing, sometimes sharp, sometimes dull	instant, temporary, ~3 months
unknown knee injury (falling on stairs)	1-2 years	below left knee cap	pulsing, shooting, tingling, aching, throbbing, sharp	instant, lasting, >8 years
irritable bowel syndrome & degenerative disk disease	~35 years (occasionally subsides), & ~10 years	lower left abdomen & lower back	penetrating, stabbing, shooting, aching, sharp, & burning, throbbing, crushing, sharp	1) instant, temporary 2) instant, "for now" (<1 week)
sciatica & bulging disk	>20 years	lower back, can spread to hips and legs	"steady dull ache", stabbing, shooting, tingling, aching, throbbing, sharp, dull	instant, temporary, 5-6 months
sciatica & "thrown out" back	>3 months & 2-4 weeks	lower back, can spread to hips and legs	"sore", stabbing, shooting, tingling, aching, throbbing at times, nauseating at times, sharp, dull	instant, temporary, couple days
migraines	>30 years, recurring episodes weekly or monthly	starts in back of head, can spread to full body	"all-encompassing", stabbing, shooting, aching, throbbing, crushing, nauseating, sharp, dull	no relief

* "instant" relief means upon awakening from the lucid dream

Nearly all participants (N=8) tried multiple, different treatments to improve the pain or underlying condition. Some tried allopathic treatments (N=7), some tried alternative treatments (N=7), and several of these participants tried both (N=4). Treatments included: over-the-counter pain killers, prescription pain killers, antacids, prescription antacids, oral steroids, cortisone injections, physical therapy, acupuncture, chiropractors, massage, lifestyle changes, dietary changes, naturopathic medicine, hypnosis, Chinese medicine, and shamanic energy work. Pain relief from all treatments was temporary, ranging mostly from several hours to several days, and it was rarely complete relief. At times, pain relief from treatments lasted for several weeks or months, but this mainly happened when participants made lifestyle or dietary changes. Most participants (N=7) don't remember whether or not they were actively treating their pain at the time of their experience(s), but other participants were confident they were not treating it (N=3).

Table 2. *Pain Descriptors and Prevalence Percentages*

Descriptors	Percentage of Participants
burning	30%
stabbing	60%
shooting	90%
tingling	40%
aching	100%
throbbing	90%
crushing	40%
nauseating	40%
sharp	80%
dull	70%

Statistical Analyses and Testing of Hypotheses

Hypothesis A: Pain Scores Before and After

A Wilcoxon signed-rank test was used to determine whether to accept or reject Hypothesis A: pain scores after the lucid dream experience will be lower than pain scores before the lucid dream experience. Overall, pain scores before the experience were higher (*Mdn* = 6.63) than pain scores after the experience (*Mdn* = 1.25). The Wilcoxon test indicated this difference is statistically significant ($T = 45$, $z = -2.67$, $p = .004$). According to the statistical evidence, the null hypothesis is rejected. Table 3 provides more detail about these results. The 90% confidence interval for pain scores before the lucid dream ranged from 6.64 to 7.41, while the 90% confidence interval for pain scores after the lucid dream experience ranged from 0.07 to 3.23.

Table 3. *Descriptive Statistics of Pain Scores Before and After Lucid Dream*

	N	Mean	Std. Deviation	Minimum	Maximum	25th percentile	50th percentile	75th percentile
Pain Before	10	6.5250	1.52046	3.50	8.50	5.75	6.63	8.00
Pain After	10	2.0000	2.67706	0.00	8.50	0.00	1.25	3.25

Hypothesis B: Absorption

A Spearman's rank-order correlation was run to determine the relationship between trait absorption of participants and their pain differentials. Hypothesis B stated absorption scores will be positively correlated with pain differential scores. The test did not find a statistically significant relationship ($r_s = -.142$, $p = .696$, $N = 10$) and the null hypothesis was accepted with a 90% confidence interval range of 25.01 to 30.39.

Hypothesis C: Expectation

A Spearman's rank-order correlation was run to determine the relationship between participants' expectation and their pain differentials. Hypothesis C stated expectation of success

will be positively correlated with pain differential scores. The test did not find a statistically significant relationship (r_s = .105, p = .773, N = 10) and the null hypothesis was accepted with a 90% confidence interval range of 4.09 to 8.01.

Hypothesis D: Dream Vividness

A Spearman's rank-order correlation was run to determine the relationship between dream vividness of the participants' experiences and their pain differentials. Hypothesis D stated dream vividness scores will be positively correlated with pain differential scores. The test did not find a statistically significant relationship (r_s = -.329, p = .353, N = 10) and the null hypothesis was accepted with a 90% confidence interval range of 7.80 to 9.02.

Hypothesis E: Mental Imagery Ability

A Spearman's rank-order correlation was run to determine the relationship between the mental imagery ability of participants (N=10) and their pain differentials. Hypothesis E stated mental imagery ability scores will not be strongly correlated with pain differential scores. The test did not find a statistically significant relationship (r_s = .189, p = .601, N = 10) and the null hypothesis was accepted with a 90% confidence interval range of 7.34 to 8.80.

Thematic Analysis of Interview Transcript Data

Three rounds of coding took place during the thematic analysis of this study. There were initial codes which were grouped into categorical codes and then these categories were refined into themes. The first round of codes was generated using the strategy discussed in the Qualitative Analysis section. This strategy was a mix of inductive and deductive logic that addressed the literal and semantic meaning of participants' phrases. Additionally, codes from the beginning interviews were used to help code subsequent interview transcriptions. After the first round of coding, there were >100 codes so a second round of categorical coding was required to

pare down this information. Any code that appeared across two or more participants was a part of this categorization and was grouped according to concept.

Around thirty of these codes appeared in only one case and thus did not constitute a pattern. The majority of these singular codes were thrown out because the researcher subjectively judged them to be insignificant as part of the healing process. Examples of singular codes that were thrown out include certain beliefs and descriptions of experiences, such as: *belief more nature leads to more LDs*, *belief talking about LDs increases frequency*, and *false awakening after LD*, in addition to others. However, there were a few exceptions where certain singular codes (<5) were integrated into the final analysis because they spoke about important concepts that other codes did not address. For example, there was only one participant who experienced *pain in lucid dream* as well as only one participant who experienced *pain from lucid dream*, but both of these concepts were important because they helped answer one of the research questions regarding increases in pain from the experience. Another example comes from a participant who did not follow the prescription she felt like she was given through the lucid dream. Three participants received prescriptions from their lucid dream experiences, but she was the only one who *did not follow the prescription* and her experience was one of the few that did not result in pain relief. Overall, there were less than five of these singular codes included into the list of >60 codes put into categories, making up a small percentage of the total.

In contrast, several codes appeared across multiple participants but were not included into the final round of coding because the researcher judged them to be inconsequential. One example is the code *outer space* which occurred for three participants and described being in an outer space environment at some point during the lucid dream experience. The researcher deemed this code as unimportant because it seemed to describe more of a background environment than a

principal part of the healing process. Another example comes from a code that also described the environment: *crystals in lucid dream*. This code was used for two participants who spoke about being around crystals during their lucid dream experience. Some people purport healing with the help of crystals (McClean, 2010), but this researcher believes there is not enough scientific evidence for this assertion and thus did not include the code into the final analysis. Also, the crystals were not emphasized as an important part of the experience for one of the two participants. Similar to the singular codes, there were less than five of these pattern codes which did not get included in the final analysis so they comprise a small percentage of the total.

After this discriminatory process, the codes were grouped into categories according to their concept. The groups emerged naturally into eight categories: dream control, senses within lucid dream, other entities in lucid dream, demographics, before lucid dream, after lucid dream, inside lucid dream, and beliefs/values/attitudes. This researcher then refined the eight categories into five overarching themes by looking at the codes within the categories and shifting them around to be more appropriate with the other codes of the group. Sometimes this shift required combining certain codes which shared similar concepts, such as the code *belief lucid dream imagery is symbolic* which was put under the code *insight from lucid dream* because both codes describe the feeling of receiving helpful information from the experience.

Some categories shared concepts as well, so these categories were combined and/or renamed to be more reflective of their codes' content. For example, many codes within the category *before lucid dream* were put into the category of *demographics*. The theme *characteristics of the lucid dream* was comprised of many codes from the following categories: dream control, senses within lucid dream, other entities in lucid dream, and inside lucid dream. After refining these categorical codes, five themes emerged: beliefs, expectations, demographics

prior to the experience, characteristics of the lucid dream, and positive outcomes. For the constituent codes that make up these five themes, see Table 4 (p. 91).

The following sections speak about the themes and their constituent codes, separated into the codes derived from inductive logic and the codes derived from deductive logic. Sometimes, though, it was difficult to delineate if the code originated from inductive or deductive logic. For example, *belief in the mind-body connection* is not a provisional code made prior to the interviews through purely deductive logic, but this researcher suspected many participants would possess such a belief so it was not completely inductive either. In these cases, the researcher erred on the side of deductive logic and placed the code under that heading because the researcher already had preconceived notions about the code's concept, so the code was not derived purely from inductive logic.

Codes from Inductive Logic

The codes within this section were developed through inductive logic, meaning they originated from the interview data and not from any preconceived notion of the researcher. For organizational purposes, these codes were arranged into their respective themes. The remaining codes developed through deductive logic will be discussed in the next section.

Beliefs: Inductive Logic

This theme consists of various codes which address certain beliefs that participants held before, after, or during the lucid dream experience. All participants did not identify with all the beliefs discussed here, but enough participants shared each of these beliefs that they became a pattern.

Synchronicity Around Experience

A smaller pattern which some participants shared was a meaningful coincidence (i.e., synchronicity) surrounding the lucid dream experience dealing with chronic pain. Participant #05 mentioned being in hypnagogic state when he saw a spiritual authority figure (i.e., Rinpoche) whom he had spent time with recently:

> I saw him, I had a vision of him and heard him speaking to me and he said there was weakness in my ankle. Well I don't know if he said my ankle specifically, I just felt my left ankle or I heard him say, "there's weakness here" and it felt as if he was kind of holding my left ankle. At that point I had not considered that I had any problems with my left ankle until I heard that and, sure enough, it was in the next day or the next few days I started to feel pain in my left ankle.

Participant #06 had a similar experience in the sense it contained a diagnosis, but different in the respect that it occurred long after the pain began and spanned across the waking and dreaming states. In the waking state, he spoke to a friend who is a shamaness living in South Africa and he asked her why he was having pain in his knee. She replied her belief system views knee problems as related to stubbornness. Later, he was speaking to a friend from a neighboring Arab country and the friend said his culture relates knee pain to stubbornness. Participant #06 found it interesting that two people from two different cultures said the same thing, and then he had his lucid dream experience:

> And I thought, what a perfect time at the doctor, I'll ask him about my knee. And I did. So he said, "Let me examine it" so he made me lie down. He looked at my knee, he got this like super-futuristic, incredible, looks like a big mobile phone and it scans the knee and it shows the inside of everything. Like this portable x-ray. Then he looks at me and he said, "I know what your problem is" and I said, "What's my problem?" and he said, "It's stubbornness". And I lost it!

Participant #07 talked about several dreams, lucid and non-lucid, where she received information about what she could do to improve her ailments that was later verified as accurate:

> I was told to take some vegetables in my diet so use some herbs that later I look for information about them and they are exactly the things I have to take. This happened to

> me so many times I can't remember every one of these experiences, but I usually take that recommendations very seriously because I usually have relief after that. Sometimes they are dreams about eating more fruits or drinking more water and then I use that information because I now believe in that since I had a very specific dream about this at 45 when I was visiting a homeopathic doctor. And before seeing him I have a dream about taking some herb that later he recommended me to take.

Attribution of Pain Relief to Lucid Dream

A couple of the participants had gradual pain relief after their lucid dream experience and attributed this relief to the lucid dream. Participant #03 mentioned many lucid dreams experiences over a period of time that led to a decrease in his pain:

> There was probably a month's worth of these lucid experiences where I was intending to understand what was going on or to you know have some guidance and to how to heal this or to allow the healing to happen. And – backing up with like the medication and all of that kind of thing – I mean what seemed to happen is that progressively over the months with working with this in the lucid dream state, it calmed down, you know to the point where it basically went away. I would still have some morning kind of an odd taste in my mouth like it was still doing it, but the pain around the esophagus and the gross symptoms just kind of subsided.

Participant #03 had multiple lucid dream experiences where pain decreased upon awakening, and he regularly had several lucid dreams in one night. During one of these nights with several lucid dreams, he woke up with pain relief and attributed it to one particular lucid dream:

> In the morning, it was a significant relief. It might have been like 2 or something afterwards. But I relate that specifically to that experience where I'm in the lucid dream and I broke that tube and was drinking that liquid.

In another case, Participant #02 had multiple lucid dream experiences with decreased pain upon awakening, as well as gradual pain relief afterward. She attributes the pain relief to her lucid dream for one experience, but not the other. Here is her speaking about the gradual pain relief from her first experience with chronic pain and lucid dreaming:

> It was only gradually. I thought it was such a special experience that it must have an effect on physical life. I just trusted and wanted it to happen, that it's possible for the healing can occur in the lucid dream. This dream is very very special for me. I never had

> experienced nothing similar…I think my power of intention, my belief, that it must work because I didn't want this pain anymore. It helped me to gradually lose the pain within about 6 weeks or so…I had hoped it would help immediately and I wouldn't have pain but I still could feel the pain, but only sometimes, not always and I had the feeling that it was less intense. So I had considered that it already worked and each time I went hiking again, I had less pain. Somehow, with my intentions, it loosened I think.

When talking about a subsequent lucid dream experience and chronic pain, she describes:

> I recall my wish to heal my right knee. I speak up – I speak aloud repeating it like a mantra, "I wish healing energy for my right knee. I wish healing energy for my right knee." I'm feeling euphoric in doing so, hoping for a healing light beam. After a while, a dream figure appears and presents me a knee bandage looking like a headband in a Norwegian [unintelligible]. It is kneaded in the colors white, golden, dark brown, and [unintelligible] steel-blue. I'm a bit disappointed but take it gratefully and put it on my knee. I lose my lucidity and the dream continues.

Participant #02 mentioned gradual pain relief after this lucid dream as well, but attributes the relief to other factors outside of lucid dreaming.

> Again, it was steadily and I didn't believe that it's because of the dreams, that it's just the – it's not because of the dream…Because I didn't go hiking so much downhill then at that time then I did before which caused the effective pain.

Belief Experience Improved Condition

With the lucid dream experience, several participants sought pain relief but there were also several participants who sought an improvement in the underlying condition causing the pain. This category contains a belief that lucid dreaming can improve the condition and/or a belief the condition did improve after the lucid dream experience. Participant #03 stated his intention was to try to relieve pain but also to try to improve his condition:

> And so I asked myself – you know for the lucid dreaming mind – what to do about or how to heal in terms of health, the GERD. I know you're specifically looking at pain but I was looking at not only relieving the pain but also healing the condition.

Participant #06 spoke about incubating a healing for his knee condition. After his experience, Participant #06 followed a prescription given by the doctor in his lucid dream and mentioned his knee condition being resolved, "I took up his advice. I started to exercise regularly, walking and

going to the gym. And I mean, since then, it's been years. Eight years now and it's not back. My knee's fine." Participant #10 did not have any pain relief from her lucid dream experience, but she did attempt to incubate dreams which would help her entire condition of migraines and not just the pain aspect of it.

Expectations: Inductive Logic

This theme consists of participants' expectations prior to the lucid dream experience, during it, and afterward. Some expectations were open-ended, but most of them contained a slant toward positivity.

Expectation of Healing Working in Lucid Dream

During the lucid dream experience, a few participants had the feeling some aspect of the healing process was working and thus their expectation of relief increased further. Participant #05 shared this occurrence from his perspective:

> I had a belief as that was happening that it would work. In the midst of the dream, I could have been accepting I suppose but I - maybe at that point - I recognized that it was possible to heal.

This increase of expectation during the experience seemed especially true for participants who felt a shift in their dream body, like #08:

> My hands get warm and then I can feel like them glowing and then I can feel it like coming out and then I can feel it going into my back. I don't look down. I just, you know, stand there and I'm breathing it and I'm feeling it and I can just feel it coming in. and it's just like this glow is coming into my back. I could almost feel it like disintegrating negative energy inside of me and I know like this is working. And I just sit there for a while and I just know in my heart that this is very very working stuff.

Participant #06 also felt a shift in his dream body during the experience, and his shift persisted into waking for a while:

> It wasn't the injection, it was his energy – the minute it hit my knee I went into a trance. Like you know, I don't know if you've had out of body experiences but, if you have, they sometimes are preceded with very strong vibrations which I call a trance state. You know

> in very deep meditations you get into a trance state as well. The second he did that, I just went into trance immediately, which is very unusual. So the vibration started in the dream and, as it got stronger, it made me exit in the dream. It got so powerful that I woke up and I remained in those vibrations for a whole hour in the waking state.

Lucid Dream Experience Different than Expected

Since almost all participants knew about the concept of using lucid dreams for healing, almost all of them had some preset idea of what would happen. As a consequence, several people experienced something different from what they expected. For example, Participant #03 said:

> It kind of surprised me because I guess I was looking for something that had more of an explanation or made sense but it's just like, well this is interesting. I mean it could have been a cup or like a medicine container but it wasn't, it was like a UV tube.

When faced with something unexpected during the lucid dream, Participant #03 improvised by breaking the UV tube and drinking its contents. Participant #04, on the other hand, was unsure about how to proceed after encountering something unexpected during the process:

> And I decided to try to do the – people talked about the light coming out of their hand and so I tried doing that but I could only create like a green marble. Like a green marble appeared in my hand and I was like what is this? And I was like, am I supposed to roll this on my body or what's happening? And then I really didn't know what to do with it.

The lucid dream faded shortly after this unexpected encounter and this experience did not result in any pain relief upon awakening for Participant #04, as opposed to Participant #03 who did experience pain relief after his lucid dream. Readers should note Participant #04 had another experience which had less unexpected elements and it resulted in temporary pain relief. How one deals with surprising elements during the experience is likely to factor into the outcome, but it is difficult to determine with the given data. For example, it is challenging to pinpoint the precise factors influencing the outcome in the case of Participant #02 because she had two lucid dreams in the same night, one right after the other. The first lucid dream had unexpected elements that seemed to lead to a loss of lucidity:

> The first dream starts lucid. A blanket is coming over my head and my deceased mother wants to press it on me. I feel suffocating under my bed cover – under my bed cover. This is a common dream sign for me, at that time, at the beginning of my lucid dreaming career. And each time was a bit different. My mother hasn't been in it before. Ignore it. Breathe normal, I said to myself. And, because I'm lying in my dream bed, I speak out my wish loud, "I'd like healing energy for my left heel into my hands." My blanket is still hanging above my body. Waterdrops are starting to fall on me, out of it, and then I lose lucidity. My daughter, in the dream aged 8-10 years, is in the room and wants to come in my bed and so on until I wake up.

The second lucid dream had more expected elements and there was pain relief upon awakening. However, it is tricky to decipher which of these experiences contributed to the subsequent pain relief because they were so close together in time, and each one might have played a part.

Open to Various Ways of Healing

Many participants had preconceived notions about healing with lucid dreaming, but there were also several participants who were open-minded about what the healing experience might entail. Participant #03 talked about his openness towards healing in its various forms, whether it be informational or experiential:

> I set it up to like well if you can give me information on what to do in a lucid dream or normal waking life, great. But if you can – if there is some kind of forces or whatever it is, resources that can be accessed and it can happen, great. So either-or, you know, both.

Participant #06 also incubated his experience with an open mindset and ended up experiencing multiple avenues of healing. He experienced informational healing where he received insights in the form of a diagnosis and a prescription for his condition, as well as experiential healing where there was pain relief when he awoke. Participant #07 received both informational and experiential healing as well, sometimes separately and sometimes within the same lucid dream. She did not intentionally incubate these experiences, nor did she try to direct them, so her mindset toward healing was certainly open in terms of what form(s) it would take.

Expectation Pain will Decrease if Prescription Followed

Three participants received information from their lucid dreams which they felt like was a prescription to help improve their condition and manage their pain. Participant #06 struggled with pain in his knee and a doctor in his lucid dream told him to start and maintain an exercise routine. He shared, "I've taken exercise very seriously since then until now, and the pain hasn't come back, so I'm very grateful." Later, he clarified, "I got my relief before I started to exercise but I think exercising helped maintain my knee's health. So that was a direct result of the dream, was that I started to exercise." He was also worried about what might happen if he stopped following the exercise prescription from the lucid dream doctor:

> I'm pretty convinced if I stop for a long time – which I'm actually concerned about now, being in lockdown, I have no access to the gym or nothing. If it prolonged for a few months of no exercise, I believe the pain would return, but I don't want to test that theory.

Participant #07 had similar experiences of receiving suggestions from doctors in her dreams:

> Some doctors cure me with energy. It's the only way to tell this. And that dreams, they bring me a lot of relief to my pain, but also always in those dreams, there are recommendations of changes in attitudes or behavior. And I always come back from that dream with certainty that I have to make changes in my lifestyle.

In one of her lucid dreams, she had insight into what was contributing to her painful condition and what she could do about it. Her insight came during the lucid dream as she thought about the dream imagery metaphorically in terms of her life:

> I found a snake that was divided in two and the two parts were living. And in that precise moment, I understand that my spine was again with problems because of my standing at my computer, and sitting doing my work. I know in that moment that this snake was a symbol of my spine and that exactly in the middle in my back, in my lower back, I would have problems because of my routines.

She also saw the feathers of a local, tropical bird around the snake and thought:

> At that moment, I realized my work as a communicator had something to do with that. I was so focused in doing my job as a communicator and a writer and I did lectures and I teach, that work was the perpetrator of the killing of the snake. And not only was it lucid,

> it was so unlike others because at that moment I realized I was abandoning me, I was hurting me with my job, with my work.

Participant #10 experienced something slightly different in the fact that her insight came after the lucid dream was over and she was reflecting on it. After spending many days incubating a dream to help with her migraines, she had a lucid dream where she cooked certain foods. She remembered the foods vividly and this vivid memory of foods was unusual so it stood out to her as being an answer to her request. Another reason food might have stood out as important is she found dietary changes as the most helpful of all the treatments she had tried over the years. Interestingly, she did not follow the food advice of the dream even though she mentioned believing it would help her migraines.

Demographics Prior to the Experience: Inductive Logic

Before their lucid dream experiences with chronic pain relief, participants shared many aspects in common and most of these could be labeled as demographics.

Tried Multiple Treatments with Temporary Relief

Another commonality amongst most of the participants was trying out multiple, different treatments to deal with the pain. Participant #10 recounts:

> I think I've tried everything. Acupuncture, food elimination, massage, naturopathic medicine, hypnosis is a new one that I'm working with. What else? Chinese medicine, I'm trying to think of more. Using ice, cold therapy, did shamanic work, like energy work.

Participants' conditions and beliefs varied, and thus so did the treatments. Most participants tried allopathic treatments and most participants tried alternative treatments, with several participants trying both forms. All relief from treatments shared in the fact that the relief was temporary and it was rarely complete. In almost all of the cases, pain relief from treatment was partial and would last several hours to several days. In a couple of cases, pain relief lasted for several weeks

or months but this primarily happened when participants made lifestyle or dietary changes and held them for a period of time.

Want to Avoid Pain Medications

This code category relates to the previous one regarding multiple treatments, but its prevalence necessitated speaking about it separately. A large portion of the participants explicitly expressed a want to avoid pain medications, saying things like Participant #6:

> I'm not a big fan of over the counter drugs or any sort of medication. I'll take it only if I have to, so I usually opted out. Like on really bad days I did because I have to perform at work, but most days I just lived with it.

Participant #10 shared a similar aversion to pain medications, not taking them even though she knew they would help her function on days with debilitating pain:

> If I caught it early and took ibuprofen, [the pain] wouldn't effect [my day] too much. If I decided to try to not take ibuprofen and it hurt really bad, it would put me out and I wouldn't be able to do anything.

The views of Participant #09 toward pain medications seem to be influenced, in large part, by his partner:

> My wife is not a big pill taker so I kind of you know moved in that kind of realm where we don't take much medication. You find your own alternative methods anyway like lucid dreaming and figuring it out yourself. Or stretching correctly or making yourself stronger instead of just masking the symptom with a pill.

An impactful lucid dream, which could likely be classified as a lucid nightmare (Stumbrys, 2018), shaped the views of Participant #01 toward pain medication. He said he was in a dungeon and, "I was chained up and there was demons in there. And there was people – there was one or two other people, males, and they were frail." He went on to share the profound effect this lucid dream had on his views:

> That was a metaphor for the way my life was going at that time. When I was in the dream I was chained up to the walls and I felt like if I keep doing what I'm doing, this is really how my life is right now. I'm taking these pain pills, I'm going to become addicted to

> them. I'm relying on them too much. And my life is going in a bad place. And I felt really bad at that time. But that dream was really the wake up call for me. That one really really stuck with me.

Participant #05 and Participant #07 both mentioned never taking any medications to help manage their pain.

Frequent and Experienced Lucid Dreamer

Several studies define a frequent lucid dreamer as someone who has at least one lucid dream per month (Saunders, Roe, Smith, & Clegg, 2016; Snyder & Gackenbach, 1988). According to this definition, all participants were frequent lucid dreamers at the time of their experience(s) and so this was the one code shared by everyone in the current study. The participant who experienced the lowest frequency had 1 lucid dream/week, or 4/month, while the person with the highest frequency ranged from 2-8 lucid dreams/week. In addition to being frequent lucid dreamers, many of these participants were also coded as an "experienced lucid dreamer" which meant they had >100 lucid dreams in their life before their lucid dream experience with chronic pain.

Having frequent lucid dreams over an extended period of time typically leads to increases in several associated abilities, such as lucid dream induction and lucid dream control. In general, these participants are above average in terms of their lucid dreaming abilities and another indicator of this is the ability to induce multiple lucid dreams in one night. Several participants spoke about inducing multiple lucid dreams in a single night. For example, Participant #02 said "that night I had two lucid dreams," and Participant #05 mentioned, "I had about 5 or 6 lucid dreams in a row." Participant #03 talked about his experience with float tanks where he could induce multiple lucid dreams consecutively, "I do the floating experience where I have up to 8 lucid dreams in a single session," and Participant #08 also spoke about being able to induce

multiple lucid dreams in a single night, “I was getting pretty good at having multiple lucid dreams a session.”

Many Attempts but not all have Pain Relief

Almost every participant in this study experienced some degree of chronic pain relief. Still, it should be noted these participants did not experience pain relief every time they tried. Most participant had numerous attempts at healing through lucid dreams and many of these attempts resulted in no pain relief. Participant #02 spoke about having two lucid dreams with healing intentions on the night she experienced pain relief, “that night I had two lucid dreams. And the first as I attempted, I felt that I didn’t have any success because I was afraid.” She explained how she was afraid the healing would not work and how this fear, mixed with a low expectation, likely led to the outcome of no pain relief.

Participant #01 distinguished between “good” and “bad” lucid dreams, with the latter typically consisting of fear or stressful situations and typically resulted in no pain relief. He also mentioned medications interfering with his ability to induce lucid dreams, as well as his ability for dream control within them:

> If you’re taking that stuff, you’re going to have a hard time going into a lucid dream to begin with. Or if you’re going to lucid dream, it might turn out bad. Yeah, it can turn bad. Like, for example, I remember one time I was flying in the dream and all of a sudden for no reason I just fell. And instead of hitting the ground, I came through it. And I was just in like an abyss of nothingness, just black, and I remember waking up and that just scared the heck out of me.

Participant #09 mentioned difficulty with maintaining a state of lucid dreaming in order to try a healing mantra, despite multiple attempts:

> The more the mantra extended, the more it extended the feeling, which I’ve always been trying to do with lucid dreaming. I just find it difficult to get farther than a couple minutes even in a lucid dream.

The attempts with no pain relief generally came before the attempts that did result in pain relief. However, this was not the case for Participant #04 whose first attempt resulted in pain relief but her second attempt did not. When questioned about this second attempt, she said the healing intention was spontaneous and not preset prior to the experience like her first attempt:

> I think the idea that it was kind of an after-thought that I was going to try healing and that I just kind of like didn't put a whole lot of thought into it. I just kind of was like, oh I guess I should try again and I don't know. I wish I had like taken it more seriously and like given it more time and maybe had a plan before.

Participant #03 took a different perspective, thinking all attempts are helpful regardless of the resulting pain relief:

> Even the ones that are not helpful I think still may be helpful. And how I think the dreaming mind works is not necessarily linear. And I think it's a cumulative thing. Like even though I may not have experienced like I would – like the ego me would have like to – well this hurts and I want it to be gone. But then it kind of gave me the idea that over a month, you know, like things were shifting. I don't think it's like a straight line thing.

Characteristics of the Lucid Dream: Inductive Logic

The previous theme addressed patterns amongst participants prior to the experience, and this theme will discuss patterns amongst the lucid dream experiences. A high majority of the experiences discussed in this study resulted in some degree of pain relief, so most of the theme contains codes with this type of connotation to them.

Lucid Dream Unusually Stable and Vivid

Lucid dreaming is a fragile state of mind many people struggle to maintain without active effort. Several participants voiced this difficulty with maintaining the lucid dream state and several spoke about the need for focused attention. However, there were also many remarks about the unusual stability and vividness of the specific lucid dream experiences involved in this study. Participant #02 thought the vividness of her experience might even translate into the effectiveness of the healing, "the light beams were very impressive to me. I felt such a visual

experience inside the dream must work somehow." Participant #09 instantly noted the vividness of his experience right from the beginning:

> When I re-entered the dream state, I noticed immediately that it was very vivid and I was dreaming of like a Victorian scene. All of a sudden music came into play and I said oh my god this music is heavenly.

Participant #04 shared two lucid dream experiences, one which resulted in pain relief and another which did not. She rated the lucid dream with pain relief as a "10" on the vividness scale, meaning it was "as clear and detailed as waking life" and the experience without pain relief as a "9" which fluctuated down to a "4" during the part where she attempted healing. Participant #06, when responding to a question about the vividness of his experience, said, "that was a definite 10, probably more. If there's a number above 10, I'd give it that. More vivid than waking life." Participant #03 echoed this sentiment of his lucid dreams being as vivid as waking or maybe more, saying, "these experiences like for me are equivalent to normal waking reality, sometimes more intense than normal waking reality." One case, Participant #07, experienced a blending of the senses known as synesthesia, "I'm in another place where there is light and the light is different. It's multisensory light that you can smell, light that you can hear music. A lot of inputs to the senses."

Felt Shift in Body

Many participants remarked feeling a shift in their body at some point during the experience. This happened with Participant #05 who asked for relief, followed by a flash of light, and then, "feeling something shifting in my shoulder or at least my dream impression of my shoulder. And then waking up." Participant #03 also mentioned, "having a series of lucid experiences and then at the end feeling that something had shifted." Participant #06 felt a shift in

his body which transitioned into the waking state and lasted for some time, coinciding with pain relief:

> I started to go into a trance in the dream. And then the trance – the vibrations became so strong – I woke up from the dream but I was still lying in bed. But I was in a complete trance physically in waking life. I was still in the same trance, and I couldn't get back to the dream. I couldn't get back to sleep. I was just lying there in this very pleasant vibration. They were strong but it felt like I was swimming in warm honey. That's the way it felt, and it stayed for an entire hour. I remember it was a whole hour. And I was feeling, gradually during that hour, my pain getting relieved.

For a couple of participants, this felt shift in body came from sexual experiences while lucid dreaming. Participant #01 spoke about exploring sexual fantasies in his lucid dreams and, after feeling good from one of these experiences, realized lucid dreaming could be used for purposes of pain relief. Participant #07 experienced something similar, but slightly different in that no sexual actions ever took place:

> It sort of like a sexual release but there's not penetration or nothing related to a body. Do you understand? Only the inner sensation and the chemical reaction and the physical sensation of an orgasm…This experience was great, it was very pleasant. And it feels like something that cures. Like if that experience provoke in the body processes that heal.

For Participant #08, the shift in his body came when he put his hands over his lower back and intended for healing energy. His hands became warm and this warmth transferred into his back. This felt shift seemed part of the reason why he believed the process was fruitful: "I could almost feel it like disintegrating like negative energy inside of me and I know like this is working." Participant #04 had a similar opinion. When asked about the source of pain relief, she responded with answer that gave much credence to this felt shift in her body:

> I don't know if it was necessarily like the light of the sun, or like partially expectation. I think the thing that makes the most sense would be like the light from the sun, though. Like I could feel it warm my body in the dream.

It was not explicitly stated, but Participant #09 also likely felt a shift in his body when he transformed his legs into a Non-Newtonian fluid-like substance.

Positive Outcomes: Inductive Logic

The last two themes addressed patterns about aspects prior to the lucid dream experience and patterns within the lucid dream experience. This theme addresses patterns regarding the outcomes of these experiences. There were a couple of participants who experienced some negative side effects, but the majority of participants experienced positive outcomes most of the time and that is why Positive Outcomes is the title of this theme. Many of the lucid dream experiences discussed in this study ended in some degree of pain relief or insight so there is certainly a partiality toward positivity in this theme, but not everything was positive.

Followed Prescription from Lucid Dream Experience

From their experiences, several participants received insightful information about their condition that could be classified as prescriptions. Many of these participants expected their pain would decrease if they followed the prescriptions and, not surprisingly, most of these participants followed the given prescriptions. An entity gave Participant #06 a prescription to start and maintain an exercise routine for his knee pain. Soon after this lucid dream experience, he began exercising regularly and his knee pain has not returned for >8 years. He said, “I’ve taken exercise very seriously since then until now, and the pain hasn’t come back.”

Participant #07 received several prescriptions over years of lucid dreaming which she tended to follow. She mentioned, “I usually take those recommendations very seriously because I usually have relief after that.” There was one specific experience she shared where she felt like the prescription was to work less; this lucid dream happened only a week before the interview so there was not much time for implementation or results. Participant #10 was the only one who did

not follow the prescription from her lucid dream and she was also the only participant to not experience any pain relief. Although this negative example might further substantiate the link between failing to adhere to a lucid dream prescription, it cannot be assumed that she would have experienced pain relief if she followed the prescription from her lucid dream. Further research is necessary to evaluate the relationship between lucid dream prescription adherence and outcome.

Other Changes from Experience

Potential pain relief was not the only change that participants experienced from their lucid dreams. All participants reported other changes from their experiences. Participant #04 reported her experience made her feel more hopeful and, "it has helped me to try to focus on the times when I do feel good." Participant #01 mentioned feeling increased self-esteem and decreased anxiety, "mentally it would help me. Self-esteem would be better. My anxiety would be baseline, don't have any anxiety." He also talked about feeling something akin to ego death, where he did not care about material things and was "really happy."

For Participant #02, the experience made her value dreams more and become more open-minded about the self:

> It concerned me that dreams are important. That they can help me understand life better. It tells me that there is more than just my ego me. That there must me some inner part of me that helped me to have this experience.

Participant #03 also spoke about becoming more open-minded as a side effect of his experiences:

> It reinforces that there's other forms of intelligence, for lack of a better way to put it. And other resources that are outside of my consciousness, you know my senses, my normal-looking experience. And that they have a profound effect on my health and well-being.

Participant #05 mentioned being more open-minded as well, but specifically about the possibilities of the lucid dream state, "it probably expanded my understanding or belief in what lucid dreams are capable of doing. It was one of a few instances where I felt like there some kind

of real physical healing." In a similar way, Participant #06's experience led him to have more faith in self-healing and more doubt in allopathic practices:

> I have less faith in traditional medicine. I will go to a doctor if I break my arm. I will do that, but I will – you know if I'm encountering something else, like an illness or a disease of an organ, I'm not so sure that traditional medicine is the best way to go about it. So my faith, not alternative medicine, but the fact that the body can heal itself and it's very intelligent, and you can access that intelligence, that belief changed a lot. And the idea that I can effect and heal and help myself became very strong.

Participant #07, like many of the other participants, reported becoming more open-minded as a consequence of her experiences:

> These lucid dreams make me more aware that we will in a more colorful world or reality than we think. And it's beautiful to live in a world with so many levels and dimensions and territories to explore. They give me a sense of expansion of the possibilities that we have and the power that we have.

Participant #09 also talked about the experience expanding his sense of possibility and his belief in the power of the mind to influence the body. On the flip side, Participant #08 felt as though his experience was a peak in lucid dreaming that led to a decreased concentration on the topic:

> I think it was kind of the beginning of the end of this whole section of lucid dreaming, to some degree. Like this was the moment of overreach. Like I hit this really high point where everything I was doing was trying to replicate that. And I sort had these standards and ideals and you know I just sort of stepped out of the moment of the practice and into – and more about like trying to get things to match this and top that. It was very – I think it was like – it made it so that I lost a little bit of perspective on my day to day practice. And it led to me kind of losing momentum.

Pain Relief from LD Temporary

The chronic pain relief experienced by participants in this study was mostly temporary, but with a wide-ranging timeline. Participant #01 experienced the shortest amount of pain relief, lasting only 2-5 minutes after waking up from a "good" lucid dream. Most participants experienced temporary pain relief lasting somewhere in the range of several hours to several days. For one of her experiences, Participant #04 recalled her pain relief lasting, "only about half

a day. Maybe like three-quarters of the day but it definitely returned throughout the day." The other experience of Participant #04 resulted in no pain relief. Participant #09 said, for him, the relief, "lasted I would say at least a day, to maybe a couple days."

In some cases, the temporary pain relief lasted a while longer, ranging from several weeks to several months. Participant #05 shared multiple experiences in this study and, for one of them, he had a hard time remembering precisely when the pain returned, "my guess would probably be within a month." For the other experience, he remembered the relief lasting, "at least 3 months." Participant #03 also shared two different experiences which both resulted in similar pain relief. The first experience had substantial pain relief lasting several months, and so did his second experience which was more recent, "from that point on I think it just got better. For months." Participant #08 recounted his relief:

> I think it completely put that incident into remission, like it completely just shut it down. And then it wasn't until the next time that I did something screwy that it started the whole process over again. Probably a few months, 5 or 6.

Two participants had chronic pain relief which seemed more permanent, lasting years. Participant #02 said her relief has lasted for years now and her pain:

> It's completely gone. Yeah, it never came back and I don't even need to wear a special sole for pain relief. I went to the orthoped with my problem before and I always had special soles in my shoes and they helped, but not very much. And since then, I now don't need any special soles. I just can walk again bare feet and it's fine.

Participant #06 had the most long-lasting pain relief of everyone. He said the relief has lasted, "until today. But I took up his advice. I started to exercise regularly, walking and going to the gym. And I mean, since then, it's been years. Eight years now and it's not back. My knee's fine."

Cannot Recall if Concurrently Treating Pain

One important detail shared by most of the participants is they cannot remember if they were treating their pain at the time of their lucid dream experience. When asked about the last

time they used a treatment before the lucid dream experience, most shared answers like Participant #02 who said, “no idea. Can’t tell you. Don’t know,” or Participant #04, “I don’t, to be honest. I’m not sure.” Participant #03 tried to elaborate on his memory:

> I don’t remember if – what it was in the context of lucid dreaming. You know, my sense is that the lucid dreaming would be after the medication. And then maybe because I didn’t experience the kind of relief that I was hoping for with the medication.

There were three participants who said they definitively recalled not engaging in any form of treatment at the time of their lucid dream experiences. This was likely easier for them because they began with using little to no treatments for the pain.

Negative Effects of Lucid Dream Experience

While most of the participants reported positive effects from their experience, there were two participants who also mentioned some negative effects of lucid dreaming in general. Participant #07 shared she is a frequent lucid dreamer and sometimes these experiences are tiring:

> I’m a very frequent lucid dreamer and usually I have to send my lucid dreams away. Sometimes they can be a problem. They use so much energy that sometimes I want to sleep only. Well I have a technique of mine. Certain positions in bed, sleep deprivation, for example if I go to bed late in the night, I’m sure I will have a lucid dream. If I have been with too much stress during the day trying to solve problem, I will go to bed and immediately try to sleep. I usually have a lucid dream. But this is something normal to me really from early age.

Participant #01 also reported this effect of feeling fatigued after waking from some of his lucid dreams:

> Sometimes I would notice that after I had a lucid dream that I would wake up and still be super tired. I would feel like I barely even slept the night before, like, in the dream I was doing all these things. And when I woke up, I felt like my body it was doing all these things, I barely slept. So that’s another thing. That had happened quite a few times. I knew I had sleep and when I wake up, I still was very tired.

Another side effect Participant #01 experienced was increased pain as a consequence of his lucid dreaming endeavors. He said:

> "The only time that it would get worse, and I'll be honest sometimes it did get worse, and the only time that would happen – actually there's two times when it would happen. Like I said, there was sometimes that I would have the lucid dream and I would wake up and I'd still be like super tired because it felt like I hardly slept the night before. So that made my pain worse. And then, like I said I had sleep paralysis. And that extra stress of the sleep paralysis, that made my pain worse because that put me in a bad mindset."

The increased pain was temporary, though, as he explained, "it would just depend. It could last maybe a few hours. It didn't last all day, or for me it was nothing like that."

Codes from Deductive Logic

The codes within this section were developed through deductive logic. In other words, they originated from ideas the researcher had prior to the study and not organically from the interview data. These codes were arranged into their respective themes for organizational purposes. After this section, all the final codes and their themes will be synthesized to share a clear outline of the qualitative findings.

Beliefs: Deductive Logic

There were no provisional codes made for participants' beliefs, but this researcher had an inkling that beliefs might be an integral part of the experience due to his assumptions which were based solely on his observations from anecdotal reports of healing through lucid dreaming. This researcher thought of two beliefs which would likely make an appearance in the data, and they did show up: 1) a belief in the connection between the mind and the body, and 2) a belief something outside oneself helped with the healing. The former belief implied an ability of the mind to influence the body and this researcher assumed anyone who tries to influence chronic pain through lucid dreaming possesses this kind of mentality because they are attempting to use a psychological strategy to deal with a psychophysiological problem. The latter belief typically

implies the existence of divine entities and this researcher assumed at least some participants would reach out to a higher power for assistance because people often seek help from higher powers for their waking life concerns, such as chronic pain.

Belief in Mind-Body Connection

One of the only aspects that almost every participant had in common was a belief in the mind-body connection and many of these participants spoke about the mind being able to influence the body, such as Participant #05 who stated, "the mind can change the body" or Participant #08 who elaborated:

> I think our brains have the power to change our physiology. And I think the dream state is such like - it's very primal. And I think that there's a space to do some real rewriting of code in that space. Because you can come out of a lucid dream with a whole different point of view, like clinically you can come out with a different point of view and physically you can come out feeling different. And just the way that you interact with yourself inside of those lucid dreams had real real power.

Several participants spoke about the lucid dream experiencing triggering a physical change in the body, such Participant #07 who said, "what I believe is that it is my own wisdom. My own inner me that is making some changes, chemical changes…And it feels like something that cures. Like if that experience provoked in the body processes that heal." Some participants thought the physical change might be taking place in the brain, like Participant #02: "the heel had an inflammation. It was red. And I think because it was chronic, I somehow could switch a connection in my brain from right to wrong again." A couple of these participants thought the brain change might be a release of certain neurotransmitters. For example, Participant #01 said:

> I feel like the mind is so powerful that it was able to just overcome it. The brain was able to heal it. I don't know. I thought personally that there was a medical reason behind it. I was thinking maybe when I would have a lucid dream, extra endorphins were being released or something.

Participant #09 believed the neurochemical change might have been triggered by positive affect of the lucid dream experience: “I feel like the euphoria helped out just because maybe it kind of triggered some – I don’t know, I can’t scientifically explain it, maybe endorphins, serotonin.” He also spoke about the possibility of the placebo effect playing a role:

> In any studies scientifically you have placebo and it’s called the placebo effect for that instance. You tell someone you’re going to have positive results, you’re going to get positive results, just because someone with authority or someone has something that they’re taking they think has the authority to do that, but why can’t we without that mental image or taking some sort of sugar pill to do that to ourselves. And I think that’s what I equate it to. Also being a little bit mystical in where you’re in this kind of dream state or lucid state or hypnagogia or whatever you kind of want to equate that to is, how can we consciously or mildly subconsciously effect that in our bodies.

Participant #07 explained her belief how certain thoughts hinder the body’s ability to heal and how the lucid dream experience might be able to overcome these obstacles:

> I believe that we can heal ourselves. That our brain is a laboratory that is working hard for us to heal but we put blockages, we put limits to this with our negative thinking and our worries. And that these dreams free my own healing resources. There is some sort of liberation and like a release in things that are interrupting the natural healing process of my body.

Others, such as Participant #06, felt there was a connection to a deeper part of the self which elicited the healing process:

> I think, whatever I connected to, was something I wasn’t aware of in my psyche before. It probably presented itself in that way, and I think I connected to some deep part of my psyche that can help me to heal. A mechanism within the human psyche and the human body that can activate healing.

Belief in Help coming from Outside Oneself

Another common belief shared across several participants was the possibility they were receiving help from outside themselves. For example, Participant #02 shares, “immediately, a 20-30cm long bright bluish light beam is flying down from the universe above me. It feels as if

from the universe to my left heel." Sometimes this belief changed over time, as was the case with Participant #06:

> Whatever that being represented was what helped fix my knee. And I don't necessarily think that it was a being outside of my psyche. Okay, let me qualify this, I used to think that when the dream happened but not any longer.

Other participants mentioned more of an open-minded approach where they were not sure whether or not they received help from outside themselves, but were open to the possibility, such as Participant #03:

> It seems like a space where there's other, or you can interact with other entities and intelligences and things like that, so it seems like there's both. So in terms of like what we were talking about, it seems like to me that was like an intervention that was partly from without. That's what it felt like.

Participant #05 shared this sentiment of the healing possibly coming from inside and outside of oneself. During one of his lucid dream experiences, Participant #05 requested healing or relief in his shoulder and when this researcher asked who he directed the request toward, he responded: "To the awareness behind the dream, to my higher self. Maybe to God, I was directing it." Later, when reflecting on his experiences, he states:

> It really makes me feel like there are outside forces conspiring to heal us just as much as our inside forces. I mean I don't know what level you want to take it to because outside inside are the same thing, but I don't know if it was like I healed myself any more than something contributed to my healing.

Expectations: Deductive Logic

One provisional code was established for expectation prior to the interviews, and it was named *expectation of success* with the following modifiers: optimistic, pessimistic, or neutral. This code was utilized whenever a participant spoke about their expectations surrounding the outcome of their lucid dream experience. The interview also contained a pointed question about the participant's expectation of success regarding pain relief where they had to answer along a

numeric scale from 0-10. The researcher felt this was an important question to ask given the placebo effect's demonstrated impact on pain perception. There was another code about expectation named: *knew about healing through lucid dreams*, which the researcher assumed would be present because many people interested in lucid dreaming have heard or read about the potential application of healing. However, a provisional code was not established for this concept prior to the interviews.

Doubtful but Hopeful

Prior to the experience, a high majority of participants expected they might be able to improve their pain with lucid dreaming but they still had doubts about how the results would turn out. Participant #03 summed up this view nicely when he shared his expectations prior to the experience, "it's kind of interesting to talk about it because there's a part of me that's more doubtful or suspicious but there's another part of me that's more hopeful." Participant #04 shared this expectation of suspicion mixed with optimism, saying:

> Strangely for someone who is like studying this stuff I think it was only like, maybe a 6. Like a hopeful but not entirely convinced. I was hopeful but I didn't have super high expectations. It just kind of sounds like too good to be true, I guess.

The views of Participant #05 were similar in that he had a low expectation of pain relief yet still put forth effort in attempting to induce the experience, sharing "but I expected it enough that I kept trying to do it." Analogous thoughts ran through the mind of Participant #02 as she tried to induce the experience, "I think I was afraid if it's possible. Or, yeah, can it really be possible?" She went on to say, "I wanted it to succeed. That's why I tried it a second time because I didn't think that this dream helped. I thought I wasn't successful with the first one, therefore I tried the second." Upon following with Participant #02, she added:

> I was skeptical if a lucid dream healing could really help me, but the moment I decided to try, I knew, I have to believe in it 200%. That was important for me. That's how the placebo effect works for me.

Participant #06 was pleasantly surprised by the amount of pain relief he experienced, starting with low expectations," I didn't think that could work. I thought that I'd get some relief, or maybe temporary, but not permanent." A couple of participants were wholeheartedly expecting some degree of relief, but the most prevalent expectation was one that encompassed both doubt and hope in varying degrees.

Knew about Healing through Lucid Dreams

Almost all participants knew about the concept of healing through lucid dreams prior to their experience. Many of these participants learned about the idea by reading books on lucid dreaming, such as Participant #02 who said, "I had read about it in a book from Robert Waggoner, Gateway to the Inner Self." Participant #04 echoed this statement, saying, "I think the first time I heard about it was in Robert Waggoner's book, Gateway to the Inner Self." Participant #03 also shared, "Well most recently it was Robert Waggoner's book on lucid dreaming and also listening to podcasts with Scott Sparrow and Ryan Hurd. And some work by Andrew Holecek." Several other participants (#05, #06, & #08) mention the same book from Waggoner as being an introduction to this idea of using lucid dreams for healing purposes.

Books on lucid dreaming, particularly Waggoner's (2009), certainly helped to implant the notion that it might be possible to heal through lucid dreaming. However, there was also a handful of participants who came across the concept themselves after healing via lucid dreaming or other altered states. Participant #9 experienced a decrease in pain by using certain affirmations during the hypnagogic state:

> I basically had to calm the nerve system and tell it to shut off basically. And it worked out as love was a key word for it to quiet down and that's how I feel like I used that in the next experience for pain.

The next experience he spoke about was a lucid dream where he employed a similar strategy:

> This kind of stemmed, I think it linked from the previous one where hey this is something that's going to be positive and healing. And I felt like that affected me - the previous one was okay, I was little more aware of what was going on but this one was more in the dream state where kind of you were deeper into the dreams lucidly.

Participants #03 and #07 both spoke about experiencing multiple lucid dreams with healing components over the years, so the concept was fairly set in mind by the time they had their experiences with relieving chronic pain.

Demographics Prior to the Experience: Deductive Logic

The theme of Demographics did not have any pre-established provisional codes, but this researcher had a couple of hunches around the topic. One hunch came from reading anecdotal reports of healing various ailments through lucid dreaming. When reading these anecdotal reports, the researcher felt there was a pattern where people who were strongly motivated to get better typically had better results than those people who were not as bothered by their ailments. The first code, *pain everyday limiting activities*, seems to provide some validation for this idea because almost all participants experienced pain every day prior to their lucid dream experience, and this pain limited them from activities they enjoy. Another pattern this researcher noticed through these anecdotal reports was the factor of intention; some people went to sleep with the intention to have a lucid dream and attempt healing, while others had no preset intention and the whole experience happened more spontaneously. The former group seemed to have more positive effects than the latter group, and the researcher presumed the participants in this study would be no different.

Pain Everyday Limiting Activities

This category combined the codes of "everyday pain" and "pain limiting daily activities" as many participants experienced both of these together. Some participants occasionally experienced temporary remissions of their chronic pain but, at the time of their lucid dream experience, almost all of them were in pain every day and this pain limited their activities. Participant #04 expounds on her experience:

> At the time I was in gymnastics and I played violin, and I had to quit both. And since then, it's kind of just been limiting in general. Like at this point it's difficult for me to hold books open, writing can be difficult, my posture's really terrible so it just is kind of difficult to hold myself. Thursdays are my appointment days, I've started physical therapy and massage therapy and that's kind of been helping. But it definitely limits me from things that I would like to be doing more.

Due to the pain from a heel spur, Participant #02 could no longer enjoy going on hikes with her husband multiple times each week. Participant #05 had ankle pain that made it uncomfortable to walk, as well as shoulder pain that made it difficult to enjoy his exercise of choice: swimming. The knee pain of Participant #06 also hindered him on a daily basis. He said, "it got to the point I couldn't go upstairs. It was very painful to go and down the stairs so – I couldn't even walk very quickly. To that extent." Another person who struggled with walking and daily activities was Participant #09, who dealt with sciatica and a thrown out back:

> Basically, my sciatica would not even let me walk straight. I had to go at a slow pace. I couldn't bend down. It was hard to sit in a seat, like driving for more than 15 minutes. You know just general activity was kind of work.

Participant #01 mentioned being particularly limited in his daily activities after experiencing a fall on concrete that led to damaged vertebrae. Afterward, he could no longer walk, sit, stand, or sleep comfortably for extended periods of time, saying, "It was affecting the quality of my life 100%."

For most of these cases, the pain condition had been present for over a decade and this persistent pain likely led to feelings of despondence and desperation for relief, such as Participant #04 who stated, “I wasn’t sure that I would ever get better, and how I just might like have to live my whole life with this. Because it’s been like 10 years of just like daily pain.” Several participants spoke about a strong desire to relieve the pain, for instance Participant #02 who said, “I think my power of intention, my belief, that it must work because I didn’t want this pain anymore.” Participant #03 was so eager for relief he began changing his sleeping habits, “I’d been dealing with the GERD, even to the point where I was like sitting up in a chair [to sleep].”

Set Healing Intention before Lucid Dream Experience

Another aspect many participants shared prior to their lucid dream experience was setting an intention for healing. In most of these cases, participants set the intention to help heal the condition and not just the symptom of pain. The words of Participant #06 demonstrate this idea:

> I started incubating for almost a little less than a couple of weeks. So every night before I go to sleep, I would make an affirmation like, “Tonight in my dreams, I will have a healing dream for my knee and when I make up I will remember this dream”. So this is like one form of incubation: using an affirmation.

This example, and others, show how many participants’ intentions were primarily set toward incubating a healing dream and not necessarily one with lucidity. Another example comes from Participant #10:

> I definitely was having the intention every night of like what will help with – I was working on a bunch of different ailments and migraines was one of them. And it was like, the intention was like okay what could bring ease to it.

There were also several individuals who intentionally sought healing specifically through lucid dreams. Participant #02 had a lucid dream where she remembered her preset intention to heal herself, but quickly lost lucidity and woke up feeling like it did not work so she immediately

repeated the process, “I went back to bed and tried again and then it worked.” Participant #04 became lucid in her dream, “and then I remember my pre-sleep intention to try to heal myself.”

It was unclear how long some participants had their intention of healing but there were others who did mention the length of their intention, such as the first example of this section with Participant #06. Participant #03 also sought healing specifically through lucid dreaming, “I asked myself – you know for the lucid dreaming mind – what to do about or how to heal in terms of health, the GERD,” and elaborated how this intention was held for a while, “I set that intention and it probably went on for about a month where you know every weekend it would be like a major target.” Participant #10 said she spent multiple weeks with a healing intention in mind, as did Participant #08:

> This had been on the list of things that I had been trying to do for a few months with regards to wanting to figure out a way to kind of create healing, or using the lucid dream for some therapeutic avenues.

When asked about thoughts which possibly contributed to the pain relief, Participant #03 responded how he thinks setting a clear intention prior to the experience is a large factor in the healing process:

> I’m thinking that a big part of that is setting a clear intention you know beforehand. And reinforcing that intention like before the morning of the lucid dream or whatever if you wake up before. For me, before I go float.

Characteristics of the Lucid Dream: Deductive Logic

This theme ended up with three provisional codes under its heading. One of these codes, *pain felt while dreaming*, stemmed from dream research and possessed the modifiers: no, decreased, increased, or same as waking. Research shows pain during dreaming is less prevalent than it is during waking (Zadra, Nielsen, Germain, Lavigne, & Donderi, 1998) and this finding is further validated with the current study because most participants did not experienced no pain

during their lucid dream experience. Two of the provisional codes within this theme were established through reading anecdotal reports of healing through lucid dreams: *role of the dreamer* (active or passive), and *presence of light*. Robert Waggoner's *Lucid Dreaming: Gateway to the Inner Self* (2009) spoke about both of these codes and was particularly influential in this area. The code *role of the dreamer* was eventually combined with the code *presence of dream control* because they both address similar concepts, so that is why it does not show up in the final analysis.

There were a couple of other codes that were not established ahead of time, but the researcher correctly assumed they would make an appearance. The first one is *positive affect during lucid dreaming*. Studies have shown a positive correlation between lucid dreaming and positive mood/affect (Koesler, 2015) and this researcher assumed the lucid dream experiences in this study would not be different. In a similar fashion, this researcher assumed findings from placebo studies would likely carry over into the realm of lucid dreaming as well. For example, studies on the placebo effect show differences in effects due to who is administering the treatment (e.g., doctor or not) and where they are administering it (e.g., in a clinical setting or not). This researcher thought lucid dreamers who experienced a healing entity (e.g., doctor), performing healing actions (e.g., injection), within a healing setting (e.g., clinic), would likely have more beneficial effects than those lucid dreamers who did not experience these aspects. The code for this was a combination of several codes: *entities, locations, and/or actions imply healing*.

Entities, Locations, and/or Actions Imply Healing

Several of the lucid dream experiences contained entities other than the dreamer, and many of these entities were helpful in the healing process. In some cases, these helpful entities

were non-descript, being more of a feeling than a visual presence, such as the account of Participant #03 who felt, "a sense of an entity or entities present that have shifted something around," or Participant #07 who felt, "some sort of being that, usually its invisible or it's a person but you cannot see a person or being but you feel it there." One experience from Participant #05 contained an entity whom he felt took part in the healing process, "there was a female presence to my left, maybe slightly older and kind of wise...I remember her being kind of like stoic, kind of like matter-of-fact."

Most of these entities were human or humanoid, and some were even doctors. Participant #07 spoke about several lucid dreams where she was in a circular spaceship with doctors who would help decrease her pain and also make recommendations for lifestyle changes, saying "they are like counselors." Sometimes it was the location that implied healing and not an entity, such as the experience of Participant #02, "I'm lying in a room on a bed. It feels like being in a hospital." In the case of Participant #04, it was simply a positive atmosphere and not a precise location which implied healing, "the setting was like really happy. There were flowering blooming and kids playing, and there was like a fountain. It was just a really pretty park. Like it was just a nice setting in general."

Two lucid dream experiences were particularly fascinating because they each contained a location which implied healing as well as an entity which implied healing. Additionally, these two experiences led to some of the most significant pain relief of this study. In one experience, Participant #05 said:

> I remember I was in this hospital room and there were like machines all around me and a doctor, I don't know if it was this guy or someone else, a male doctor came and gave me an injection in my left ankle. And I woke up.

Participant #06 had a similar experience where he was in a clinic in space with a humanoid doctor who gave him an injection into the area with pain:

> He made me lie back and he injected the knee with some liquid. And he started sending energy to my body and I started to go into a trance in the dream. And then the trance – the vibrations became so strong – I woke up from the dream.

These two experiences were unique in that they contained both a healing location (i.e., a hospital & a clinic) and a healing entity (i.e., doctor, human & humanoid), along with healing actions taken by the entity (i.e., injections).

Presence of Dream Control

Many lucid dreams contain elements of dream control where the dreamer intentionally manipulates some aspect of the situation. The experiences in this study were no exception: most lucid dreams consisted of some degree of dream control. The amount of dream control varied between experiences and participants, but it was almost always present to some extent. After passively enjoying part of his lucid dream, Participant #09 decided to actively change the dream direction toward one of healing:

> I said okay let's positively use this experience to help yourself, whatever ailment that's going on, physically or mentally, as a block. So I kind of just said hey dissipate your legs, dissipate your ankles, dissipate your hips, and basically I felt like it became just like almost a sludge or a slime or a – what's it called? Non-Newtonian fluid, where you hold it stiff and it's like a ball like you put cornstarch and water and push it and it holds firmly.

Participant #04 exercised a high level of dream control by flying through walls and changing dream scenes. As part of her healing intention, she decided to soak up the rays of the dream sun:

> I fly near the fountain and sit on one of the only open spaces in the grass and I face the sun. I had heard of people doing healing with some kind of light, but since my pain is in my whole body I decide to like just soak in the sun. I don't know how I came up with the idea but it was sunny so I just tried it. I like sit cross-legged and I just like look up right at the sun and I don't do it for very long but I let it like heat my whole body up.

She talks about people healing with light in lucid dreams, a concept mentioned by Waggoner (2009), and this happened with multiple participants in the current study. Participant #08 recalled his preset intention to heal his lower back, so he put his dream hands over that area:

> I got to imagine this like energy coming out of my hands and into my lower back. And my hands get warm and then I can feel like them glowing and then I can feel it like coming out and then I can feel it going into my back.

This transformation of healing intention into light appears commonplace when exercising dream control for the purposes of healing through lucid dreams. Participant #03 recounted, "I remember having a sense of light coming from the hands or flames coming from the hands." Sometimes the light does not come from the hands, but it is frequently preceded by a healing intent. Participant #05 shared the following experience with minimal dream control, "I asked for some relief in my shoulder. And I recall some kind of flash of light, whether it was lightening or something like that." Participant #02 had a similar experience with minimal dream control where she stated a healing intention and light immediately followed:

> I speak aloud, "I wish for healing energy for my left heel." Immediately, a 20-30cm long bright bluish light beam is flying down from the universe above me. It feels as if from the universe to my left heel. Its cutting through it and coming out between my toes as a dirty blue, gum-like tape. Another light beam is flying down into my heel and out between my toes.

In an interesting twist, Participant #06 also experienced intention transforming into light, but it was not his own intention nor his own light. After asking a humanoid doctor to address his knee problem, the doctor used his hands to send rainbow energy to the knee of Participant #06:

> He put his hands over my knee and he sent rainbow energy to it. I mean it was fascinating to see because he was like a container of the rainbow energy. He's just – he's got an infinite amount – and he's just shooting it out of his palms like spotlights, but the spotlight was rainbow and it was hitting my knee.

Dream control does not always go according to plan, though. Participant #04 experienced this when she tried to manifest light into her dream hands and instead manifested a green marble.

Participant #01 also experienced this firsthand while flying around in his lucid dreams, despite typically having a high level of dream control:

> Kind of like doing whatever I wanted. Outer space, meeting aliens, things like that. A lot of them were with flying and I noticed with the flying sometimes I could control it, sometimes I couldn't control the flying. It just took me where it was going.

Some participants chose a high level of dream control but others opted for lower levels of dream control, making small changes like stating a healing intention or asking for help and relief. This category of "presence of dream control" also contains the code "conscious surrender" where participants purposefully surrendered their dream control in an attempt to facilitate the healing process. Participant #06 experienced conscious surrender because he let the humanoid doctor control most of the situation. Participant #05 also had conscious surrender in both of his experiences when he: 1) asked for relief, and 2) allowed someone to wheel him into a hospital room and allowed the doctor to give him an injection. Participant #02 simply asked for relief and let light beams from the universe do the rest.

Participant #03 spoke about relinquishing when asked about what he felt like contributed to the pain relief of his experience. He said the first part was setting a clear intention, "and then the second part is to let go. You know, to release expectations." In one of his experiences, Participant #03 had a blend of dream control where he asked how to heal his body and a UV tube appeared. Although he was hesitant, he felt he needed to drink the fluid inside the tube so he broke the tube open and drank it. Most of the time, the participant initiated the process of healing during the lucid dream but this was not always the case. Participant #10 was an exception because she did not appear to exercise any dream control during her experience and this was likely due, in part, to her fluctuating lucidity throughout the dream. It is worth noting Participant #10 also did not experience any pain relief from her experience.

No Pain during Lucid Dream

Out of the fourteen experiences examined, thirteen of them did not have any pain during the lucid dream. This aspect of the lucid dream experience was particularly attractive to a couple of the participants who were living with high levels of pain every day as it allowed for a brief reprieve. On this note, Participant #04 said, "one of the reasons that I think I enjoy dreaming so much is that I don't have to deal with my pain while I'm there." Participant #01 also mentioned, "basically, in the dream, I would have no pain. And many times when I would wake, I wouldn't have any pain. And I'd feel really good." One participant did report pain and its level was approximately the same as its level in waking. Curiously, this experience also consisted of an injection and Participant #05 reported, "I don't remember the injection being painful."

Positive Affect during Experience

Another commonality amongst many of the experiences was positive affect. Positive affect during the lucid dream were generally connected to dream vividness/content, a sense of accomplishment, or just not being in pain for a while. For Participant #09, the positive affect seemed to stem mainly from vividness of the dream content. He shared, "all of a sudden music came into play and I said oh my god this music is heavenly and I started to get very emotional," and, "the smell, I could intently smell how lovely it was." When asked about the contributing factors of pain relief, he responded, "I feel like the euphoria helped out." When this researcher asked Participant #04 the same question, she responded with a similar answer about the pleasantness of the dream environment:

> I think the setting was like really happy. There were like flowering blooming and kids playing, and it was just like a fountain. It was just like a really pretty park. Like it was just a nice setting in general.

Participant #04 also mentioned enjoying lucid dreams because of the lack of pain and the complexity of the dream's vividness:

> They had like these really intricate patterns of stonework. And I would just like get up really close and just like kind of marveling how detailed it was and how it didn't seem like a dream, it just seemed so real, which still amazes me even after all this time.

Participant #08 spoke about feeling peaceful while flying around after he completed his intention of trying to heal his lower back pain, "I'm flying around and I just kind of like – that sense of tranquility and calm that was there." Participant #02 also felt positive affect after completing her intention of trying to help her heel pain, "I'm feeling euphoric and in awe of what had happened. I'm flying through the wall out of the building."

Participant #07 talked about experiencing positive affect whenever she had an orgasm (without sexual content) during a lucid dream, "this experience was great, it was very pleasant. And it feels like something that cures." Participant #01 did not talk about orgasms specifically, but he did speak about indulging in sexual fantasies which likely resulted in orgasm or, at the very least, positive affect. He also mentioned flying in many of his lucid dreams which is another activity that typically coincides with positive affect. Positive affect was not ubiquitous across all experiences in this study, though.

There were also several instances of negative emotion, namely, fear. Participant #10 felt her fear was responsible for the onset of lucidity in her dream, "it was like the extreme fear so that extreme emotion like took me there maybe. The fear because I was very scared for my life." Participant #10 did not experience any pain relief from the lucid dream, although this result cannot be pinpointed to fear being present. Participant #02 experienced both positive and negative emotions that did not result in pain relief:

> I speak aloud repeating it like a mantra, "I wish healing energy for my right knee. I wish healing energy for my right knee." I'm feeling euphoric in doing so, hoping for a healing

> light beam. After a while, a dream figure appears and presents me a knee bandage looking like a headband in a Norwegian [unintelligible]. It is kneaded in the colors white, golden, dark brown, and [unintelligible] steel-blue. I'm a bit disappointed but take it gratefully and put it on my knee.

Negative emotion did not necessarily lead to a negative or neutral result in terms of pain relief. On the contrary, there were a couple of experiences with fear that also led to positive results. One of these experiences comes from Participant #03 who had a brief moment of fear as he broke open a UV tube and drank its contents, something he would never do in waking because of the harm it would inflict. However, he felt like this was an answer to his request for healing so he went through with it and experienced pain relief upon awakening. Another experience comes from Participant #01 who had a lucid dream of being chained to a wall along with other humans who were starving and demons wandering about. While there was no pain relief upon awakening, Participant #01 said this lucid dream was impactful for him because it led to an insight regarding his pain management strategy.

Positive Outcomes: Deductive Logic

This theme ended up with three provisional codes which originated from a dissertation on healing through lucid dreams that categorized healing into three groups: *insight healing*, *prescriptive healing*, and *experiential healing* (Banerji, 2017). These groups are not mutually exclusive so one experience might contain one, two, or all three, of these types of healing. Two of these provisional codes were later combined to make one of the codes found under this theme: *insight and informational healing*. The final code, *positive affect after experience*, was not a provisional code established before the interviews. However, this researcher considered its appearance a possibility using the same logic for the code *positive affect during experience*.

Experiential Healing with Pain Relief upon Awakening

Almost all participants had experiential healing where the lucid dream experience led to noticeable pain relief upon awakening. Participant #09 recounted:

> I noticed it after. I noticed that I kind of instantly was able to stand a little bit straighter and I did try bending. I did want to bend all the way down but I felt like I could walk at a quicker ease, a little bit faster.

Participant #08 felt immediate effects upon awakening as well:

> Usually waking up in the morning, I have like half an hour to an hour of I'm feeling like absolute shit, stretching, moving. You know my body is stiff and worn and it takes time to come back and I got to be careful. And in that phase, the morning sucks. But I was just like: bing! Like you got that brightness of coming out of a lucid dream. Like you're light and you're positive and you feel accomplished and just warm, but it was also in my body, too. My body felt good.

In one experience from Participant #03, other symptoms of his condition existed but his pain was greatly diminished:

> I would still have some morning – kind of an odd taste in my mouth like it was still doing it, but the pain around the esophagus and the gross symptoms just kind of subsided. And I did notice you know after one floating lucid dream experiences that like even within the session, the pain pretty much went away. I mean it was maybe like 60 to 70% when I began, then at the end it was like 10 to 5%.

For Participant #05, there was complete pain relief the morning after his experience, "I woke up in the morning and my pain was gone." Participant #06 also experienced complete pain relief the morning after his experience, although only after staying in a vibrational trance state for a while after waking:

> I was just lying there in this very pleasant vibration. They were strong but it felt like I was swimming in warm honey. That's the way it felt, and it stayed for an entire hour. I remember it was a whole hour. And I was feeling, gradually during that hour, my pain getting relieved. After the hour, the pain completely vanished. And I actually got up and I started walking and I had zero pain. I was amazed, I was blown away, I was like this is unreal. Like I have zero pain.

Two of the participants mentioned the morning after their lucid dream experiences was the only time they felt complete pain relief since the pain had initially started. One report came from Participant #01 who shared, "There was no pain. There was no pain. No pain at all. Yeah, complete pain relief. Non-existent…The only time that I experience [complete pain relief] was after a lucid dream, like a good one." The other report came from Participant #04 who said immediately after the lucid dream, "for the first time in 10 years, [the pain] was a 0."

Participant #02 and Participant #07 also both mentioned feeling decreased pain upon awakening from their lucid dream experiences, but the relief was not complete. The pain relief for Participant #02 progressively increased to the point of being complete and permanent, but it took several weeks, "it helped me to gradually lose the pain within about 6 weeks or so," and she attributes this slow reduction of pain to the lucid dream experience.

Insight and Informational Healing

As suggested by other research (Banerji, 2017), healing encompasses more than just experiential relief of negative symptoms. Healing can also come in the form of insight or information. There were several participants in this study who received insights and information about their health conditions and/or their contributing behaviors. Participant #01 had multiple insights stemming from lucid dream experiences. His first insight came after a sexual experience while lucid dreaming:

> I felt really good from that experience and that's what made me realize that hey I could use this to help with my back pain. This could be used to help more. And that one was like a sex fantasy.

The second insight of Participant #01 came after a lucid nightmare where he found himself chained to a wall along with other starving humans and demons roaming about. He felt this experience symbolized his pain management behaviors at the time:

> That was a metaphor. Like I said before, for the way my life was going at that time, I was – when I was in the dream I was chained up to the walls and I felt like if I keep doing what I'm doing, this is really how my life is right now. I'm taking these pain pills, I'm going to become addicted to them.

He went on to emphasize the role this lucid dream played on his decision-making:

> That one had a lot of effects on my real life. After that dream, I stopped going to that doctor. It was really like a pill mill. I stopped going there and I stopped taking the oxycodone.

Participant #06 also received life-changing information from his experience, but his insight was explicit in the dream content and did not require any interpretation. In his lucid dream, he asked a doctor to examine his knee which is where the pain was occurring:

> He said, "I know what your problem is" and I said, "What's my problem?" and he said, "It's stubbornness". And I lost it! I mean I was really pissed! Like everyone keeps telling me it's stubbornness. What am I being stubborn about? And his answer hit like a ton of bricks. He said, "Your stubborn for not wanting to exercise". And it smacked me in the dream. I mean, not only had I been very overweight at the time, but I'd been literally not exercising for years. And I know I should, but I'm not moving at all. I'm not walking a lot, I'm not going to the gym, I'm doing nothing. So it really – I finally understood what am I being stubborn about: not wanting to exercise.

Upon hearing this information, Participant #06 had a typical feeling associated with insight, "So that moment of clarity gave me like an "aha" moment. Like, ohhh, that makes sense." When asked about what contributed to his pain relief, Participant #06 had this to say:

> Maybe the recognition that what he said also was true: that the stubbornness was related to not wanting to exercise. And I love the clarity because others would tell me you're stubborn but when I asked what I'm stubborn about, they don't know.

The lucid dream doctor also told Participant #06 to start maintaining a consistent exercise routine in order to keep his knee pain at bay. Thus, Participant #06 experienced two insights: one which was diagnostic and one which was prescriptive. Participant #07 also received several insights related to her health through lucid dreams, most of which would fall into the prescriptive category. She shared:

> I have experiences like a prescription. I was told to take some vegetables in my diet or use some herbs that later I look for information about them and they are exactly the things I have to take. This happened to me so many times I can't remember every one of these experiences. But I usually take those recommendations very seriously because I usually have relief after that. Sometimes they are dreams about eating more fruits or drinking more water and then I use that information because I now believe in that because I had a very specific dream about this in my 45, I think. When I was visiting a homeopathic doctor and before seeing him I have a dream about taking some herb that later he recommended me to take. I had dreams about crystals that later I knew that these crystals are used in alternative medicine to cure irritable bowel.

In one experience she described, the insight came to her during a lucid dream as she was observing the content. There was a living snake split in two, which she interpreted as symbolizing her back pain, and the snake was surrounded by the feathers of a local bird, which she interpreted to mean her work as a communicator. The imagery made her realize that she was causing part of her back pain through her behavior of overworking. Participant #07 spoke about how these insights provided relief for her on several different levels:

> In every level, in the physical level and in the medical level. It was like something like this: the feeling after that or the reasoning after that is "Oh I'm so stupid that in my daily life I am working on such tasks that apart me from the pressure. How could I do this to me?" And that is a whole relief, in many levels at the same time.

Participant #10 received an insight into behaviors that could help improve her condition and her pain. She already came to this conclusion in the past so it was not a completely new insight, but it did reaffirm the information's importance:

> That food plays an important part in what – how I'm feeling. And that like if it just felt like that brought also me together with my family but if felt like it was an important part. And I already kind of know that but it just reiterated it that eating those certain foods could bring ease and healing.

Like Participant #01, the insight of Participant #10 came after the lucid dream when she was reflecting on its content and wondering about the possibility of an underlying message.

Positive Affect after Experience

Many participants felt positive affect during their lucid dream experience, and many participants felt positive affect after their experience as well. Participant #08 described feeling joyful after his experience due mostly to a sense of satisfaction with completing a predetermined task in his lucid dream:

> Like coming out of it, it was like on top of the world, like on fire. To be able to – because this was something that I had really been thinking about for a long time. Really wanted to do. It had been on the list for a long time, so to remember what you're trying to do and to actually do it are two different things.

Participant #06 felt amazed after his experience because the resulting pain relief went far beyond his expectations. Participant #05 had a similar experience of being surprised by the amount of pain relief, "I was awestruck that it was gone. It just seemed to vanish." Participant #06 also mentioned feeling grateful for his pain not returning. Participant #07 mentioned gratitude as an aftereffect from many of her lucid dreams, too:

> I usually wake up from these dreams feeling so grateful for having them and they help me not to get trapped in the fictions of reality, in the fiction of the problem, of the scarcity feelings. It's like being in such nice place where everything is in place and where we have the power of transform each moment into something beautiful, something expanding.

Additionally, Participant #07 mentioned feeling happy after lucid dreams that contained a non-sexual orgasm or release of sexual tension. The same can likely be said of Participant #01 who indulged his sexual fantasies on occasion with his lucid dreams. The pain for Participant #01 always quickly returned in a matter of minutes but he still felt joyful about many of his lucid dream experiences and this positivity would help him get through the day, "there were times when I felt really good mental, like really really good, and that would carry me through the day a lot of times, for most of the day." In a similar manner, Participant #04's experience made her more optimistic about the future, "it made me more hopeful that I could experience pain relief."

Summary of Qualitative Findings

In this study, some codes were developed inductively, some codes were developed deductively, and many were a mix. After the qualitative analysis, five themes emerged: beliefs, expectations, demographics prior to experience, characteristics of the LD, & positive outcomes. See Table 4 on page 91 for these themes and their constituent codes.

Table 4. *Themes and Constituent Codes*

Beliefs	Expectations	Demographics prior to Experience	Characteristics of the Lucid Dream	Positive Outcomes
belief in mind-body connection	doubtful but hopeful	pain everyday limiting activities	entities, locations, and/or actions imply healing	experiential healing with relief upon waking
attribution of pain relief to LD	expectation of healing working in LD	tried multiple treatments w/ temporary relief	LD unusually stable and vivid	pain relief from LD temporary
belief experience improved condition	knew about healing through lucid dreams	want to avoid pain medications	presence of dream control	cannot recall if concurrently treating pain
belief in help coming from outside oneself	LD experience different than expected	frequent & experienced lucid dreamer	felt shift in dream body	insight and informational healing
synchronicity around experience	open to various ways of healing	multiple LDs with healing	no pain during LD	followed prescription from LD experience
	expectation pain will decrease if prescription followed	set healing intention before LD experience	positive affect during experience	positive affect after experience
		many attempts but not all have pain relief		negative effects of LD experience
				other changes from experience

CHAPTER 5: DISCUSSION

Interpretations of Quantitative Data

Primary Hypothesis regarding Pain Scores

Hypothesis A stated self-reported pain scores after the lucid dream experience will be lower than self-reported pain scores before the lucid dream experience. This hypothesis was accepted because pain scores after the lucid dream experience (*Mdn = 1.25*) were lower than pain scores before the lucid dream experience (*Mdn* = 6.63) by a statistically significant margin (*T* = 45, z = -2.67, *p* = .004). It should be noted that these scores reflect participant's recollection of what they were feeling at the time and not actually what they were feeling at that time. If participants' recollections were an accurate reflection of their pain at both time points, then the statistically significant difference suggests that some aspect of lucid dreaming was perceived to contribute to a reduction in chronic pain for the participants of this study.

For most participants, the experience of chronic pain reduction was reported as temporary and described as generally lasting several hours to several days. For a couple of the participants, the experience of chronic pain reduction was described in a manner suggesting the change was permanent because it has persisted for multiple years. Evidence from this study provides preliminary support that additional research is needed to determine whether or not chronic pain can be reduced through lucid dreaming. If lucid dreaming can help reduce chronic pain, further research can help determine the precise mechanisms of action behind this phenomenon.

Other Hypotheses regarding Variables

Some possible mechanisms of action were explored in this study through the measurement of certain variables: trait absorption, expectation, dream vividness, and mental imagery ability. Several hypotheses were formulated to assess the relationship between these

variables and the pain differential outcome. Hypothesis B stated absorption scores will be positively correlated with pain differential scores, meaning higher trait absorption might lead to more pain relief. Hypothesis C stated expectation of success will be positively correlated with pain differential scores and this suggests participants' outcomes might be influenced by their expectations about the experience. Hypothesis D stated dream vividness scores will be positively correlated with pain differential scores, implying that vividness of the lucid dream might be a factor in the degree of pain relief with more vividness being connected to more relief. Results of these statistical tests were contradictory to the hypotheses; expectation, trait absorption, and dream vividness are not correlated with pain differential in the current sample. Hypothesis E stated mental imagery ability scores will not be strongly correlated with pain differential scores; in other words, the ability of participants to generate detailed mental imagery will have no bearing on their pain score outcomes. This result is consistent with the prediction that mental imagery was unrelated to pain score.

If this study's findings are an accurate, then these variables (i.e., high trait absorption, positive expectations, high dream vividness, & high mental imagery ability) might not be a prerequisite for experiencing chronic pain relief through lucid dreaming. Given the variability in participants' reported success in applying lucid dreaming to the reduction of pain symptoms, this may suggest alternative variables contribute to better or worse outcomes. Possible explanations come from other factors, such as positive affect, intentions, and various lucid dreaming abilities. These potential factors, and more, are discussed in the next two sections which review the qualitative analysis and answer this study's research questions.

Interpretation of Qualitative Data

Five themes emerged from the qualitative analysis of this study: beliefs, expectations, demographics prior to experience, characteristics of the lucid dream, and positive outcomes. One of the most common codes across participants was a *belief in the mind-body connection*, and this is not surprising given it is an inherent assumption when attempting to improve one's health through dreaming. Many participants also *believed the lucid dream experience helped improve their underlying health condition* and not just the symptom of pain. Furthermore, some participants *believed forces outside themselves* (e.g., God or a higher entity) *were helping them heal*. On a related note, some participants believed *synchronicity* (i.e., a meaningful coincidence) might have been a part of their experience with healing through lucid dreams. With the exception of one instance, all participants who felt pain relief *attributed this relief to their lucid dream experience*.

However, participants believing their pain relief is due to the lucid dream does not mean lucid dreaming was the source of their pain relief. In fact, most participants in this study *could not remember if they were treating their chronic pain at the time of their lucid dream experience*. Most participants had *tried multiple different treatments* for their pain over the years and they reported relief from these treatments as rarely complete, typically only lasting a couple of hours to a couple of days. In contrast to traditional treatments, several participants had pain relief lasting much longer than a couple of days from their lucid dream experiences. In two cases, the relief lasted years and is seemingly permanent. However, most reports from participants in this study indicate that *pain relief from lucid dreaming was also temporary*, typically lasting a few hours to a few days.

Another theme from the qualitative analysis is expectations. Participants described holding many expectations throughout the process. The most prevalent was an expectation of feeling *doubtful but hopeful* about the outcome of one's experience. Some participants also held other expectations prior to the experience. For example, several participants went into the experience with an expectation they will remain *open to various ways of healing* (e.g., experiential and/or informational) and they will not force any one particular way. Another expectation shared by about half of the participants came from previous knowledge. Approximately half of the participants already *knew about the concept of healing through lucid dreams*, so they likely held expectations and preconceived notions about what the experience might entail.

Other expectations within this theme happened during the lucid dream or afterwards. While lucid dreaming, many participants went through a process of healing and some of them *expected the healing to be working* in that moment; this expectation seemed particularly frequent in those individuals who also experienced a *felt shift in their body* during the process. A few participants mentioned the *lucid dream experience was different than what they expected*, and this discrepancy likely stemmed from preconceived notions about the phenomenon due to previous knowledge about the topic. All three of the participants who *received prescriptions* held the *expectation their pain would decrease if they followed the prescription*, and two of these participants adhered to the advice.

A third theme of this study's qualitative analysis was associated with demographics of the participants prior to their lucid dream experiences. One code within this theme was shared by almost all the participants: *pain everyday limiting activities*. Most participants experienced pain everyday which limited their activities in some regard. As previously mentioned, almost all

participants *tried multiple treatments for the pain* and any relief from these treatments was temporary. Several participants also spoke about *wanting to avoid taking medications* to help manage the pain, and a couple of participants also mentioned being *wary of traditional medicine*. There was a split between natural lucid dreamers and learned lucid dreamers in this study, indicating it may not matter how a person learns to induce lucid dreams. Participant responses suggest that experience or, more precisely, lucid dreaming abilities developed through experience are more critical to the outcome than the source of learning how to lucid dream. Abilities generated through lucid dreaming experiences will be discussed more thoroughly when addressing the topic of dream control.

Like specific demographics, the fourth theme pertains to aspects of the lucid dream experiences which also stood out. One characteristic shared by almost everyone was *no pain during the lucid dream*. In all but one instance, participants did not experience any pain throughout the duration of their lucid dreams. Additionally, a few participants mentioned their *lucid dream experiences were more vivid and stable than usual*. The majority of participants felt *positive affect at some point during their lucid dream and/or afterward*. One potential source of positive affect for some participants might have been dream control, possibly due to a sense of accomplishment from intentionally manipulating one's surroundings. Whatever the reason, dream control was present in the majority of participants' experiences and was a source of positive affect for some.

In a handful of these lucid dream experiences, there were *entities, locations, and/or actions which implied healing*. For example, a doctor in a clinic/hospital setting who administers an injection was reported by two participants. For another participant, several doctors administered a futuristic treatment, but not in a clinical setting. Interestingly, the participants in

these three cases did not use dream control to seek out entities, locations, and/or actions which implied healing. Instead, they simply found themselves within these scenarios during the experience. All three of these participants also *felt a shift in their body* during the treatment portion of their experience, and these participants were not the only ones in this study to feel a shift in their dream bodies. The majority of participants experienced a *felt shift in their body* and, for some, this feeling occurred after putting one's *dream hands over the problem area* while thinking of *healing intentions*.

Scenarios like the ones described above generally led to *experiential healing* with pain relief upon waking, which was the most common form of healing in this study. This code, along with several others, made up the fifth theme: Positive Outcomes. Several codes within this theme have already been mentioned elsewhere: *pain relief from LD temporary*, *cannot recall if concurrently treating pain*, and *followed prescription from experience*. *Insight and informational healing* is another code that was briefly addressed and it described participants receiving healing in the form of information or insight, such as one individual who received a prescription to start exercising consistently for his knee pain.

In similar fashion to *positive affect during the experience*, there was also a pattern of positive affect after the lucid dream as well. Part of this positive affect after the lucid dream likely comes from experiencing substantial pain relief upon waking, which happened for almost all participants. Beyond pain relief, participants spoke about undergoing other changes because of their lucid dream experiences. Participants mentioned becoming more open-minded, more hopeful, less anxious, as well as having increased self-esteem and more belief in the power of the mind to influence the body. Almost all of these changes were positive, but one participant did experience changes which could be considered more negative: he felt his experience was a peak

in lucid dreaming that led to a decreased concentration on his lucid dreaming practices and abilities.

While the experience was positive for most participants, there were also some undesirable side effects and these were put into the code: *negative effects of LD experience*. Two participants reported feeling tired after some of their lucid dream experiences, and this is a complaint other lucid dreamers have mentioned as well (Dodet, Chavez, Leu-Semenescu, Golmard, & Arnulf, 2015). One of these participants mentioned an increase in stress and sometimes a temporary increase in pain from his "bad" lucid dreams, which might be more appropriately labeled lucid nightmares (Stumbrys, 2018). Another participant felt a moment of *pain during his lucid dream* when the doctor poked him with a needle to administer an injection, but this pain rapidly decreased and did not translate into his waking life.

Answers to Research Questions

This study sought to answer several questions. The first question was: what are the similarities between lucid dream experiences that increase chronic pain? There was only one participant who reported lucid dreams occasionally increasing his pain, so there are not multiple reports to compare to one another. Nevertheless, the data from this participant is insightful. For this participant, the pain increases from lucid dreaming only lasted a few hours so the increase was temporary. Additionally, this participant noted pain increases coming from *feelings of fatigue which led to additional stress* the morning after a lucid dream. He said, "the pain, it would be worse because I didn't sleep the night before. So mentally, you know, I would sleep but it didn't feel like sleep, so mentally it's just more stressed."

It is well-established that a lack of sleep can lead to increased sensitivity to pain (Lautenbacher, Kundermann, & Krieg, 2006). It is also well-established that a lack of sleep can

lead to increased stress (Minkel et al., 2012) and increased stress levels can lead to increased levels of chronic pain (Hiller et al., 2010). This was supported by the qualitative data of this study because many participants mentioned *stress making their chronic pain worse*. Participant #01 spoke about *stress being caused by sleep paralysis* and increasing his pain, "I had sleep paralysis. And having that extra stress of the sleep paralysis, that made my pain worse because that put me in a bad mindset." The two central features being discussed here are stress and sleep deprivation.

Research shows lucid dreaming does not negatively impact sleep quality (Schadow, Schredl, Rieger, & Göritz, 2018; Stocks et al., 2020). In fact, many people report feeling well-rested and energized upon waking from a lucid dream (Stumbrys & Erlacher, 2016). One possibility of this fatigue is certain lucid dream induction techniques which require sleep interruption, sleep deprivation, and/or sleep schedule changes (Stumbrys et al., 2012). Participant #01 spoke about using such techniques as a means of inducing his lucid dreams. Thus, it is likely his pain temporarily increased, at least in part, because of sleep deprivation which is not completely necessary for inducing lucid dreams.

Participant #01 also talked about additional stress as a result of sleep deprivation and sleep paralysis. If sleep deprivation is not utilized to induce lucid dreams, then the person will not have this stress. Also, people might be able to mitigate the stress from sleep paralysis by using educational materials that explain this experience as well as its harmless nature. This is the approach one study took when trying to teach a large group of people how to induce lucid dreams (Aspy, Delfabbro, Proeve, & Mohr, 2017). To answer the research question succinctly, sleep deprivation and stress are the similarities between lucid dream experiences that increase chronic pain.

The second research question this study sought to answer was: what are the similarities between lucid dream experiences that decrease chronic pain? Most participants in this study reported decreased pain so there was a considerable amount of data for comparison. In fact, most of the qualitative analysis dealt with this question but the findings will be briefly summarized here. Two beliefs were held by all participants: a *belief in the mind-body connection*, and a belief the lucid dream experience was the source of pain relief (i.e., *attribution of pain relief to LD*). Several participants with decreased pain also shared the *belief they were receiving help from outside themselves* (e.g., from God) as part of the healing process.

Other similarities between experiences with decreased pain stem from the demographics of the participants. These participants were strongly motivated because they were in *pain every day which limited their daily activities*. These participants were also are persistent in their efforts because most of them reported *many lucid dream experiences which did not decrease their chronic pain*. Some, but not all, participants with decreased pain reported *multiple lucid dream experiences that contained components of healing*. Thus, several people were already personally *familiar with the concept of healing through lucid dreams* and simply applied this concept to their problem of pain.

Additionally, most participants were both *frequent and experienced lucid dreamers*, so many of them were also well-acquainted with this particular state of mind beforehand. However, lucid dream frequency probably matters less than the abilities developed during these experiences, such as remembering intentions and controlling the dream (Schredl, Rieger, & Göritz, 2018). In fact, the majority of participants with decreased pain utilized these two exact abilities by *remembering a preset healing intention* and *exercising dream control*. These findings

indicate that people with higher-level abilities in lucid dreaming might be more likely to get results with lucid dreaming interventions than people with lower-level abilities.

Intention seems to be an important factor in the experience as many participants who reported decreased pain also had a *preset intention for healing*, and some of them also *reaffirmed this healing intention during the lucid dream*. It did not seem to matter which form this intention took; it could be formulated as a wish, a request, or an affirmation. Several participants mentioned their intentions specifically when asked about the aspects of their experience that possibly led to decreased pain. One participant felt her healing intentions, both before and during the lucid dream, were at least part of the reason she experienced decreased pain. Another participant had two lucid dream experiences, one with pain relief and one without pain relief. With the former experience, she created a healing intention before going to sleep but she did not have any preset intentions with the latter experience. When asked about the source of her pain relief, she said her decreased pain might have come from her intention for healing which she set prior to the lucid dream experience.

Most participants focused their *intention of healing on the underlying health condition* and not just the symptom of pain. Although, there were several people whose *healing intentions were focused solely on pain relief*, so this aspect did not seem to make much of a difference in the results. A broader intention focused on the condition might be helpful in terms of openness to experience because healing can take many forms and information is one of them. For example, many people find healing in the receiving of information concerning a diagnosis or prescription. The code *open to various ways of healing* describes this mentality of being open-minded, and it was another similarity shared by some of the participants who experienced decreased pain. By example, Participant #06 rated the most substantial, longest-lasting pain relief and also endorsed

a broad intention of healing his condition. During his lucid dream, he received both *diagnostic* and *prescriptive information* which he felt like contributed to his overall pain relief.

Along with Participant #06, several participants spoke about *insights they received through their experiences*. These insights came from observing the lucid dream content, from interacting with the lucid dream content, and from reflecting on the lucid dream content. These insights fit into one of two basic categories: diagnostic or prescriptive. While most of the lucid dream experiences reported in this study did not contain insights, all but one of the lucid dreams with insight resulted in decreased pain. The one experience with insight that did not result in pain relief came from a participant who did not follow the prescriptive advice given during the experience. Insight is an inherent part of the lucid dreaming experience (Voss et al., 2013) and research shows insight plays a part in healing through lucid dreams (Banerji, 2017). Consequently, the lack of healing experienced by this participant may have coincided with her failure to follow the insight gained from her lucid dream.

Other similarities between these experiences with decreased pain are *informational healing* (i.e., *prescriptive healing* and/or *diagnostic healing*) and *following prescriptive advice*. Three participants received information from their experience which they would categorize as *insight from their lucid dream* and *prescriptive healing*. All three participants held an expectation their *pain would decrease if they followed the prescription*; two of them *followed the prescriptive advice*, had *experiential healing* where their pain decreased, and *experienced positive affect from the lucid dream*. One of these participants set a *healing intention before the lucid dream* as well as a *healing intention during the lucid dream*, used *dream control*, and received *diagnostic healing* in addition to *prescriptive healing* and *experiential healing*. This latter participant also

experienced the most substantial and longest-lasting pain relief, reinforcing the importance of *intentionality* and *dream control* when attempting to relieve pain through lucid dreaming.

Some participants with decreased pain received *informational healing*, but the vast majority of participants in this study had an *experiential healing* where they felt decreased pain. Almost all participants had *no pain during the lucid dream*, so this pain decrease was felt upon awakening. The pain relief was often complete and the *pain relief was temporary* in most cases, lasting a few hours to a few days on average. It is difficult to determine the precise source of this pain relief, though, since most participants had *tried multiple treatments for their pain* over the years and many of these participants *could not recall if they were concurrently treating their pain* at the time of the lucid dream experience. This means many participants do not remember if they were using pain treatments at the time of their lucid dream experience and this aspect greatly confounds the results as any reduction in pain scores might be due to other treatments being used at the time.

On the other hand, there are several indicators which point toward lucid dreaming playing a part in the chronic pain reduction, such as all participants *attributing their pain relief to their lucid dream* experience. Another indicator of the effect of lucid dreaming was a noticeable, often complete, relief of pain upon awakening. This is important because participants rarely reported complete pain relief from treatments they had tried before their lucid dream experience. Also, relief from standard pain treatments typically only lasted a couple of hours to a couple of days, while several participants in this study experienced relief lasting much longer than a few days. For two participants, the relief has endured for several years and the pain shows no sign of returning. However, on average, the *pain relief from these lucid dream experiences was temporary* and lasted a few hours to a few days.

Directing the lucid dream experience with *dream control* is another commonality amongst many of the experiences that resulted in decreased pain. Most participants consciously manipulated their lucid dream experience to some degree. In some cases, participants exercised a substantial degree of dream control by *remembering their intentions to heal*, putting their *dream hands over the problem area*, and setting their mind on *healing intentions during the lucid dream*. In other cases, lucid dreamers used a minimal amount of dream control by going with the flow of dream content and trying to incorporate their healing intention into the experience. For example, Participant #06 found himself in a clinic so he decided to ask the doctor about his pain condition, who then performed an exam and gave him an injection. As another example, Participant #04 found herself in a park with the sun shining. This participant had previously read about others who used light in their lucid dreams as a meaning of healing, and her pain occurred throughout her entire body, so she felt the sunrays might provide some healing for her. Her intention was not to learn about her pain condition through lucid dreaming, it was to experience pain relief. Many of these instances with *experiential healing* also contained a *felt shift in the dream body* and *positive affect before and/or after the experience*, both of which were connected to *dream control*. While *dream control* was a trend amongst these experiences, it should be noted that some participants did not exercise any dream control in their lucid dreams.

Sometimes participants used their *dream control* to direct the experience toward *entities, locations, and/or actions which implied healing*. For example, being in a clinic/hospital, with a doctor, who administers an injection. Two participants experienced this precise scenario and both received significant pain relief that lasted longer than the study average. Placebo studies using doctors and injections tend to find larger effects than other studies that do not administer the placebo with these contextual factors (Thompson, 2000). This gives credence to the idea that

placebo is an influential factor when attempting to relieve chronic pain through lucid dreaming, especially since several participants explicitly mentioned placebo possibly playing a role in their results.

Although the quantitative findings from this study found no relationship between expectations and pain relief, the qualitative findings tell a different story. Expectations were one of the five themes and almost all participants with decreased pain held the expectation of being *doubtful but hopeful* about the outcome of their experience. Also, as mentioned previously, two participants with pain relief held the *expectation their pain would decrease if they followed their prescriptions*. Some, but not all, participants with decreased pain also held the *expectation their healing was working during the lucid dream experience*. This expectation of the healing being effective might be due, in part, to *a felt shift in the body* during participants' experiences. Studies on placebo show a felt shift in the body after administration can amplify participants' expectations and influence outcomes (Price, Finniss, & Benedetti, 2008). This *felt shift in the body* might be part of the reason some participants experienced pain relief from their lucid dreams, in addition to encountering any *entities, locations, and/or actions which imply healing*.

Another similarity between experiences with decreased pain was a complete *absence of pain during the lucid dream*. With the exception of one instance, all lucid dreams that resulted in decreased pain did not contain any pain during the experience. Two participants mentioned positive affect during their experiences which stemmed from this absence of pain because it was a brief reprieve from their all-encompassing pain while awake. *Positive affect, both during and after the experience*, was another pattern amongst almost all the lucid dreams that resulted in decreased pain. Research shows positive affect plays a role in mitigating pain (Finan & Garland,

2015) so it was likely an influence in these experiences as well, especially since positive affect is a common characteristic of lucid dreaming (Voss et al., 2013).

For a couple of the participants, the lucid dream's vividness seemed to be the trigger of their positive affect. This is not unusual. Lucid dreams are often so vivid that marveling at their detail is commonplace, even amongst frequent and experienced lucid dreamers (Johnson, 2017). Even though the quantitative analysis of this study found no relationship between dream vividness and pain relief, the qualitative analysis shows dream vividness might influence pain levels through the mediating factor of positive affect. Another potential source of positive affect during/after the experience might have been the sense of accomplishment that comes along with completing a predetermined task or, in other words, exercising one's lucid dreaming abilities. Positive affect was felt by almost all participants after their experience and part of this positivity was no doubt due to feeling less pain than usual upon waking.

The third research question this study sought to answer was: what are the differences between lucid dream experiences that increase chronic pain and lucid dream experiences that decrease chronic pain? Responses to the previous two questions addressed much of this answer, but the biggest differences would likely be sleep deprivation and stress. These two components were present in the lucid dream experiences of Participant #01 which increased pain, but they were absent when he was discussing lucid dreams which decreased his pain. These two components were also noticeably absent in the rest of the experiences discussed by participants which decreased their pain. Participant #07 mentioned using sleep deprivation as a lucid dream induction technique, but never spoke about increased stress or pain from this deprivation.

Evidence Concerning Other Psychological Theories

Response Expectancy Theory

Kirsch's response expectancy theory asserts what people experience depends in part on what they expect to experience (2018). In this study, the data surrounding expectation was mixed so it is difficult to conclude whether the evidence is in favor of the response expectancy theory or against it. The quantitative analysis showed there is no relationship between one's level of expectation and the level of pain relief participants had from their lucid dream experience (r_s = .105 , p = .773, N = 10). On the other hand, the qualitative analysis seemed to tell a slightly different story because Expectations were one of the five themes which emerged. Taking a closer look at the data reveals more on the subject. Part of the reason expectations became a theme is because there was much discussion about various expectations held by the participants before, during, and after their experiences. This talk about expectations was due, in part, to the questions prepared by the researcher ahead of time.

When examining the codes under the Expectations theme, there are not many which directly address the idea posed by response expectancy theory. Several of the codes deal with expectations which occurred during the experience or afterward: *lucid dream experience different than expected*, *expectation of healing working in lucid dream*, and *expectation pain will decrease if prescription followed*. Two of the other codes addressed participants' knowledge and openness prior to the experience: *knew about concept of healing through lucid dreams* and *open to various ways of healing*. The only code which is particularly relevant to the response expectancy theory is: *doubtful but hopeful*. This code covered the concept that most participants had a mix of doubt and hope about possible pain relief from the experience.

Doubtful but hopeful was one of the most prevalent codes across participants, but it should be reiterated this expectation was measured using an instrument which is not standardized or validated for the variable. Thus, it is certainly possible the NRS-11 did not attain an accurate portrayal of the expectation variable. This is especially true given the fact it was measured retrospectively, because retrospective estimates of expectation have shown to be skewed by one's results (Oliver & Burke, 1999). The precise wording of the NRS-11 is important when measuring pain (Brauer, Thomsen, Loft, & Mikkelsen, 2003; Hjermstad et al., 2011; Singer, Kowalska, & Thode Jr, 2001), so the wording likely makes a difference when measuring expectation with the NRS-11 as well. To reference the wording of this study, see the Semi-Structured Interview Guide (Appendix B).

Almost all participants had some expectation the experience would result in pain relief, but there were only three participants who fully expected pain relief. These three participants did not have the most pain relief, but they also did not have the highest pain levels before the experience. Two of these participants experienced a *felt shift in their dream body* during the experience which likely led to higher levels of expectation, and the other participant spoke about intentionally manipulating her expectation toward optimism:

> I was skeptical if a lucid dream healing could really help me, but the moment I decided to try, I knew, I have to believe in it 200%. That was important for me. That's how the placebo effect works for me.

This participant also experienced most of her pain relief gradually over the course of weeks after the experience. However, she was one of the two participants for which the pain relief was permanent, lasting years. The other two participants with full expectations also experienced pain relief that lasted longer than the average for this study, lending support for the response expectancy theory.

Alternatively, the participant who experienced the highest amount of pain relief (8 to 0), which lasted the longest of everyone (>8 years), also had one of the lowest expectations out of everyone in the study. This participant did not expect permanent pain relief was possible so his experience might be evidence against the response expectancy theory. On the other hand, his experience contained many contextual factors that would generally lead to a heightened placebo response. Specifically, he encountered a doctor in a clinical setting who administered an injection that was followed by a vibrating sensation all over his body; in other words, there was an *entity*, *location*, *and action which implied healing* followed by a *felt shift in the body*. Another participant who had considerable pain relief also had this same scenario with contextual factors indicative of a placebo response: a doctor gave him an injection in a hospital setting. Overall, this study contained mixed results about expectation that lean more towards support than opposition for the response expectancy theory.

Continuity Hypothesis and Dream Pain

The continuity hypothesis posits dream content is largely reflective of one's waking life experiences (Schredl & Hofmann, 2003). Results from this study could either support or oppose the continuity hypothesis, depending on one's interpretation. Nearly all participants did not have pain during their lucid dream experiences, even though they all had pain in their waking lives, so this could be interpreted as evidence against the continuity hypothesis. However, prior research has shown pain as being disproportionately infrequent in dreams compared to waking (Zadra, Nielsen, Germain, Lavigne, & Donderi, 1998), so it is known that pain is not as prevalent during dreams as it is during waking. This makes the case of pain special in terms of the continuity hypothesis because it does not act the same as other elements in dreams.

This study's evidence could support the continuity hypothesis because pain was an emotional concern in waking for all participants and this concern showed up in their dreams as well. However, the factor of lucid dreaming needs to be considered because lucid dreamers can intentionally bring their waking concerns into their dreams, which is precisely what happened for almost every participant in this study. The continuity hypothesis bases its assertions primarily on research with non-lucid dreams (Schredl & Hofmann, 2003), so it may only apply to instances of non-lucid dreaming. One study did look at lucid dreaming through the lens of the continuity hypothesis and found support, as self-reflection and insight traits were found to be similar across waking, dreaming, and lucid dreaming (Yu & Shen, 2020). Still, the current study is in a unique position because it focused on pain and on lucid dreaming where people can recall their waking concerns due to lucidity.

Limitations and Research Issues

This study provided data regarding the novel research topic of relieving chronic pain through lucid dreaming, but there are also several limitations. One of the most impactful limitations of this study is the sample size. The current study is small by scientific standards because the number of participants is too few to adequately represent any population. Without proper representation of the population in the study's sample, it is difficult to accurately generalize study findings. In such cases, a larger effect size helps demonstrate the likelihood that any effects found from the study may be true (Creswell, 2009). Consequently, this study looked for a large effect size as a means of balancing the limitations of its small sample size. However, it should be noted that small studies can also lead to artificially inflated effect sizes.

One strategy for gathering a representative sample of a population is the use of randomized sampling. Random sampling happens when each sample has an equal chance of

being chosen to participate in the study and this strategy reduces selection bias. However, the current study did not use random sampling. Instead, it used convenience sampling and snowball sampling where participants were recruited because they self-reported experiencing the phenomenon in question. These sampling strategies, though, increase selection bias where the sample is not truly representative of the population because it was not randomly selected (Robson, 2011). On the other hand, randomized sampling could be considered premature given the exploratory nature of the study and need for preliminary investigation among individuals who report experiencing the desired phenomenon. In terms of participants, one confounding variable is roughly half of them already knew about the concept of healing through lucid dreaming before their experience, and the other half had not been introduced to this concept beforehand.

The retrospective design of this study made it possible to investigate the desired phenomenon since it is not widely prevalent. However, investigating the past comes with intrinsic limitations. The retrospective nature makes participants' memory questionable as a reliable source, especially since some participants' experiences happened years prior to the interview (avg = 2.93 years). Recall bias is likely in this kind of scenario because participants cannot accurately remember everything that was happening at the time of their experience (Jacobsen, 2012). For example, it is highly possible that these participants were engaging in some kind of activity separate from their lucid dreaming that provided pain relief (e.g., taking a medication, doing yoga). However, most of them had difficulty remembering all their activities and precisely when they happened. Scientific investigations regarding retrospective pain estimates have demonstrated these self-reports are relatively reliable (Brauer, Thomsen, Loft, & Mikkelsen, 2003; Hjermstad et al., 2011; Singer, Kowalska, & Thode Jr, 2001), but the same

cannot be said of retrospective estimates regarding expectation. Results influence one's retrospective expectation (Oliver & Burke, 1999) so data from the expectation variable should not be viewed as reliable. Additionally, results from the pain variable should be questioned as well because they are recollections of what the participants were feeling at the time and not actually what they felt in that moment.

Almost all participants in this study had some form of higher education, so they might have known about scientific research and recall bias. If they did know about recall bias, then they might have censored their answers in an effort to counteract the effects of this bias. However, there is no evidence that the participants of this study censored their answers in this way. Similar to recall bias, reporting bias is another limitation of this study's design. Reporting bias happens when participants, or researchers, select or suppress information in order to appear more favorable (Jacobsen, 2012). In this case, participants could lie or omit information about their experiences during the interviews in order to appease the researcher. Although participants had little to gain by lying in this study so the chances of reporting bias from participants is minimal.

Additionally, these interviews provide a rich and detailed description of the experience which would not be possible with other formats that reduce reporting bias. The descriptions led to themes which can provide direction to future studies investigating the topic. Another possibility is reporting bias from the researcher who can manipulate the study's data by only reporting information that aligns with the researcher's views. To combat reporting bias from the researcher, final themes were sent to participants to ensure validity with their experiences and any discrepancies were synthesized into the final analysis.

Another limitation of this study was the use of instruments which were not validated for the variables they purported to measure. The NRS-11 is a validated instrument for measuring

subjective pain scores, even retrospectively in most cases (Brauer, Thomsen, Loft, & Mikkelsen, 2003), but it is not a validated measure for the variables of expectation and/or dream vividness. Thus, it is possible these instruments were not measuring the intended variable and this would naturally lead to an increase in statistical errors. Even though this study has several limitations, its results provide a preliminary conceptual basis for future research into relieving chronic pain through lucid dreams by investigating possible variables associated with the experience, as well as exploring new avenues via qualitative inquiry.

Future Directions

There is still much to learn about the phenomenon of relieving chronic pain through lucid dreaming and certain elements of this study's design could be improved to get a clearer picture of the variables involved. For example, a larger sample size will allow for more robust statistical analyses and completing the study in real-time, as opposed to retrospectively, will allow for less memory errors to occur. One variable of particular concern is expectation. It was surprising to find expectation playing such a minimal role according to the quantitative analysis, but this variable in particular is susceptible to getting skewed when measured retrospectively. The qualitative analysis certainly suggested expectations were important: expectations were one of the five themes, several participants explicitly mentioned the placebo effect, and two participants who experienced the most/longest pain relief also received injections from doctors in a clinical setting during their lucid dream experiences. Several participants experienced an *entity, location, and/or action which implied healing*, as well as a *felt shift in their body* during the experience, which are all contextual factors in the placebo response. Thus, future research should re-examine this variable of expectation.

Future research should also take a closer look at certain lucid dreaming abilities. Specifically, there are three abilities which played a role in many of participants' experiences: 1) the ability to induce lucid dreaming, 2) the ability to remember preset intentions while lucid dreaming, and 3) the ability to manipulate the environment (i.e., dream control). If people learned these other two abilities alongside learning how to induce lucid dreams, then it might open up this experience of pain relief to more novices. However, it should be mentioned that learning how to induce lucid dreaming will likely be more difficult for people with chronic pain. Participant #01 explicitly mentioned this concern, voicing that people in chronic pain might find it difficult to induce lucid dreaming due to the side effects of their pain medications which typically alter sleep cycles and negatively impact dream recall. Dream recall frequency possesses a strong positive correlation with lucid dream frequency in the literature (Erlacher, Schredl, Watanabe, Yamana, & Gantzert, 2008), so the concern of Participant #01 is well-made.

Along with lucid dreaming abilities, future studies should look at other demographics of the participants, too. Demographics was one of the five themes because there were numerous aspects of these participants which seemed important. Almost all of them were strongly motivated because they were in *pain everyday which limited activities* that they enjoyed. Many of them were persistent because they had *several attempts of healing through lucid dreaming without any results* prior to their experience discussed in this study. Several participants also spoke about a *want to avoid pain medications* and an openness to try alternative treatments, likely stemming from *trying multiple treatments* for their pain in the past. Future studies should consider these demographics when choosing potential participants, in addition to the beliefs their participants hold.

Beliefs were another theme of this study that should be considered by future research. A *belief in the mind-body connection* was one of the only codes prevalent across all participants, as well as a *belief that lucid dreaming was the source of pain relief*. A few participants believed there was a *synchronicity* (i.e., meaningful coincidence) surrounding their lucid dream experience and a few participants also *believed they were getting help from outside forces* (e.g., God, Higher self) in the healing process. Additionally, some participants held the *belief their condition improved* from the experience and not just the symptom of pain. The participants of this study held a variety of beliefs, some of which seemed relevant to the process of healing through lucid dreams and were included in the final analysis, while other beliefs seemed unimportant and were left out. Future studies can use the beliefs within this theme as a guide for what to measure with their participants.

Other possible variables which should be examined are intention, positive affect, and insight. Many participants had a *preset intention for healing* or pain relief prior to their experience and some participants reaffirmed this *healing intention during the lucid dream*. For instance, one participant remarked how important it is to set a clear intention when trying to heal through lucid dreams. Another participant shared two experiences in this study, one with pain relief and one without pain relief. She also spoke about how important it is to set a clear intention ahead of time because she did not do this for her second experience and she believes this is part of the reason there was no pain relief.

Positive affect is another possible variable behind this phenomenon that future research should look at closer. Many participants reported *positive affect during their lucid dream* experience, or *afterward*, or both. Several of these participants said they *believed positive affect played a role in their pain relief*. One participant spoke about her expectation and positive affect,

thinking the former might have had less effect on her results than the latter. Also, as previously mentioned, research shows positive affect has a mitigating influence on the perception of pain so positive affect likely played a part in the lucid dream experiences of this study as well.

Another variable which future studies should examine is *insight*. In many ways, people find informational healing just as impactful as experiential healing. There were several participants who spoke about insights as a result of their experience and, for some, this information was life-changing. One participant received insights which could be classified as a *diagnosis* and a *prescription* for his health condition. This participant took the information seriously and he also experienced the most substantial, longest-lasting pain relief of anyone in this study. There are likely numerous different factors responsible for his results, but the insights he received were surely one of these factors.

Another angle that future studies should consider is the current nature of participants' chronic pain, as well as the pain's origin. Chronic pain can develop for a variety of reasons, some of which are physiological while others are more psychological. Since lucid dreaming is a psychological intervention, people with issues of a psychosomatic nature might experience more results than people with issues based on a physiological injury. There were examples within this study that indicate this possibility. Out of everyone in this study, Participant #01 had the most temporary pain relief and he also had a severe physiological injury: a damaged vertebra. Participant #06 had the most substantial, longest-lasting pain relief and his chronic pain appeared to be more psychosomatic at the time of his lucid dream experience. It should be noted the chronic pain of Participant #06 originated from a physiological injury (i.e., knee damage incurred when he fell on stairs), but seemed to develop into an ailment that was more psychosomatic in nature. The diagnostic and prescriptive advice Participant #06 received from his experience said

his chronic pain was related to a psychological problem: a stubbornness to pick-up a consistent exercise routine. Thus, the participant with the least amount of pain relief had chronic pain that was more physiological in nature, while the participant with the most amount of pain relief had chronic pain that was more psychosomatic in nature, so this aspect needs further examination.

With its retrospective design, this study cannot determine whether or not lucid dreaming was the source of pain relief for these participants. However, there are several data points that lean toward this possibility. Given the small sample size, it is also difficult to determine whether or not any of the four measured variables are factors in the experience. More research is needed to verify the role of these variables, as well as the other possible variables found in this study. Overall, the evidence from this study indicates that participants remember lucid dreaming helping them manage their chronic pain. With mind-body medicine on the rise, people are embracing new strategies to deal with issues of health and lucid dreaming seems to show potential in this regard, imploring further investigation into the topic.

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APPENDICES

Appendix A: List of Provisional Codes

- expectation of success (optimistic, pessimistic, or neutral)
- pain felt while dreaming (no, decreased, increased, or same as waking)
- insight healing
- prescriptive healing
- experiential healing
- role of the dreamer (active or passive)
- presence of light (color?)

Appendix B: Semi-Structured Interview Guide

Before we begin, I wanted to briefly introduce myself and this research project so you can get a better idea of the type of information that I'm seeking. My name is Elliott Gish and I'm working on a PhD in Psychology at Saybrook University. This research project is part of my doctoral program and what I'm hoping to accomplish with it is a better understanding of a specific lucid dream experience. The specific experience I'm talking about is relieving or attempting to relieve chronic pain with lucid dreaming. It seems that some people have more pain relief with this experience than others, so I'm trying to learn more with the hope that people might be able to use this information in the future to attain some pain relief for themselves.

If you have had this experience more than once, that is completely fine. We will talk about your experiences individually with each one taking approximately ~20-30 minutes to discuss. I have about 30-40 questions overall. Also, I want to remind you of your right to pass on any question within this interview, as well as your right to stop the interview completely at any time. And, just so you are aware, I will now turn on the recorder to record this conversation because this helps me to not lose any information that could be potentially valuable.

So, I want to start out with a few questions on demographics, then we'll move onto to the pain and your experience(s).

1. In what country were you born?
2. In what country, or countries, did you live before turning 18 years old?
3. What is the highest degree or level of school you have completed? (If you're currently enrolled in school, please indicate the highest degree you have received thus far.)
   3.1. [probe = less than a high school diploma, high school diploma or GED, Associate degree, Bachelor's degree, Master's degree, Doctoral or Professional degree]

For reference, a lucid dream is a dream in which you are aware that you are dreaming while you are dreaming, even if the awareness is only momentary. So, that being said…

4. At what age did you have your first lucid dream?
5. You had a specific experience of relieving or attempting to relieve your chronic pain in a dream, would you say that specific experience was a lucid dream?
6. At the time of this specific experience, how often were you having lucid dreams on average?
   6.1. [probe = daily, weekly, monthly, yearly, >yearly]
7. At the time of this specific experience, approximately how many lucid dreams had you experienced in your life total?
   7.1. [probe = 1-99, 100-499, 500-999, 1000-9999, 10000 or more]
8. At what age did you have this specific experience with lucid dreaming and pain?
9. Before this specific experience, had you heard or read about others who used lucid dreaming to help with their chronic ailments?
   9.1. [probe = If so, where did you hear/read about it?]

Now, I want to move on to some questions regarding the pain in your body prior to this experience…

10. Where was the pain?
    - 10.1. [probe = diagnosis? Self-diagnosis?]
11. How did the pain start?
12. What was your age when the pain started?
13. After the pain started, how often did you have it?
14. How did the pain affect your daily life?
15. Did anything make the pain better?
    - 15.1. [probe = What was the treatment(s)?]
        - 15.1.1. [probe = Did you take the treatment as prescribed?]
        - 15.1.2. [probe = What was the frequency and dosage of the treatment(s)?]
        - 15.1.3. [probe = How much pain relief did you get from the treatment on a scale of 0-10? 0 being "no pain relief" and 10 being "complete pain relief]
        - 15.1.4. [probe = How long did the pain relief last?]
        - 15.1.5. [probe = When was the last time you used this treatment before the lucid dream?]
    - 15.2. [probe = Did you ever try any alternative treatments to relieve the pain? For example, acupuncture, hypnosis, massage, chiropractor, etc.]
        - 15.2.1. [probe = If so, what was the alternative treatment(s)?]
        - 15.2.2. [probe = What was the frequency and dosage of the treatment(s)?]
        - 15.2.3. [probe = How much pain relief did you get from the alternative treatment on a scale of 0-10? 0 being "no pain relief" and 10 being "complete pain relief]
        - 15.2.4. [probe = How long did the pain relief last?]
        - 15.2.5. [probe = When was the last time you used this treatment before the lucid dream?]
    - 15.3. [probe = Did you ever use over-the-counter pills or supplements to relieve the pain?]
        - 15.3.1. [probe = If so, what did you use?]
        - 15.3.2. [probe = What were the dosages?]
        - 15.3.3. [probe = How often did you take them?]
        - 15.3.4. [probe = How much pain relief did you experience from the pills/supplements on a scale from 0-10? 0 being "no pain relief" and 10 being "complete pain relief"]
        - 15.3.5. [probe = How long did the pain relief last?]
        - 15.3.6. [probe = When was the last time you used this treatment before the lucid dream?]
    - 15.4. [probe = Did you ever experience spontaneous pain relief where the pain diminished without any treatment?]
        - 15.4.1. [probe = On a scale of 0-10, how much pain relief did you get from spontaneous remission? 0 being "no pain relief" and 10 being "complete pain relief"]
        - 15.4.2. [probe = How long did the pain relief last?]
        - 15.4.3. [probe = When was the last time this happened before the lucid dream?]
16. Did anything make the pain worse?
17. Please describe what the pain felt like…
18. I'm going to read a list of pain adjectives, please tell me which ones accurately reflect what this pain was like for you. To make this easy, just respond with a "yes" or a "no" for each one

of these adjectives. Okay? So…burning? stabbing? shooting? tingling? aching? throbbing? crushing? nauseating? sharp? dull?

18.1. Any other adjectives you would like to add? If so, please describe…

19. In your own words, please share this specific lucid dream experience in which you relieved, or attempted to relieve, your chronic pain:
    19.1. [probe = At what point did you realize you were dreaming?]
        19.1.1. [probe = After you became lucid, did you ever lose the lucidity?]
    19.2. [probe = Did you feel chronic pain during the experience?]
        19.2.1. [probe = If so, how did it compare to your chronic pain in waking life?]
    19.3. [probe = Did your pain increase during this experience?]
        19.3.1. [probe = If the pain increased, when did you first notice the increase?]
        19.3.2. [probe = If the pain increased, how did it compare to your pain in waking life?]
    19.4. [probe = Did your pain decrease during this experience?]
        19.4.1. [probe = If the pain decreased, when did you first notice the decrease?]
        19.4.2. [probe = If the pain decreased, how did it compare to your pain in waking life?]
    19.5. [probe = In your opinion, was there anything else you could have done while lucid dreaming to experience pain relief?]

Okay, now I would like to move onto some questions where you answer with a certain number along a scale. For instance, I'll ask something like: "On a scale of 0-10, with 0 being no pain and 10 being the worst pain in your life, how was your pain during the lucid dream?" Okay?

20. On a scale of 0-10, with 0 being vague/blurry/dark to 10 being as clear & detailed as waking life, what was the vividness of your lucid dream experience?
21. On a scale of 0-10, with 0 being no expectation that it will succeed and 10 being 100% confident it will succeed, what was your "expectation of success" in terms of pain relief?
22. On a scale of 0-10, with 0 being no pain at all to 10 being the worst pain of your life, how was the pain before this lucid dream experience?
    22.1. [probe = daily average]
23. On a scale of 0-10, with 0 being no pain at all to 10 being the worst pain of your life, how was the pain immediately after this lucid dream experience?
    23.1. [probe = daily average]
24. If pain increased after the experience, how long did the increase last?
    24.1. [proxy = If pain decreased after the experience, how long did the decrease last?]
25. What do you believe was the source of this pain increase (or decrease)?
    25.1. [probe = Tell me more about that…]
26. In your opinion, were there any thoughts, feelings, or actions within the lucid dream that contributed to the pain relief (or lack thereof)?
    26.1. [probe = Tell me more about that…]
27. Besides a possible change in pain, did having this experience change you in any other way?

28. Is there anything else you would like to add about this experience?
29. Was this the only experience you ever had of relieving, or attempting to relieve, chronic pain with lucid dreaming?
    29.1. [probe = If not, back to question 5: "You had a specific experience…"]

30. Is there anything else you would like to add before we end the interview?

I just want to say thank you so much for your time and for being open and willing to share all this valuable information with me. I greatly appreciate it, and I greatly appreciate you. As compensation for your participation, I'll be sending the gift card to your email address within the next 24 hours or so. Once I've completed the final data analysis, I'd be happy to share my findings with you if you're interested. And if you have any questions, please feel free to reach out to me at any time. The best way to contact me is my school email address: egish@saybrook.edu. Thanks again, I hope you have a wonderful day.

Appendix C: Example of Interview Transcript

Interviewer: Alright, it is recording.

Interviewee: Okay.

Interviewer: Now also I want to remind you of your right to pass on any question in this interview as well as your right to stop the interview completely at any time.

Interviewee: Okay.

Interviewer: Okay, and I want to start out with some questions on demographics and then we'll move on to the pain and then the lucid dream experiences. Sound good?

Interviewee: Okay, yep.

Interviewer: So in what country were you born?

Interviewee: The U.S.

Interviewer: Okay, and in what country or countries did you live before turning 18 years old.

Interviewee: Just the U.S.

Interviewer: Okay, and what is the highest degree of level of schooling that you've completed.

Interviewee: I'm about a quarter away from finishing my Bachelor's.

Interviewer: Okay, and just for reference – I'm sure you're aware of this, well aware – but for reference, a lucid dream is a dream in which you are aware you are dreaming while you are dreaming, even if the awareness is only momentary. Right?

Interviewee: Correct, mm-hmm.

Interviewer: So, that being said, at what age did your have your first lucid dream?

Interviewee: I must have been around 10 years old.

Interviewer: Okay.

Interviewee: I'm not sure exactly, I just remember that it was like in elementary school for sure.

Interviewer: Okay, no problem. And this specific experience that we're going to be talking about today, or experiences in your case, would you say that those were lucid dreams?

Interviewee: Yes.

Interviewer: Okay, good. And at the time of this specific experience, how often were you having lucid dreams on average?

Interviewee: These last few months I'd say, or even around that time I was probably having like 2, at least 2 a week.

Interviewer: Okay. And at the time of this experience, which was recent, approximately how many lucid dreams had you experience in your life total?

Interviewee: I haven't been as good as you about writing them all down, but maybe 50 to 100, probably not quite to 100 but –

Interviewer: Okay.

Interviewee: 50 to 70, I'd say.

Interviewer: Okay, good, thanks. And how old are you – or I guess I should ask, how old were you at the time of this experience?

Interviewee: 25.

Interviewer: Okay. And before you had this experience, had you heard or read about others you had used lucid dreaming to help with their bodily ailments?

Interviewee: Yes.

Interviewer: And do you remember where you heard or read about it in particular?

Interviewee: I think the first time I heard about it was in Robert Waggoner's book.

Interviewer: Mm-hmm.

Interviewee: Gateway to the Inner Self.

Interviewer: Yeah, very common, very common.

Interviewee: Yeah.

Interviewer: Okay, great. Well now I want to move onto some questions regarding the pain in your body prior to the experience. So where was the pain?

Interviewee: I've been experiencing chronic body pain since about the age of 15.

Interviewer: Mm-hmm.

Interviewee: But that – the first night specifically I woke up in the middle of the night and like my neck and shoulders were really hurting from sleeping in an awkward position.

Interviewer: Mm-hmm.

Interviewee: But overall the body pain in January has been mostly in like my hands, wrists, knees, back, feet, I think that pretty much covers it. Pretty much like full-body pain. It's been pretty bad.

Interviewer: Okay. And is there any kind of diagnosis related with this pain?

Interviewee: No, the doctors have kind of gone back and forth. For a while, they thought it was rheumatoid. I think right now they're on – I can't even remember what it's called, like poly – I don't even know to be honest. They're not really sure, they think it might be related to trauma I experienced as a child.

Interviewer: Okay. And you said it started when you were 15 years old?

Interviewee: Correct.

Interviewer: After a night of sleeping awkwardly, is that correct?

Interviewee: No, the pain started when I was 15. It started in my hand and it spread through my body, but that night specifically my neck and shoulders were really bad because of sleeping awkwardly, and before the lucid dream experience.

Interviewer: Okay, okay. So the pain originally started in your hand?

Interviewee: Correct.

Interviewer: Okay. And after the pain started, how often did you have it?

Interviewee: Daily.

Interviewer: Uh-huh. And how did it affect your daily life?

Interviewee: At the time I was in gymnastics and I played violin, and I had to quit both.

Interviewer: Mm-hmm.

Interviewee: And since then, it's kind of just been limiting in general. Like at this point it's difficult for me to hold books open, writing can be difficult, my posture's really terrible so it just is kind of difficult to hold myself. Thursdays are my appointment days, I've started physical therapy and massage therapy and that's kind of been helping.

Interviewer: Mm-hmm.

Interviewee: But it definitely limits me from things that I would like to be doing more.

Interviewer: Okay. Has anything made the pain better?

Interviewee: Pain relief tablets like Ibuprofen.

Interviewer: Mm-hmm.

Interviewee: For a while acupuncture helped, but I didn't really stick with that very long. I think the massage therapy is helping, physical therapy seems to be helping, yoga has been really helpful just kind of like stretching and helping mobility.

Interviewer: Mm-hmm. Okay, so was Ibuprofen the only over-the-counter pills that your tried for pain relief?

Interviewee: Yeah, so specifically I think I'm taking Naproxen Sodium.

Interviewer: Mm-hmm, mm-hmm, yeah.

Interviewee: But I'm pretty sure that's just the active ingredient in Ibuprofen.

Interviewer: Right. And how much relief does that give you? Let's say on a scale of 1 to 10, er, 0 to 10, 0 being no pain relief, 10 being complete pain relief.

Interviewee: I would say it brings it down – it generally doesn't disappear but it brings it down to like a manageable level so maybe it decreases like 70%.

Interviewer: And where – what's the average pain like, on a daily average for you on a scale of 0 to 10? 10 being the worst pain in your life.

Interviewee: That's hard. Definitely in the winter months like it can get pretty bad, like up to a level 8.

Interviewer: Mm-hmm.

Interviewee: But in the summer and when I'm traveling in warmer places, I'd say it's down to like a dull 2 or 3.

Interviewer: Okay. And the Ibuprofen, you said it's about a 70% reduction from that?

Interviewee: Yeah, I just don't tend to use it very often. I've the pain for so long, I typically just ignore it best I can and just like power through it.

Interviewer: Mm-hmm, mm-hmm.

Interviewee: I only take the Ibuprofen like, I don't know, like only a couple times a month. More in January, January is particularly bad but I don't take it very often.

Interviewer: And how long does the pain relief usually last from the Ibuprofen?

Interviewee: …that's a good question. Maybe like 6 to 8 hours.

Interviewer: Okay.

Interviewee: It's like when it's really bad and I have to take it, I'll take it in the morning and then I'll find myself needing it again in the evening.

Interviewer: Mm-hmm. And do you remember when was the last time you used it before this lucid dream experience?

Interviewee: I don't, to be honest. I'm not sure.

Interviewer: Okay, yeah, no worries. Let's talk a little bit more about these other things that helped you though, the massage, the physical therapy – how much did those help you? Let's start with the massage, how much pain relief did that provide for you, or does that provide for you?

Interviewee: …it's weird because sometimes like right after, you almost have like an increase in symptoms because she's like working on things that hurt and kind of getting it all out.

Interviewer: Mm-hmm, mm-hmm.

Interviewee: But its definitely been helping like re-align some things and she's been noting that I'm like responding faster to the treatment every week.

Interviewer: Mm-hmm.

Interviewee: But pain relief specifically, it's really hard to gauge. I guess it has been getting better though, because since I started in January it has been getting slightly better.

Interviewer: Okay.

Interviewee: I don't know how to rate it though, to be honest.

Interviewer: Right. Well slightly better maybe only a couple points or so overall, but maybe gradually decreasing?

Interviewee: Yeah. Yeah, that's what I'd say.

Interviewer: Okay, okay. And what about the physical therapy?

Interviewee: That's almost even harder to gauge. I think for like the first month it actually increased by pain.

Interviewer: Yeah.

Interviewee: Just like moving around in ways that I wasn't used to, but now that the muscles are starting to get moved in the correct ways and I'm able to support myself better, I've noticed a definite improvement in posture which has been helping the pain.

Interviewer: Mm-hmm.

Interviewee: But again it's hard to rate.

Interviewer: Yeah.

Interviewee: So I guess just another kind of gradual improvement there.

Interviewer: Okay. And did you ever use any medical treatments to try to relieve the pain?

Interviewee: For a couple months I was on treatment for rheumatoid arthritis. First I tried some pills – what were they, oh goodness I might even have to Google it. They were…uh…

Interviewer: Yeah, no worries. Take your time.

Interviewee: Okay, let me Google it.

Interviewer: Yeah, yeah please. If you don't mind.

Interviewee: …..Methotrexate, that's what it was.

Interviewer: Okay.

Interviewee: So I was on that in pill form for about a month. Then they changed it to injection for a couple months just because the pills were ridiculously expensive. And I noticed nothing from them at all.

Interviewer: From the pills or the injections?

Interviewee: Yeah, no improvement. But my doctor now says that's because I don't actually have rheumatoid so it makes sense.

Interviewer: Yeah, mm-hmm. Now I think I might have heard you mention something about acupuncture or chiropractor?

Interviewee: Yeah, acupuncture.

Interviewer: Okay, tell me more about that.

Interviewee: So I tried that right towards the beginning of the pain, I'd say around 16 years old. When it was kind of still located in just my hand.

Interviewer: Mm-hmm.

Interviewee: And then when it spread – like not even necessarily spread but just – I started experiencing – at first it was in my left hand, I'm left-handed. And then it was in my right hand and that's when the doctors started being like "oh that's really weird. Like you're not old enough to have like arthritis in both of your hands" and they kind of stopped believing me.

Interviewer: Mm-hmm.

Interviewee: But we tried acupuncture and I noticed relief for like a few days from that.

Interviewer: Hmm, and how much relief?

Interviewee: Not complete, but definitely probably down to like that 2-3 level again.

Interviewer: Wow, okay, great.

Interviewee: Yeah, it was really interesting. I'm thinking about starting again actually.

Interviewer: Yeah. And did you happen to do this acupuncture within the week that you had this lucid dream experience? Do you remember?

Interviewee: No, no I haven't done that since I was 16.

Interviewer: Gotcha, okay. Alright, have you ever experienced any spontaneous pain relief where the pain just diminished without any treatment?

Interviewee: No, no until the – well I don't want to give anything away but no.

Interviewer: Okay, okay. Did anything make the pain worse?

Interviewee: Definitely like use.

Interviewer: Mm-hmm.

Interviewee: Just overuse, like repetitive use. Yeah like I bussed tables for over a year and constantly like walking around holding a heavy tray, picking up like plates and cups. Like by the end of that job I could like barely pick things up. It was rough.

Interviewer: Mm-hmm.

Interviewee: And very strangely, when I was reading a book on Ardell Mendel's bodywork last year, when I was reading that book the pain got so bad I like couldn't hold the book. And I kind of wonder if that was like psychosomatic so what was up with that, it was really interesting.

Interviewer: Yeah, interesting. Okay, well I want to read a list of pain adjectives and please tell me which ones accurately reflect what the pain was like for you.

Interviewee: Okay.

Interviewer: So, to make this easy, just respond with a yes or no for each one of these adjectives. Okay?

Interviewee: Okay.

Interviewer: So, burning?

Interviewee: No.

Interviewer: Stabbing?

Interviewee: Yes.

Interviewer: Shooting?

Interviewee: Like from one location to another?

Interviewer: Mmm, yeah, mm-hmm.

Interviewee: I'd say yes.

Interviewer: Okay. Tingling?

Interviewee: No.

Interviewer: Aching?

Interviewee: Yes.

Interviewer: Throbbing?

Interviewee: Yes.

Interviewer: Crushing?

Interviewee: Yes.

Interviewer: Nauseating?

Interviewee: Yes.

Interviewer: Sharp?

Interviewee: Yes.

Interviewer: Dull?

Interviewee: Mmm, also yes. Even though it seems.

Interviewer: Mm-hmm I know exactly what you mean, no worries. Any other adjectives you'd like to add?

Interviewee: Umm, there's so many of them already I don't know. I think those pretty much covered it.

Interviewer: Okay, okay. And just to clarify before we move on to the lucid dream experiences here, the daily pain average – you said it was kind of hard to gauge because it would fluctuate?

Interviewee: Yeah.

Interviewer: And fluctuate from about a 2 to 3 to about an 8?

Interviewee: Yeah, and 2 and 3 is like when I'm on vacation, somewhere warm.

Interviewer: Okay. So a daily average would be higher?

Interviewee: Yeah, I guess like a daily average would be like a 6.

Interviewer: Gotcha, okay. Alright, thank you. So I'd like to move on to the specific lucid dream experiences in which you relieved or attempted to relieve your bodily pain. So, in your own words, please tell me all about this experience.

Interviewee: Do you want the full dream, or just the lucid part?

Interviewer: Yeah, full dream, please.

Interviewee: Okay. I typed out that first one that I had and it's kind of long.

Interviewer: Okay, yeah.

Interviewee: I could read it directly or I could kind of tell you from memory, whichever is easier for you.

Interviewer: Umm, you know what would probably be best for me is if you wouldn't mind reading it directly. That way I get all the details, if that's okay with you.

Interviewee: Yeah, that's fine.

Interviewer: Okay.

Interviewee: Okay, so the earliest part of the dream that I can remember started in a dull, depressingly lit version of my apartment. I discovered a large vertical portion of a dividing wall that had begun to crumble away and I worried that my cat might hurt herself on it. I think about how we'll have to start repairing it in the morning, but it was already really late. My boyfriend and I go to bed and when I wake up in the morning, which is a false awakening, he's still asleep. But that's pretty normal because he often later than I do.

Interviewer: Mm-hmm.

Interviewee: I somehow have the knowledge that a friend of mine had moved into the building and I go to visit him. His apartment is on the top floor and when I enter I'm surprised at the size. The ceiling is extremely high and the kitchen was large and modern, where mine is tiny and really dated. The building's like 100 years old and is converted from an old office building. He has floor to ceiling windows and some follow the slight slant of a roof. And since he's on the top floor, you can see greenery outside and there's sunlight flooding into the apartment. I express my amazement and suppress the urge to ask how much it was costing and how he was affording it. But I ask to look around which he is fine with. The place is huge, it's like the size of 4 or 5 units put together and as we walk around I find multiple kitchens. There's one in the hallway that's designed as like a walk-thru kitchen, another room has another modern one, and then I go into a further room that has an outdated kitchen kind of like my own, and so I describe the comparison to him. And then in another room, there's a slightly elevated section with a couple stairs leading up to it and it's just this random area. And he says he's thinking about making it into a dining

room. And I tell him that I have an entertainment unit that I'd gotten for free and I would be fine giving it to him if he wanted it, just to kind of like have some furniture in this place because the whole room is just empty, but he politely declines. We go back into the first kitchen which has a living room next to it and we sit on the couch and begin watching the TV in the corner. It's an episode of That 70's Show and the characters are smoking so much weed that they turn into characters from The Simpsons and we laugh about it. Two girls come out of his room to let him know that they're leaving and I try to refrain from having a reaction because I know this guy Brian is in kind of like a polyamorous relationship. And he'd recently told me about an experience in which he'd slept in a bed with like four people and got no sleep. So, let's see, remembering or just like seeing the other people remind me that I also have someone sleeping in a bed downstairs and I'm like wondering if he'd woken up and was wondering where I was. And right at this time, a man enters the apartment right as the girls leave and he sees Jacob and I sitting on the couch and he gets really mad. We explain that nothing is happening and we're just friends from school but he doesn't believe us. I don't want to be a part of the argument so I try to excuse myself and leave the apartment, but he starts chasing me. And when I get out of the apartment, I recognize my extreme emotions and my fear which is something I've been looking out for in my lucid dreams. So I decide to do a really check, even though I'm pretty sure I'm awake because I remember waking up and like all the events leading up to it.

Interviewer: Mm-hmm.

Interviewee: But I go up to a wall and I put my hands to it and they just go like right through it. So I'm like okay I guess it is a dream. And – I've lost my place –

Interviewer: No worries.

Interviewee: Yeah, it was – to my surprise it works. So now that I'm lucid I proceed to fly all the way through the wall. And I'm in the same building but I can see people in their offices, like now it's an office building, potentially the way that it used to look or you know it used to be an office building so maybe that's where I get that. And I see people at their desks like working away. And then I remember my pre-sleep intention to try to heal myself and since I know kind of where I am, although it's a dreamscape, I decide to go out of the apartment building and into the park that's in front of the building. Upon flying through the walls of the building and seeing the park, I'm amazed at the size which is much larger than it is in real life and it's bustling full of people. The sun is out and people are lounging around having conversations. There's like music playing, kids are running around in the park, a bunch of flowers had bloomed in the grass, and there's a fountain that isn't there in waking life. I fly near the fountain and sit on one of the only open spaces in the grass and I face the sun. I had heard of people doing healing with some kind of light, but since my pain is in my whole body I decide to like just soak in the sun. I don't know how I came up with the idea but it was sunny so I just tried it.

Interviewer: Mm-hmm.

Interviewee: I like sit cross-legged and I just like look up right at the sun and I don't do it for very long but I let it like heat my whole body up, maybe less than like 30 seconds even. And then I'm like okay, what else should I do? And I decide to go fly to an area that I've seen in previous non-lucid dreams, it's like this little ocean spot that I like had dream memories of going to but I've never actually made it there.

Interviewer: Mm-hmm.

Interviewee: And so I fly up into the air and I envision that it's like over in the distance and I see it over there. And I start to fly there but it's so far away that I remember another tip in which you can just like zoom yourself there.

Interviewer: Mm-hmm.

Interviewee: And so I try to visualize that and then I'm suddenly there. I like zoom there. And it isn't exactly as I remember from the previous dreams but it's like really beautiful and I fly around and explore it. And before long I find this abandoned like mostly demolished building. All that's left is like kind of the metal structure of this big building and I see a mother and daughter climbing around on it. I fly higher and I look back towards where the dream began and the sun is setting and it's really pretty. And I fly towards it but have another false awakening back into the dilapidated version of my apartment. And then I tell my boyfriend about the dream, and then I wake up for real and I was confused about whether or not I'd actually told him. And that's that.

Interviewer: Wow, what an experience.

Interviewee: Yeah, it was one of the longest dreams I've remembered, it's quite – yeah it's quite out there.

Interviewer: Yeah, yeah. There's a lot to it.

Interviewee: Yeah. I can still picture the whole thing perfectly. I didn't even write this down until like a couple weeks ago because I was like maybe it would be better if I had a written version but I can still picture the entire thing.

Interviewer: Yeah, yeah. That's amazing. So I'd like to ask you a few questions on that experience, if you don't mind.

Interviewee: Mm-hmm.

Interviewer: Did you feel your bodily pain during the experience?

Interviewee: No, I don't usually feel it in my dreams.

Interviewer: Okay. And when did you – did you notice any – well I guess you kind of already answered that question with you don't typically notice pain relief.

Interviewee: Mm-hmm.

Interviewer: I was going to ask you when did you first notice any pain relief, but that would probably be later on after the dream.

Interviewee: Right.

Interviewer: So I'd like to ask you a few questions along a scale.

Interviewee: Okay.

Interviewer: So these will all be on 0-10 scales.

Interviewee: Okay.

Interviewer: So, on a scale of 0-10, how vivid was the lucid dream experience? 0 being vague, blurry, dark and 10 being as clear and detailed as waking life.

Interviewee: I guess 10.

Interviewer: Okay.

Interviewee: Yeah.

Interviewer: And on a scale of 0-10, what was your expectation of success in terms of pain relief? 0 being no expectation it will succeed, 10 being 100% confident.

Interviewee: Strangely for someone who is like studying this stuff I think it was only like, maybe like a 6. Like a hopeful but not entirely convinced.

Interviewer: Yeah, yeah. Mm-hmm, okay. So on a scale of 0-10, with 10 being no pain at all, er 0 being no pain at all, 10 being worst pain in your life, what was the pain like right before this lucid dream experience? Like the night before.

Interviewee: Yeah, it was pretty bad because I woke up with that really bad shoulder pain so I'd say like an 8.

Interviewer: Okay. And what about immediately afterwards?

Interviewee: For the first time in 10 years, it was a 0.

Interviewer: Wow, that's amazing.

Interviewee: Yeah, it was.

Interviewer: Truly amazing. So, just to clarify, did the pain ever get worse from the experience?

Interviewee: No.

Interviewer: Okay. And how long did the pain relief last?

Interviewee: Unfortunately, only about half a day.

Interviewer: Okay.

Interviewee: Maybe like three-quarters of the day but it definitely returned throughout the day.

Interviewer: Mm-hmm. And what did it return to? The same levels or somewhere else?

Interviewee: Yeah, it wasn't so bad that day. I'd say it only got back up to like a 4 that day.

Interviewer: Mm-hmm.

Interviewee: And ever since then it like hasn't been nearly as bad as it was all January.

Interviewer: Okay. And what do you believe was the source of this pain relief?

Interviewee: Umm, good question. I don't know if it was necessarily like the light of the sun, or like partially expectation.

Interviewer: Mm-hmm.

Interviewee: I think the thing that makes the most sense would be like the light from the sun, though. Like I could feel it warm my body in the dream. It was – it felt really nice. I kind of regret not doing it longer.

Interviewer: Yeah, tell me more about that. You said it was roughly about like 30 seconds it felt like?

Interviewee: Yeah, yeah. I mean even though I've been getting lucid more and more often, I'm just like – I'm easily distracted and I was just like I wanted to do like a bunch of things because I was like really lucid and like – sometimes you feel like that fear of losing it or you can feel yourself fading out –

Interviewer: Yeah.

Interviewee: But it was like so clear this time, I didn't feel like it was going to go away. So I just was like, what else – what other cool things should I try instead of like focusing on it and like really giving it a full chance. I don't know.

Interviewer: Gotcha, so it – let me see how to phrase this – it wasn't – did you feel like the healing process was complete or you moved on before there was a "completion" to it?

Interviewee: I don't even know what a completion would look like, I guess.

Interviewer: Yeah, mm-hmm.

Interviewee: But I just kind of was like alright that was cool I guess. Like –

Interviewer: Yeah.

Interviewee: I just was easily distracted I suppose.

Interviewer: Mm-hmm. How did you feel in that moment after absorbing the sun? Did you feel like it helped?

Interviewee: It was difficult to tell because I wasn't experiencing the body pain in the dream.

Interviewer: Mm-hmm.

Interviewee: Which is one of the reasons that I think I enjoy dreaming so much is that I don't have to deal with my pain while I'm there.

Interviewer: Yeah.

Interviewee: So it was difficult to tell if it had helped. I like wanted it to have worked but like I said I didn't have like – I was hopeful but I didn't have super high expectations. It just kind of sounds like too good to be true, I guess.

Interviewer: Mm-hmm, mm-hmm. So in your opinion were there any – I know you mentioned the sun – were there any other thoughts or feelings or actions within the lucid dream that you felt like contributed to the pain relief?

Interviewee: I think the setting was like really happy.

Interviewer: Mm-hmm.

Interviewee: There were like flowering blooming and kids playing, and it was just like a fountain. It was just like a really pretty park. Like it was just a nice setting in general.

Interviewer: Yeah. Okay. And besides pain relief did having this experience change you in any other way?

Interviewee: Umm…that's a good one. I mean it made me want to try it again.

Interviewer: Mm-hmm.

Interviewee: And it made me like more hopeful that I could experience pain relief. Because around that time, I was talking with my therapist about how I wasn't sure that I would ever get better, and how I just might like have to live my whole life with this.

Interviewer: Mm-hmm.

Interviewee: Because it's been like 10 years of just like daily pain.

Interviewer: Yeah.

Interviewee: So I guess its kind of just made me more hopeful and its helped me to like try to focus on the times when I do feel good.

Interviewer: Yeah. Okay. Well…I guess that about wraps it up for me in terms of that experience. Is there anything else you would like to add about this experience before we move on?

Interviewee: I don't think so.

Interviewer: Okay, well let's move on to the second experience then. If you don't mind.

Interviewee: Okay, it's not nearly as long or detailed.

Interviewer: Yeah, no worries.

Interviewee: So it won't take as long.

Interviewer: Yeah. Umm, so I guess take it away whenever you're ready. Go ahead and tell me all about the experience.

Interviewee: Okay, I didn't write this one down because it was more of a snippet that I remember.

Interviewer: Okay, yeah, no worries.

Interviewee: But I was in like a big castle. And once I became lucid, which I don't remember how I became lucid, I pretty much spent the time like flying around and looking at the walls. I would like get up like really really close to them and they were made of like – they had like these really intricate patterns of stonework. And I would just like get up really close and just like kind of marveling how detailed it was and how it didn't seem like a dream, it just seemed so real.

Interviewer: Mm-hmm.

Interviewee: Which still amazes me even after all this time. And then I was like oh man I should try that pain relief thing again, like it worked pretty well last time. And then there was a wizard there, or like he was dressed in a cloak, he didn't have a hat or anything. But he had a big long white beard so I was like wizard of course, I'm in a castle. And I decided to try to do the – people talked about the light coming out of their hand and so I tried doing that but I could only create like a green marble. Like a green marble appeared in my hand and I was like what is this? And I was like, am I supposed to like roll this on my body or what's happening? And then I really didn't know what to do with it. And then you appeared and you told me that people have been healing themselves in lucid dreams for over 3,000 years. And I think I woke up after that. It wasn't whole lot of anything.

Interviewer: Gotcha, okay. So, I guess, what was the experience like afterwards? Was there any pain relief associated with that or no?

Interviewee: No, there wasn't.

Interviewer: Okay. And did you feel the pain within that dream?

Interviewee: No.

Interviewer: And let's go to the marble thing real quick, the thoughts on that.

Interviewee: Yeah.

Interviewer: You were confused about what to do with the marble. Is that right?

Interviewee: Yeah, yeah. I wasn't sure like why it appeared.

Interviewer: Mm-hmm.

Interviewee: It was very strange. I don't know.

Interviewer: And then pretty much after that is when the dream faded away?

Interviewee: Yeah.

Interviewer: Gotcha, okay.

Interviewee: Maybe I should have eaten it. I just thought of that.

Interviewer: There have been some interesting dreams that I've heard so far.

Interviewee: I'm sure, yeah.

Interviewer: So what about the vividness of this experience? On a scale of 0-10.

Interviewee: Definitely less so. I'd say it was like – when I was flying around looking at the walls in was still like an 8 or 9, but once I got to the part of healing it was down quite a bit. I almost don't even quite remember that part, maybe only like a 4 on the vividness scale.

Interviewer: Okay. And what about the expectation of success? On a scale of 0-10.

Interviewee: I don't know why because after last time it worked so well, I think my expectation was a bit lower this time. Umm, maybe only like a 3 or a 4.

Interviewer: Okay. And –

Interviewee: Oh I'm sorry you probably need one number, let's say a 3.

Interviewer: No, no you're fine. You're fine, no worries. Thank you. Thank you, though, I do appreciate that. And just to double-check, did the pain ever get worse from this experience?

Interviewee: No.

Interviewer: And you said there was no pain relief from that one?

Interviewee: Not that I noticed, no.

Interviewer: Gotcha, okay. In your opinion, was there any thoughts, feelings, actions, that contributed to not having the pain relief?

Interviewee: I think the idea that it was kind of an after-thought that I was going to try healing and that I just kind of like – I didn't put a whole lot of thought into it, I just kind of like – was like, oh I guess I should try again and I don't know. I wish I had like taken it more seriously and like given it more time and maybe had a plan before.

Interviewer: Mm-hmm. Yeah the first lucid dream you mentioned your pre-sleep intention was to do this healing.

Interviewee: Mm-hmm, exactly.

Interviewer: Was that the case for this second one as well?

Interviewee: No, that one was spontaneous.

Interviewer: Okay, interesting.

Interviewee: Yeah.

Interviewer: Okay. Any certain colors that should out to you between these two dreams?

Interviewee: In the first one, it was like really sunny and green.

Interviewer: Mm-hmm.

Interviewee: Like the grass was very green and the sunlight almost had like a warm kind of color to it. But then once I flew over to that part of the ocean, like, and I saw that dilapidated building it got like very like moody and darker. And in the second dream, the stones were all like brown and grey. And I think the only thing of color was like the green marble, and it wasn't like bright green, it was kind of like a moss green.

Interviewer: Hmm, okay. And tell me a little bit more about this time in the sun. You were sitting in the grass by yourself, did you have your eyes closed?

Interviewee: Oh, that's a good question. I actually don't know if I remember. I guess I must have because looking into the sun probably would've been pretty – although it's a dream, I was going to say that it would be like kind of blinding and painful.

Interviewer: Right.

Interviewee: I think I did close my eyes, though.

Interviewer: Okay, interesting. And tell me more about this wizard character for a second. Did this have any kind of relevance to the dream? Was it important? Did he have any certain connotations?

Interviewee: I think it was just because I was in a castle and, I don't know, maybe I asked for help. When the marble appeared, I might have asked for help or like wasn't sure what to do with it so he was there to try and help me. Oh I might have even – now that I think of it – I might have even gotten the marble a little bit bigger, like to fit in between my two hands.

Interviewer: Mm.

Interviewee: But I still have no idea what to do with it.

Interviewer: Mm, okay. Well, I think that pretty much wraps the questions up for me in terms of that experience. Anything else you'd like to add about that experience: the second one?

Interviewee: I do remember that it was like cloudy and dark outside, because I thought about doing the sun again but it was like not the correct weather.

Interviewer: Hmmm, mm-hmm. Interesting.

Interviewee: Yeah.

Interviewer: Okay. Well, one question I forgot to ask you before was about how you became a lucid dreamer. Was it more of a natural thing or was it a learned thing for you?

Interviewee: I had like a few spontaneous ones like I had that one when I was 10, and I had another one when I was like – the memories fade so fast, I really should write these things down. I had another one probably around the age of 20, and I had my third when I was like 23. And that one was like super cool, and after that I like find a book on it. I pretty sure it was like Laberge's Exploring the World of Lucid Dreaming. And then I like started looking for research on it and I couldn't find as much as I wanted. And that was when I like decided to return to school and study it, seriously.

Interviewer: Yeah.

Interviewee: So I've tried lots of different techniques. None of them, like, on their own. Kind of just like all of them, like reality checks, wake-back-to-bed, I've only had one WILD. Kind of just like I mean when you're studying it, you kind of think about it like all the time.

Interviewer: Yeah.

Interviewee: And you're kind of always like oh am I awake or am I dreaming? Or like oh this is actually all a dream. And I actually quit smoking weed in January so that like really bumped them up like without even like trying really.

Interviewer: Mm-hmm.

Interviewee: So I guess a combination of like thinking about it all the time, researching it, and I guess I must have some kind of – maybe not necessarily a natural ability like some people do, but I had a few spontaneous ones, just from like questioning reality in general.

Interviewer: Yeah. Okay. Going back to your first lucid dream, I'm curious about why you decided to walk out into the park.

Interviewee: Hmm, umm, that's a good question. I guess like in most of my lucid dreams I like to fly and I usually see like really beautiful like sun rises and sunsets and like the sky is always like the coolest part of my dreams. So I think I just like almost always go outside in my dreams.

Interviewer: Mm-hmm.

Interviewee: Oh that brings back the memory of my second one. Thank you for asking that. I'm going to write it down.

Interviewer: Yeah, of course.

Interviewee: But yeah, I prefer to be outside in my lucid dreams, and dreams in general.

Interviewer: Mm-hmm. And tell me more about this castle, was it familiar? Had you been there before?

Interviewee: No, it was just really large, and cool.

Interviewer: Okay. Umm, well…I think that pretty much sums it up on my end. Yeah, yeah, I think I got all the information I needed, so thank you. I really appreciate you doing this, Nancy.

Interviewee: Oh, not a problem.

Interviewer: You've helped me a lot, you really have.

Interviewee: Awesome. Yeah, I'm really excited, too. Are you like allowed the publish this or how will that work?

Interviewer: Yes, I need to figure out the publishing details because it will be my dissertation. So I don't know how I can, if I can, re-publish it as a study and how I can talk about it. But I will certainly be publicizing the results as much as I can. So, yeah, I will definitely make the results known.

Interviewee: Yeah, I don't know if you need like specific permission to share the dreams but if you want to share mine, you are more than welcome to.

Interviewer: Thank you!