Comparative use of Yoga and Guided Muscle Relaxation

to Prepare for a Structured Music & Imagery Experience

by

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Abstract

Inductions serve as the entry point for music & imagery (M&I) experiences as well as other receptive music interventions. A very small body of literature exists specifically examining the role of inductions in M&I work. The purpose of this study was to explore the differences and similarities between a typical guided muscle relaxation induction and a yoga-based induction to investigate the potential for developing and establishing alternative induction methods for use with M&I. This study was a convergent parallel mixed methods experimental design; both quantitative and qualitative data were collected independently during the same experimental phase, analyzed independently, and integrated together during the interpretation of findings. Participants (n = 62) were randomly assigned to one of two inductions, then experienced a structured M&I experience. Resting heart rate was measured before and after induction, and after M&I; narrative writing prompts asking about the participant's induction experience, structured music and imagery experience, and the interaction between the two, as well as demographic questions were answered by participants following the M&I. Quantitative results were analyzed using a mixed repeated measures ANOVA and a series of paired t-tests. Results indicated no significant difference on heart rate between induction methods; however, significant declines in heart rates were found between all three levels of measurements. Qualitative narratives were coded using thematic analysis and compared; participants in both groups reported similar elements across both conditions, with notably unique themes also present in each induction group. The researcher posits that based on these results, yoga functions effectively as a music & imagery induction. Potential for future refinement and exploration of yoga with M&I research is discussed, as is the possibility of utilizing different types of inductions to elicit specific domains of experience in M&I participants.

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Figures and Tables

CHAPTER 1 – Introduction

Music inherently requires listeners, but there are a variety of reasons people choose to listen to music. As a stimulus, music evokes a range of reactions in those hearing it. It is difficult to imagine listening to music and having absolutely no reaction to it, whether the response is to tap one's foot, recall a memory related to a song, or experience any number of emotions. Music & Imagery (M&I) methods developed as a means of harnessing the potential for music to bring about cognitive and physical responses in listeners, and these methods have evolved into a variety of subtly varied procedures to help aim these experiences toward intentional goals. M&I typically consists of a guided experience of listening to music and either describing one's own spontaneous responses, having a series of images and situations described by the guide and experienced by the listener, or a combination of the two. These elements provide a space for the listener to engage with and/or describe his/her own imagery, feelings, sensations, and thoughts in order to have a deeply personal experience (Bruscia, 2002; Grocke & Moe, 2015; Grocke & Wigram, 2007; Meadows, 2002; Muller, 2007).

In M&I, the music listening experience is often preceded by an induction experience. Inductions are interventions meant to calm the physiological and mental processes of a client to encourage more effective engagement with the M&I. They help to reduce distraction from impeding thoughts and provide a transition from the current internal and external environment into a deepened sense of awareness. This reduces internal static, leading to reflexive responses that offer a high degree of authenticity and bypass conscious blocks (Bonny, 2002; Bush, 1995). This state of semi-consciousness is sometimes identified as a non-ordinary state of consciousness also known as a non-ordinary state (NOS), or a mental state similar to that experienced when daydreaming or meditating, also thought of as a deviation of normative conscious functioning (Bonny, 2002; Cahn & Polich, 2006; Goodman, 1986; Vaitl et al., 2005; Wallace, 1970). By experiencing the NOS, the client is able to more effectively experience a deeper immersion and intuitive connection to the M&I experience (Bonny, 2002; Muller, 2014; Ventre,

2002). Since an ability to immerse oneself into the NOS and connect with the music is a requirement of the M&I experience, the induction is a critical component of M&I sessions as a means of facilitating this process. Traditionally, inductions share similar features of lying in stillness and listening to a verbally described relaxation process; however, clients are not always able to effectively relax through verbal instruction alone, resulting in less effective M&I sessions (Bonny, 2002; Grocke & Wigram, 2007). This research project was born out of curiosity about the possibility of using a different type of induction, one based on a series of yoga postures, and then evaluating a comparison with a traditional M&I induction.

Potential for Research

Yoga provides a dynamic range of movement that engages the body, and when followed by the savasana pose (also referred to as corpse pose, in which the practitioner lies in complete stillness after tensing and relaxing the body), seems to offer a similar entry into a relaxed state (Jovanov, 2011; Swenson, 2013). Currently there is a dearth of M&I research regarding analysis of different inductions, and an absence of empirical research investigating movement as a component of inductions. If yoga provides an analogous experience to other M&I inductions, it may offer a new option for listeners who do not achieve the desired physical and cognitive impact that typical inductions are meant to provide, as well as potentially providing a new avenue for M&I practice and research. The purpose of this study was to explore the differences and similarities between a standard form of induction and a yoga-based induction to investigate the potential of developing and establishing alternative movement-inclusive induction methods for use with M&I.

Personal Narrative

This study originated from a coincidental collaboration between a community yoga instructor and a student-run music therapy club at a university in southwest Virginia. The student researcher was among the participants who engaged in a full yoga class that ended with the savasana pose, lying in

complete stillness. After the conclusion of the session, members of the club began sharing their experiences, and among those was an expressed desire to experience M&I after yoga, as it had induced a feeling of relaxation comparable to relaxation inductions. This was the genesis for the entire study, as the student researcher possessed a personal interest in yoga and M&I practices and consequently was well oriented to examine a synthesis of the two experiences.

CHAPTER 2 – Review of Literature

Music & Imagery (M&I) Practices – Past to Present

Most of the early development of M&I can be credited to the work of Dr. Helen Bonny. Dr. Bonny's initial work with M&I involved LSD-induced NOS where music provided a scaffold of structure to support subjects through their chemically influenced NOS (Bonny, 2002). Unexpectedly, Dr. Bonny discovered that listeners who were not under the influence of LSD described similar types of experiences as listeners in the chemically induced altered-state, contributing to the assertion that music-induced NOS had the potential to affect an analogous experience to chemically induced NOS. Dr. Bonny's work resulted in a gradual refinement of a methodology as she developed her initial techniques. Over time, research and experimentation have substantially informed the creation and refinement of the wider family of M&I procedures that now exist. Dr. Bonny's work formalized the clinical process by which structured M&I experiences help clients to let go of their defense mechanisms and step into a world of inner experience. This process occurs through a facilitated release of intense and deeply held emotions, which contribute to peak-experiences that lead to a sense of timelessness and continuity (Bonny, 2002). Dr. Bonny created a foothold for the investigation and development of the Bonny Method of Guided Imagery and Music as a unique method of therapy.

There is now a wide range of procedures related to the controlled application of listening to music and experiencing imagery (throughout this paper the term *imagery* is used in a M&I context to imply not only visual imagery, but also sensory experience, emotional experience, and intuitive experience; this reflects the potential for variety in personal experience by the listener when imaging to music). These procedures include Music and Imagery, Guided Imagery and Music, and Guided Music and Imagery, group variations of each, and the Bonny Method of Guided Imagery and Music (Bruscia, 2002; Grocke & Wigram, 2007; Grocke & Moe, 2015). For the purpose of this study, the use of *M&I* as a term will refer to the entire range of procedures listed above, with an acknowledged additional label for the

Bonny Method (BMGIM), which requires occasional differentiation. Music and Imagery is a term for variations of M&I procedure where the guide either offers no verbal intervention or provides descriptions of imagery accompanied by music listening. One example is structured music and imagery, which uses a pre-written script of imagery to accompany listening to music. Another example is music relaxation, where the guide helps the client with an induction and then allows the client to experience the music in silence with a goal of promoting relaxation.

Guided Music and Imagery and Guided Imagery and Music refer to procedures wherein the guide assists in shaping the imagery experience by providing support with an overall intention for the session, and by providing prompts and questions to the client during the music and imagery; however, these services can be used on a short- or long-term basis and may use any type of music from classical through modern repertoire. BMGIM involves a long-term series of sessions, wherein the guide helps to shape the overall intention for the session but encourages the client to generate any and all reflexive experiences of imagery. In BMGIM sessions, the guide offers questions and prompts to the traveler to further deepen his/her experience. BMGIM is also traditionally limited to a very specific catalog of classical music utilized for listening experience (Bruscia, 2002).

Each of these procedures ranges in duration, psychological and physiological intensity, and level of interaction between the guide and the client, but they all share the core process of listening to music accompanied by experiencing some form of imagery (again, acknowledging the use of the word *imagery* in a M&I context as being not limited to visual imagery, but also sensory experience, emotional experience, and intuitive experience). M&I training requirements can range from non-formalized procedures to rigorous supervised programs such as the significant training needed to become a BMGIM fellow (Bruscia, 2002; Grocke & Moe, 2015; Grocke & Wigram, 2007). The purpose of M&I in a therapeutic context can range from supportive goals such as inducing relaxation to psychotherapeutically reconstructive interventions including exploration of the subconscious. M&I can

be utilized in the profession of music therapy as well as in a range of mental health and support fields, including, but not limited to, counseling and social work (Bonny, 2002; Bruscia, 2002; Muller, 2014; Summer, 2015).

Due to the different clinical needs of individual clients and the potential for incredibly deep emotional experiences, the role and training of the guide is an important component of the practical and ethical considerations of M&I. While practitioners may utilize a variety of M&I techniques during treatment, BMGIM by design and in its current application is typically used on its own and tends to be the method least combined with other forms of M&I procedure (Muller, 2017).

Role of Relaxed State and Non-Ordinary State of Consciousness in M&I

Dr. Bonny's initial M&I protocols were informed largely by the Guided Affective Imagery practice of Hanscarl Leuner, who implemented an experience that was structurally similar, with an induction and guided imagery, but did not typically incorporate music (Bonny, 2002; Meadows, 2002). Leuner's dream-based work and experience integrated the hypnagogic state (pre-sleep, post-wakefulness), much as Bonny's GIM practice invoked a deeply relaxed state as a precursor condition for experiencing vivid imagery and reducing interruption of experience by conscious thought processes (Bonny, 2002; Meadows, 2002; Vaitl et al., 2005). Ericksonian hypnotherapy includes similar principles and methods directly and indirectly when working with clients to engage them beyond the typical functioning level of consciousness, with hypnosis inducing a state meant to reduce self-occupation and improve automatic/effortless responsiveness (Meadows, 2002; Vanhaudenuyse, Laureys, & Faymonville, 2014). Ultimately, similarly to these other modalities, Dr. Bonny found that inducing a relaxed state prior to the intervention improved and increased the M&I experience (2002).

While more intense forms of M&I practice such as BMGIM utilize NOS as a component of therapeutic intervention, not all M&I requires that depth of psychological immersion. Supportive forms of M&I often involve primary or secondary goals of increasing relaxation and reducing tension (Bonny,

2002; Bruscia, 2002; Grocke & Wigram, 2007; Muller, 2014; Summer, 2015). Though some M&I techniques are not intended to induce a NOS, all current modalities of M&I implicitly or explicitly invoke relaxed states of functioning. However, as Ventre (2002) pointed out, NOS is not a binary condition, instead existing in gradients on a spectrum in which a deeply relaxed state and a NOS may result in an experiential overlap for participants.

A relaxed state can be observed through changes in physiological, cognitive, and emotional conditions. M&I researchers suggest that there are trends in these experiences, including physical relaxation of musculature (Ventre, 2002); homeostasis of bodily systems (Bonny, 2002); alleviation of pain intensity (Grocke & Wigram); regulation and increased potential to control and direct cognitive focus and awareness while reducing distraction (Bonny, 2002; Grocke & Wigram, 2007; Ventre, 2002); increased attention to inner environment, and the ability to screen internal and external stimuli, thereby reducing distraction (Bonny, 2002; Ventre, 2002); reduced intellectual experience and increased intuitive experience (Bonny, 2002); reduced anxiety, stress, tension, and agitation, and potentially enhanced sense of well-being (Grocke & Wigram, 2007); enhanced receptivity to musical stimuli, visualizations, and emotional responses (Bonny 2002; Grocke & Wigram, 2007); and increased potential for engagement with internal defenses and repressed experiences (Bonny, 2002).

Beyond sources specific to M&I, there is an existing body of studies investigating the related NOS induced through different forms of religious and non-religious meditation and mindfulness that invoke deep experiences of relaxation, but many of them occurred in the 1970s when there was a cultural spike in interest investigating NOS. As a result, there is a range of historical sources that have been consulted to integrate into the findings of the limited number of modern studies. Specific to defining a state of deep relaxation, Davidson (1976) and Vaitl et al. (2005) observed a reduction in resting heart rate (HR). Vaitl et al. (2005) also outlined other physiological changes relevant specifically to experiencing a relaxed state, including reduced respiration, reduced galvanic skin response, reduced

sympathetic nervous system activity, and reduced levels of cortisol. Wallace (1970), Davidson (1976), and Vaitl et al. (2005) all offered reports of hypnagogic functioning or experiencing a transient state of wakefulness. Neither fully alert nor fully asleep, Davidson (1976) described it best: "[T]he established physiological changes… are indicative of a level of activation or arousal which is low, but not so low as to preclude maintenance of the waking state" (p. 358). There was also a noted ability to accept paradoxical thinking while experiencing this state of functioning (Davidson, 1976).

It is worth reiterating that there are related but subtly different experiences between relaxed states and deeper NOS (Ventre, 2002). Davidson (1976) acknowledged that they seemed related in nature; however, the relaxed states reported subjective experiences of bypassing or side-stepping conscious controls, while NOS invoked a sense of unity. He also noted differences in brain-wave measurements when deeper experiences of NOS were reported. Jovanov (2011) noted distinctions that could be indicated through comparison of Heart Rate Variability, and Vaitl et al. (2005) reported variations in galvanic skin response when measuring psychologically induced NOS versus physiologically induced NOS. It is worth noting that Davidson (1976) did not report a consistent difference in findings that compared measurements of heart rate and respiration between relaxed states and NOS.

Current Induction Practices in M&I

There is a relative dearth of accessible literature around the specific practice and application of inductions in relation to M&I. While nearly all M&I literature includes an outline of the role of inductions in broad terms, it is nearly always included as a tertiary element relegated to small paragraphs of general characterization. To date, Grocke and Wigram (2007) have had in their research the most in-depth discussion and breakdown of inductions in relation to application in M&I.

The Grocke and Wigram text is incredibly useful as they outlined the individual components of inductions and M&I that need to be considered, highlighting the importance of the client's physical position as a paramount consideration in preparing for the relaxation experience. The listener must find

a comfortable position, which may involve adapting to the movement needs of the client. They also note the benefit of utilizing a blanket or sheet for experiences of significant length due to the potential for a reduction in body temperature while maintaining a sustained relaxed state.

The environment in which the experiences take place must also be considered, and Grocke and Wigram (2007) noted the importance of eliminating interference, to include taking all steps to avoid interruption or disturbance by external forces, as well as reducing sensory pollution by diminishing light levels and reducing external sounds. Because these are sound-based experiences, the guide must attend to his/her own vocal quality, as this is the medium for delivering the induction. Guides must recognize that their vocal tone quality must be consistent and one's vocal range should not tend toward high or low extremes during either the induction or the M&I. Vocal projection is critical in order for the recipient to be able to clearly interpret the instructions, while also maintaining a dynamic level that is appropriate and non-startling. Prosody, intonation, and speaking pace are all mentioned as elements to consider as well, with the suggestion that the guide should employ moderation in all qualities in order to avoid extremes. Finally, the guide should use his/her own breathing to model respiration for the listener as a vital element to enrich the induction and M&I experience.

Beyond these characteristics of practice, Grocke and Wigram (2007) laid out five suggested protocols for inductions. They first highlighted the "autogenic-type" induction, a type of induction that keeps the client in control of elements of the experience. Rather than define exactly how to relax through the induction experience, autogenic inductions utilize non-specific language in their guidance to provide an experience meant to encourage relaxation and allow the listener to enact that relaxation in whatever way is best personally achieved. This approach should be used with participants who can follow direction and maintain focus. Their first example is a verbal walkthrough of the parts of the body, taking time to observe each body part in order to promote relaxation. This offers a scaffolded experience for the participant, with minimal detail offered, to allow for the listener to populate the

experience to his/her individual need, thereby allowing for a wide range of adaptation. The second example is another form of autogenic relaxation that utilizes a focus on any color of the client's choice. Grocke and Wigram warned that there may be a contraindication for the color imagery with clients dealing with respiratory issues, as it is suggested that the induction begin with breathing the color into the body. The chosen color then travels through the body as each body part is sequentially experienced similarly to the initial example. A third autogenic example is provided that consists of much the same experience as the color induction, instead using a ball or wave of light to move progressively through the body and invite relaxation. They noted that the light induction can also take an alternative form that radiates from the inner "self" gradually growing to fill the body. Their final induction example breaks off from the autogenic family and is a Progressive Muscle Relaxation (PMR). In PMR, the guide offers more direct instruction, which is suggested for clients with trouble focusing independently or who have difficulties with self-directing elements of experience, as well as for clients with a high level of energy. This method progressively walks through each part of the body as the guide instructs the listener in a consistently timed tightening and release of muscles.

The remaining literature regarding inductions and M&I assumes intuitive application of specific induction practices based on the general relaxation goal. Intuitive application occurs when selecting music programs for M&I as well; however, there is a comparable wealth of literature that relates to the conversation about what music choices might be appropriate for different M&I experiences. Inductions are often independent techniques that occur prior to the music, but still integrate into the music experience; therefore, it is somewhat surprising that there has not been more structured discussion about the most useful inductions for the M&I procedures. Since pre-existing literature already effectively hosts a discussion of the role of types of music in M&I, this study seeks to invite inductions into the conversation as an integral, non-musical element of M&I experience. M&I exists within an intersection of professional practices, so it is important for all affected practices to critically consider this

technical element of therapeutic procedure; however, music therapists should be particularly invested in this topic given their widespread use of receptive listening procedures that utilize induction techniques (Grocke & Wigram, 2007).

Yoga Practice Research

The modern concept of yoga often invokes thoughts of stretches and bodily contortions. The series of physical postures and movements used in yoga practice are formally called *asana* and they came into existence as physical expression of larger philosophical beliefs. For the purposes of this study, the term *yoga* will refer only to a series of bodily postures and movements from the asana or physical practice of yoga. The use of the term yoga in this narrower context is not meant to disrespect the practice's culture of origin, but rather to acknowledge the boundaries of its role within this study.

Yoga has gained notoriety for promoting beneficial emotional and physical changes. Research has demonstrated that yoga reduces perceived stress while improving a sense of well-being, impacts physiological systems, and improves sympathetic and parasympathetic nervous system functioning (Khalsa, 2004; Tripathi, Kumari, & Ganpat, 2018). Within yoga research there is room for a wide degree of difference between experimental parameters since there are many variations in yoga practice, which makes comparison between studies difficult. However, there is some evidence to support comparisons among different yoga formats in the findings of Cowen and Adams (2007), who compared the use of three different yoga formats and found they all resulted in similar final decreases in HR, though the longer-lasting, physically intensive format did demonstrate a larger rise in HR.

Surya namaskara, or sun salutation, is a specific sub-series of postures that begins ashtanga yoga, and it is easily recognized as the opening sequence of many yoga practices. Ashtanga yoga is a larger framework of defined postures and movements that outlines an overall total yoga practice, while surya namaskara is a defined sub-set of movements meant to reflect the themes of the larger practice; surya namaskara is also meant to awaken the body in a flow of movement guided by breath (Swenson,

2013). Relatively little research into the practice of surya namaskara alone was found, as it is often examined when involved in a larger yoga practice including other movement sequences, though one study by Gnanalatha (2007) found that practicing surya namaskara in exclusion did not push HR readings beyond typical limits and improved participants' reported sense of well-being. Surya namaskara is a relatively uncomplicated series of movements that does not require a substantial physical requirement of participants.

A much larger body of research exists examining the specific effects of savasana, or corpse pose, referred to as such because it involves lying still as a corpse. Typically the final experience of a yoga practice, this is often initiated through a quick sequence of PMR-like bodily tensing and relaxing and requires the practitioner to then lie in a supine position and maintain stillness for an extended duration while encouraging the body's musculature to completely relax. During this, the participant is meant to encourage a stillness of mind that mirrors the stillness of the posture (Swenson, 2013). Research has demonstrated the potential of savasana to reduce blood pressure, pulse rate, and respiration, as well as reduce perceived stress (Bera, Gore, & Oak, 1998; Gnanalatha, 2007; Santaella et al., 2014). Savasana by its nature is markedly similar to simply lying in a supine position, differing mainly in entry experience and intention, and as such has been compared to lying and sitting in stillness in a number of studies. Findings are somewhat difficult to compare because there has also been considerable variation in the different independent variables relating to the resting position used for comparison against savasana. Bera, Gore, and Oak (1998), Sharma, Mahajan, and Sharma (2007) and Santaella et al. (2014) found more significant stress reduction in their participants engaging in savasana compared to lying in a supine or sitting positions. Subramanya and Telles (2009) found savasana to reduce stress in their participants, but observed a more significant reduction in participants exposed to "cyclic meditation" or periodic shorter resting meditations interspersed throughout activity as opposed to the longer duration savasana, which closes the experience. Sharma et al. (2007) also noted a more significant decrease in

stress response in participants with training in savasana, which may suggest that a familiarity with the pose offers a more potent reducing force or inoculant for stress-related conditions.

Overall, yoga research suggests that it has the potential to reduce mental and physiological stress conditions, ultimately inducing a relaxation response capable of reducing cognitive and somatic arousal (Khalsa, 2004; Tripathi, Kumari, & Ganpat, 2018). Khalsa (2004) noted that it supports autonomic system functioning toward homeostasis without feelings of drowsiness or the need for sleep. This aligns with findings by Vaitl et al. (2005), who reported forms of yoga capable of inducing NOS. Also worthy of note is a finding by Tripathi, Kumari, and Ganpat (2018) that yoga has the potential to enhance emotional sensitivity. Given the nature of the reported potential for yoga to induce change in metabolic readings and subjective experiences of stress and consciousness, it becomes a reasonable prospect that elements of yoga may function similarly to the previously outlined induction techniques currently applied to M&I procedures.

Current Research into Inductions and Yoga used with M&I

Very little research has occurred examining the role and function of inductions in M&I, or the use of yoga in combination with M&I, and the few existing findings are largely dated. There is a fairly rich body that examines the experiences of music choices, imagery, clinician influence, and interpretation, but virtually none that inspects the role and function of inductions (Grocke, 2002; McKinney, Bruscia, & Grocke, 2002). A single study by Band, Quilter, and Miller (2001) was found that used a variety of measures to evaluate and compare a structured and unstructured induction as well as different musical styles to accompany the M&I; no significant difference was found between the structured and unstructured induction. The researcher found only two published articles examining the integration of yoga or movement into M&I practice. Lusk (1995) wrote an article that discussed the potential for yoga to induce relaxation and suggested M&I experiences as another possible intervention for achieving the same state of relaxation, but this was based on anecdotal experience and application.

Pickett (1994) published an article offering various movement and sensation-based experiences for M&I. Tapping into expressive elements of posture, movement, and sensation, she provided examples from her practice where clients utilized movement to express and interact with their personal experience. The movements were drawn from feelings based internally or externally and offered an opportunity for improvisation within a more structured experience meant to foster physical engagement and free expression. Pickett's outlined movement and sensation processes are meant to be engaged throughout the M&I experience rather than prior to the music as an induction would.

Carlsson (2001) discussed a potential relationship between yoga and M&I, through the role of an energetic force called *kundalini* outlined in some yogic philosophies. This philosophical comparison does suggest that the two practices harbor potential to engage similar internal energetic forces, but only uses this point as a lens from which to view and discuss M&I, rather than a potential for entwining two procedural modalities. Jovanov (2011) found areas of overlapping potential between yogic meditation and musical entrainment as means of engaging NOS, though this was among a larger variety of surveyed influences that all demonstrated similar potential. Goodman (1986) investigated the potential of different religious postural conditions as means of engaging NOS, and though none of the tested postures had their origin in yoga, there were mechanical similarities to certain body positions and movements used in yoga. Davidson (1976) acknowledged the potential of music and movement to engage NOS, noting particularly the role of ecstatic dance. All the previously described literature examines the use of yoga and/or movement in relation to the music-listening portion of the actual M&I experience, meaning the role of the induction is never discussed in any of this literature. None of this offers a concrete background for integrating yoga and M&I, but it does offer an amount of research demonstrating parallel potentials. The lack of induction-focused literature offers a unique opportunity to investigate current native M&I induction methods, while also exploring the integration of yoga-based practices within a M&I setting.

Purpose of Current Study

The purpose of this study was to examine whether a guided muscle relaxation (GMR) and yoga-based induction provided a comparable physiological and cognitive experience for participants who were about to engage in a brief, structured M&I experience as evidenced through a measurement of heart rate and participant narratives at the conclusion of the experience. The pre-imagery induction experiences served to ready participants for the brief M&I experience. This research will contribute to the body of literature evaluating the efficacy of current induction practices as well as investigate the potential for the use of yoga as an alternative to more commonly practiced inductions used within M&I.

The qualitative and quantitative data collected for this study addressed the following questions and the data were mixed using a convergent parallel mixed methods design.

Quantitative Questions

1. *Are there any observable changes in resting heart rate over time between inductions and M&I? If so, what is the nature of those changes?*
2. *Will there be measurable similarities and/or differences between changes in heart rate readings for the yoga induction and GMR induction group?*

Qualitative Questions

3. *What themes will arise from personal narratives of experience for both induction groups?*
4. *What personal narratives (if any) offer points for comparison or differentiation between the experiences of the two induction groups?*

Mixed Methods Question

5. *Will participant narratives align with the quantitative data? If so, how? If not, what were the discrepancies?*

The null hypotheses for this study were as follows: **H_O:** there would be no significant difference between heart rate readings over time; there would be no significant difference between induction groups when comparing heart rate readings over time; there would be no significant difference between induction groups when comparing total heart rate readings.

CHAPTER 3 – Methodology

Participants

A total of 62 participants (*n* = 62) were enrolled in the study. Participants were recruited from a convenience sample from a mid-sized university campus and the surrounding community in rural southwestern Virginia.

Participants were consented to participate (see Appendix A) and informed of the experimental protocol and the general purpose of the research study before random assignment by envelope method. Participation in the study required participants to be between the ages of 18 and 65, capable of giving their own consent, possess no significant hearing impairments, and be able to engage in up to 10 minutes of moderately strenuous activity, including stooping, bending, and lowering the body to the floor. These requirements reduced the potential for variance in the listening component of the M&I experience and ensured that participants could engage in the minimal physical requirements of yoga in a way that was safe for them. Previous experience with M&I and/or yoga was not a factor in recruiting volunteers nor a condition for group assignment. Since M&I services are open to nearly the entire population, a diverse cross-section of the general public was sought for this study in order to represent potential consumers of M&I services.

Figure 1 displays the progression of participants through the research design and aligns with best practices for reporting parallel randomized trials of two groups as outlined by Moher et al. (2010) for the Consolidated Standards of Reporting Trials (CONSORT).

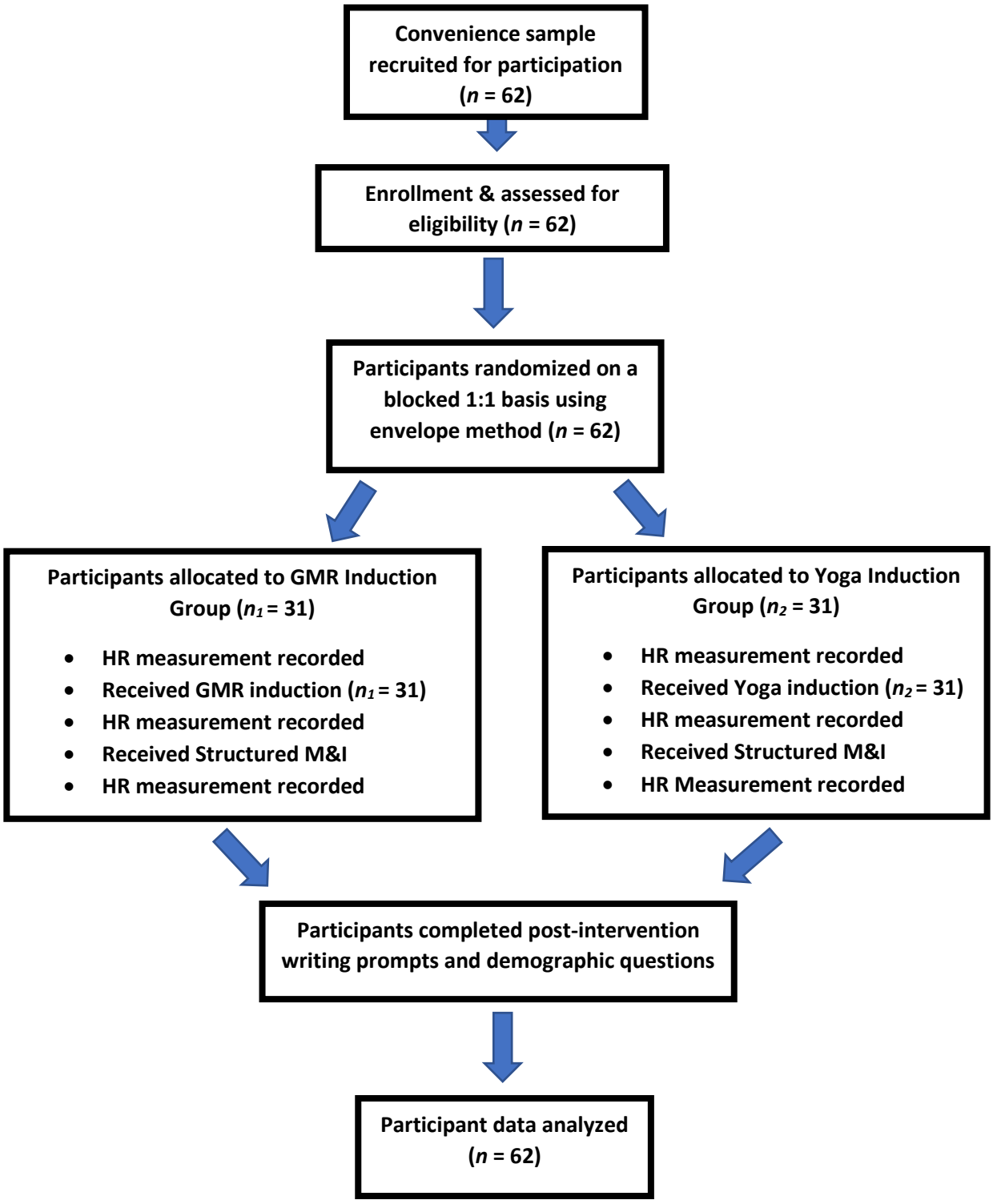

Figure 1. CONSORT Flow Diagram

Design

This study was a convergent parallel mixed methods experimental design in which both quantitative data and qualitative data were collected independently from each other during the same experimental phase, analyzed independently, and integrated together during interpretation of the findings (Creswell & Clark, 2011). The mixed method design allowed for observation of objective measurements through physiological conditions in the form of average HR, and investigation of subjective evaluation of perceived experience in the form of qualitative narratives. Quantitative data were recorded at three separate times throughout the experiment, and qualitative data were collected at the end of the experimental procedure.

Selection of Study Parameters

Due to the complex and subjective nature of measuring and classifying induction and M&I experiences, the researcher developed this study utilizing mixed methods data collection as a means of establishing points of comparison for two types of induction based on empirical and phenomenological observations. Hunt (2017) developed a study that utilized a similar combined approach to examine experiences within M&I, effectively combining neurological EEG data and phenomenological experiential reports into a "neurophenomenological" model.

Bio-metric measurements act effectively as a means of comparison for objective observation of quantitative measurement and changes. A variety of bio-metric measures have been used to evaluate individuals' experiences in deeply relaxed states and NOS. Resting HR, galvanic skin response, and certain brain wave readings have been identified in M&I and music therapy literature as parameters for measuring biometric elements of experiences (Hunt, 2017; Miller, 2011). This aligns with a wide body of meditation and NOS research and reviews that have utilized resting HR, HR variability, and galvanic skin response as parameters for evaluating experimental results (Davidson, 1976; Jovanov, Cvetkovich, & Kosic, 2011; Sudsuang, Chentanez, & Veluvan, 1991; Vaitl et al., 2005). Though brain wave scans,

galvanic skin responses, and HR variability all possess a higher degree of sensitivity in measuring physiological responses, they all require technological resources that can prove difficult to access. Each of these methods also requires diagnostic tools and equipment that can be more cumbersome and difficult for participants to ignore, resulting in a potential disturbance of the participant experience. HR readings are the least sensitive measure available, but also the most accessible and non-intrusive to work with (Jovanov et al., 2011). Consequently, average resting HR was used as a means of utilizing available resources and minimizing use of intrusive/distracting equipment during study procedures.

Very few evaluative measures exist for measuring the efficacy of inductions in M&I experiences. Bruscia (2000) developed the Guided Imagery and Music Responsiveness Scale, but its application by nature places the responsibility for evaluation on the guide and requires experiential dynamics that require a specifically BMGIM approach to practice, and thus do not apply to other M&I experiential procedures. In the validity and reliability testing of Bruscia's scale, Meadows (2000) came across only one other pre-existing measure, the Creative Imagination Scale as a Measure of Hypnotic Responsiveness by Wilson and Barber (1978). This scale evaluates measures equivocal to BMGIM inductions and has a self-reported measure for the level of induced relaxation, but otherwise consists of suggestibility measures that seek to evaluate the susceptibility of the listener to suggestion and influence from the guide. McKinnney, Bruscia, andGrocke (2002), and Studerus, Gamma, and Vollenweider (2010) reviewed studies that utilized a variety of measures relating to evaluating M&I and NOS, but each required elements of free imaging that would extend beyond the M&I training of the student researcher (SR) to administer and still not address the element of inductions. Band et al. (2001) utilized the Tellegen Absorption Scale (Tellegen & Atkinson, 1974) in their study, which may offer a means of evaluating depth of immersion via induction experience, but would also require modification for the purposes of this study. Rather than seek to find scalar measurements of ineffable experiences, the SR determined that it was imperative to provide participants with a chance to engage in an

opportunity for free self-disclosure, thereby accounting for a case-by-case presentation of individual experiences, while allowing for analysis of the content for themes and trends or discrepancies. Self-perception of the experience is an invaluable metric to have, since perception has been observed to affect the efficacy of relaxation and meditation practices (Cahn & Polich, 2006). The point is well put by Davidson: "[P]ainful though the reliance on subjective reports is to the scientist for whom all data must be 'objective,'… it cannot be avoided in any consideration of conscious states" (1976, p. 349).

In order to observe the interaction between the induction and the M&I, evaluation of both experiences needed to occur to allow for possible signs of variation to be observed. However, comparison of experience required minimizing differences in experiential variables, and it has been pointed out that M&I is typically a distinctly subjective experience. There fortunately exists a particular M&I procedure called *structured music and imagery,* which inherently attempts to limit the different unpredictable variables of imagery experience.

Born out of work by Moe, Roesen, and Rabin (2000), structured music and imagery has the guide provide a pre-defined imagery experience (e.g., sitting in your childhood backyard or walking through a meadow) that is spoken to the listener as the music plays. The experience may be entirely described or offer moments for independent experience within the described framework, depending on the needs of the listener. Utilizing a structured music and imagery experience that relies on a fixed imagery script ensures a baseline element of the imagery experience as grounds for comparison, while narrative description of the experience outlines any similarities or variations from the perspective of the listener.

In selecting induction variables, the basic autogenic induction outlined by Grocke and Wigram (2007) wherein the guide verbally talks the client through relaxation of the body, one body part at a time, offered a simple and replicable technique with no significant contraindications. For the purposes of this paper, it will be referred to as a guided muscle relaxation (GMR), acknowledging that it guides the

listener through an experience of relaxing the muscles, but does not definitively outline how to relax. GMR filled the role of a typical structured verbal-relaxation induction that can be used with any number of M&I procedures.

Since there is no pre-existing example of a yoga-based M&I induction, this induction had to be constructed for the purposes of this experiment. The overarching qualities of an induction meant that it had to be a relatively brief intervention designed to precede a M&I experience and induce relaxation, and so any yoga-based induction had to reflect those core qualities. To keep the induction brief, it had to be shorter than an entire yoga practice, which would require a significant time commitment. Surya namaskara (sun salutation) is the first sequence of movements in a yoga practice, and as such it effectively takes the body from a state of inaction to a state of activity. Swenson (2012) promoted the idea that surya namaskara represents the spirit of the larger practice, a small representation of the larger whole. In the Ashtanga yoga practice, surya namaskara is repeated multiple times, increasing activity level with repetition. This offers an effective cycle of active yoga-based movement that is easily repeatable and accessible, and limited to a relatively short duration. However, this only serves to activate rather than relax participants, resulting in the need for savasana (corpse pose). Savasana naturally ends yoga practices and is intended to enhance relaxation and decrease self-occupation, mirroring the decompressing elements sought in M&I inductions. By creating a yoga-based induction comprised of surya namaskara and savasana, an experience was created that represented core movement themes of yoga while trying to first activate, then relax the body and mind in a brief time period. This experience was easily administered and replicable, allowing it to serve as an appropriate experimental induction.

Materials

A Zacurate brand model 430-DL exercise-physiology grade finger pulse oximeter was used to measure resting heart rates. The SR provided a yoga mat for participants to lie on and to use for yoga

postures. Odorless disinfectant wipes were used to sanitize the oximeter and yoga mat surface between participants. A battery-operated Bluetooth speaker was connected to an MP3 player to provide the music for the M&I experience. A clipboard and writing utensil were provided for completing the writing prompts and demographic questions after the experiment.

The song used for the M&I experience was the track “Sigma” by Agnew and Løvland (1995) (see Figure 2 for an option to listen to this song through a streaming music service). This song was selected from a M&I training provided by a BMGIM fellow and training for the Atlantis Institute for Consciousness & Music (Borling, J. Personal communication, October 21, 2016). This song was indicated as harmonically stable, providing a musical experience that would support listeners over a brief experience rather than seek to actively provoke. Due to the brief nature of the M&I experience and the level of training of the SR, provocative music was avoided so as not to evoke strong emotional responses that could not be resolved within the scope of the study procedure. Through the provision of a song identified as “stable,” the SR took great precaution to provide a safe and controlled experience for participants.

The writing prompts and demographics questions used for this experiment were generated by the SR (see Appendix B). The purpose was to collect general demographic information about participants, as well as collect participant narratives for qualitative evaluation.

Figure 2. Spotify Song Code - To listen to the song used in the M&I experience in this study, open the music streaming program Spotify on a smartphone, select "search," press the camera icon, and scan this picture (Agnew & Løvland, 1995).

Procedure

Participants were recruited through e-mails, flyers, and research recruitment software. E-mail invitations were forwarded to students and faculty through academic program directors (see Appendix C). Flyers were posted in the community inviting participants to contact the SR for participation information (see Appendix D). Participants were also recruited through postings on the SONA software system (see Appendix E), a research recruitment program where students enroll for approved research studies in exchange for fulfilling academic course requirements. Participants did not receive compensation for participating, except for SONA volunteers, who received academic credits redeemable with their respective professors through the SONA system.

Participants met individually, one time, with the SR, a music therapy graduate student, for a 30-minute session, in a non-soundproof private research lab room with dimmable lights on the university campus in the behavioral sciences building. The SR reviewed the consent form (see Appendix A) with participants outlining the experimental procedures. Participants selected a piece of paper from an envelope randomly assigning them to either the GMR or the yoga induction group (random assignment was on a blocked 1:1 basis).

Participants assigned to the GMR induction were invited to take off their shoes or any other articles of clothing that might inhibit feeling physically comfortable while lying down. The SR recorded the average HR reading from a finger pulse oximeter applied to the participant's ring finger (all HR readings in this study were taken from the average resting HR observed over 30 seconds); the oximeter remained on the participant's hand for the remainder of the experimental protocol. The SR instructed the participant to lie on a provided yoga mat in a part of the room where the lights had been dimmed to one-quarter of their intensity. The SR then recited a scripted GMR experience (see Appendix F). After completing the GMR script, the SR recorded a second average HR reading.

Participants who were assigned to the yoga induction were invited to take off their shoes or any other articles of clothing that might inhibit their feeling physically comfortable while moving and lying down. The SR recorded the average HR reading from a finger pulse oximeter applied to the participant's ring finger; the oximeter was then taken off the participant's hand to avoid interfering with the yoga movements. All participants were verbally instructed through the yoga posture series by the SR (see Appendix G for the verbal script). The SR also offered participants the option of the SR demonstrating the yoga postures during instruction to provide additional visual reference. The yoga series consisted of two sets of moving yoga postures, surya namaskara A (see Figure 3) repeated twice, and surya namaskara B (see Figure 4) repeated twice. This was followed by the SR re-applying the finger pulse oximeter to the participant's hand before proceeding into the resting yoga posture, savasana (see Figure 5), which was maintained for 3 minutes. After the completion of savasana, the SR recorded a second average HR reading.

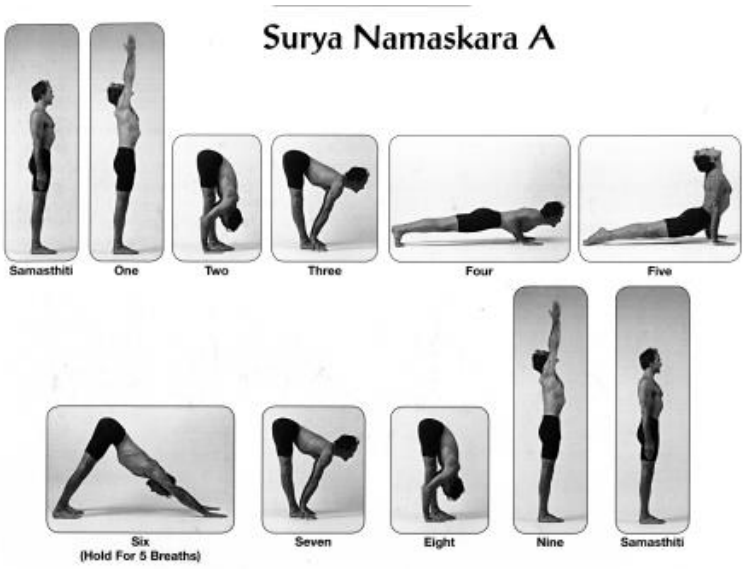

Figure 3. Surya Namaskara A – Sun Salutation A *(Swenson, 2013)*

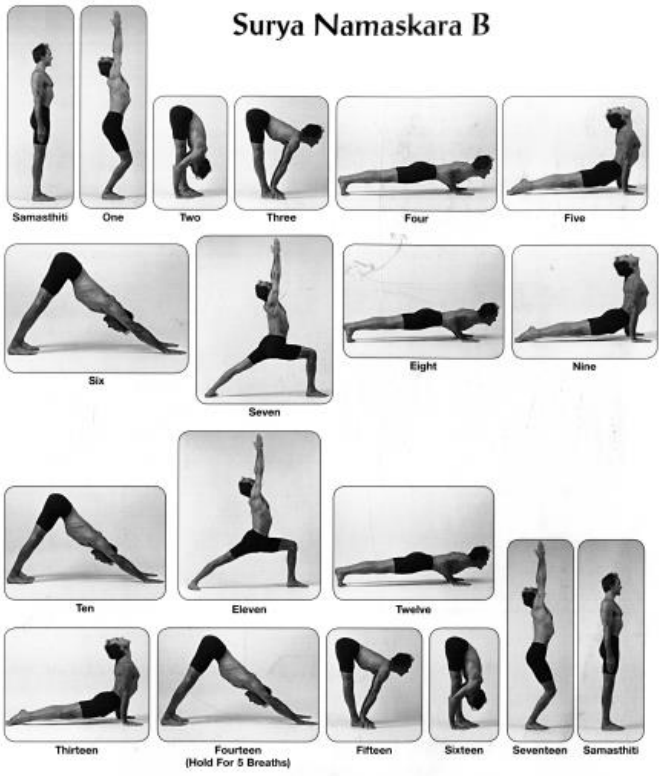

Figure 4. Surya Namaskara B – Sun Salutation B *(Swenson, 2013)*

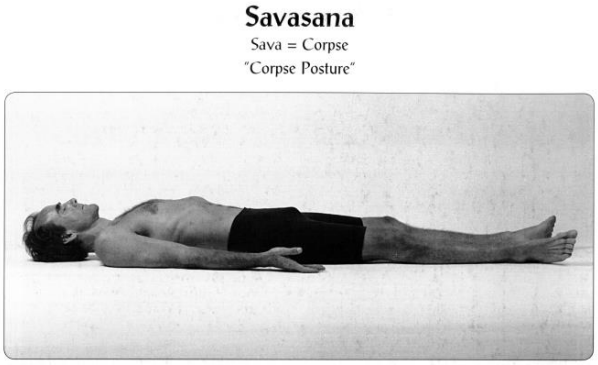

Figure 5. Savasana – Corpse Pose *(Swenson, 2013)*

At the conclusion of either the GMR or yoga induction, both sets of participants were given an identical music and imagery experience. The SR used an MP3 player and wireless speaker at half volume to play the pre-recorded song "Sigma" by Agnew and Løvland (1995) from the album "Secret Garden," while reciting a pre-constructed script for a structured music and imagery experience (see Appendix H). After the conclusion of the M&I, the SR recorded a third and final average HR reading. The SR then asked participants to complete written narratives from provided prompts related to their experience as well as to provide demographic information (see Appendix B). Writing prompts were offered prior to demographic questions to allow for immediate and reflexive responses rather than disconnecting the participants' experience by asking demographic questions first. In order to avoid perspective bias, prompts were also sequentially ordered to inquire about induction and M&I experiences independently before inquiring about possible interactions. After completing the prompts and questions, the participants were offered a sheet with contact information for local counseling services and a M&I practice (see Appendix I) in case they desired verbal processing of their imagery experience; this was due to the potential for M&I to stir up deep emotional responses from unexpected source experiences, and thus provided ethical support structures for clients that might experience unforeseen and/or significant emotional responses.

Handling of Data

Participant consent forms were stored in the secured office of the faculty mentor. Participant narratives, demographic information, and HR readings were recorded into and stored electronically on a password protected computer. Quantitative data were processed utilizing the Statistical Package for Social Sciences software to perform a 3 x 2 mixed model repeated measures ANOVA, as well as follow-up paired t-tests. Qualitative data were coded for thematic content as outlined in the results sections.

Ethical Considerations

Structured music and imagery was selected as the M&I procedure for this practice because evidence suggested that it is less psychologically intensive than forms of imagery that involve free-association by the participant or in which the participant actively engages in a conversation with the guide (Bruscia, 2002; Moe, Roesen, & Raben, 2000). The yoga postures utilized in this study were selected with the assistance of a certified yoga instructor and the script was written with adaptation suggestions to accommodate each participant's physical ability and a potential lack of pre-existing yoga experience. The song selected for the M&I was chosen for its harmonic stability, which reduced the potential for cognitive or emotional provocation and improved the likelihood of positive association to musical content (Grocke & Wigram, 2007; Muller, 2014). As was mentioned previously, contact information for local counseling services and a M&I practice was provided (Appendix I) as a means of addressing and processing any unexpected emotional responses prompted by the M&I experience.

CHAPTER 4 – Results

Demographic Information

There was a total of 62 participants (n = 62) whose age ranged from 18-50 years old. Sixty-two participants (n = 62) were assigned to either the GMR or yoga induction groups with an equal split between the two groups (n_1 = 31; n_2 = 31) due to the 1:1 blocked allocation. Sixty-three percent of the total participant pool was between the ages of 18-20. The GMR group had a higher percentage of 18-20-year-old participants (71%), while the yoga induction group had fewer 18-20-year-old participants (55%). The total participant pool was 69% female and 31% male. A similar gender distribution was mirrored in the induction groups. The GMR group consisted of 32% males and the yoga group had 29% males. All participants had completed at least some undergraduate-level education. First-year college students comprised the largest total participant pool at 32%, with a similar distribution in both induction groups. Detailed demographic information of the participants is presented in Tables 1, 2, and 3.

Table 1 - Participant Age

Participant Age						
Years Old	**Combined**	***n*=62**	**GMR**	***n_1*=31**	**Yoga**	***n_2*=31**
	Participants	**Percent**	**Participants**	**Percent**	**Participants**	**Percent**
18-20	39	63%	22	71%	17	55%
21-30	16	26%	6	20%	10	33%
31-40	4	6%	2	6%	2	6%
41-50	3	5%	1	3%	2	6%

Table 2 - Participant Gender

Participant Gender						
	Combined	***n*=62**	**GMR**	***n_1*=31**	**Yoga**	***n_2*=31**
	Participants	**Percent**	**Participants**	**Percent**	**Participants**	**Percent**
Male	19	31%	10	32%	9	29%
Female	43	69%	21	68%	22	71%

Table 3 - Participant Education

Participant Education						
	Combined	***n*=62**	**GMR**	***n_1*=31**	**Yoga**	***n_2*=31**
	Participants	**Percent**	**Participants**	**Percent**	**Participants**	**Percent**
Some Undergrad in years .05	20	32%	11	35%	9	29%
Some Undergrad in years 1.5	10	16%	7	23%	3	10%
Some Undergrad in years 2.5	10	16%	4	13%	6	19%
Some Undergrad in years 3.5	11	18%	5	16%	6	19%
Some Undergrad in years 4.5	2	3%	1	3%	1	3%
Some Master's Education	3	5%	1	3%	2	7%
Master's Degree	6	10%	2	7%	4	13%

Quantitative Findings

Initial findings were calculated using a 3 x 2 repeated-measures ANOVA. Average heart rate readings from the GMR participants (n_1 = 31) and yoga participants (n_2 = 31) at the three stages of the experiment are displayed in Table 4 and Figure 6.

Table 4 – Mean Resting HR by Induction Group

	Pre-Induction	Post-Induction/ Pre-Imagery	Post-Imagery
GMR	M = 78.45	M = 71.19	M = 69.45
	SD = 13.64	SD = 10.9	SD = 10.61
Yoga	M = 82.74	M = 73.29	M = 70.97
	SD = 14.79	SD = 15.09	SD = 14.89

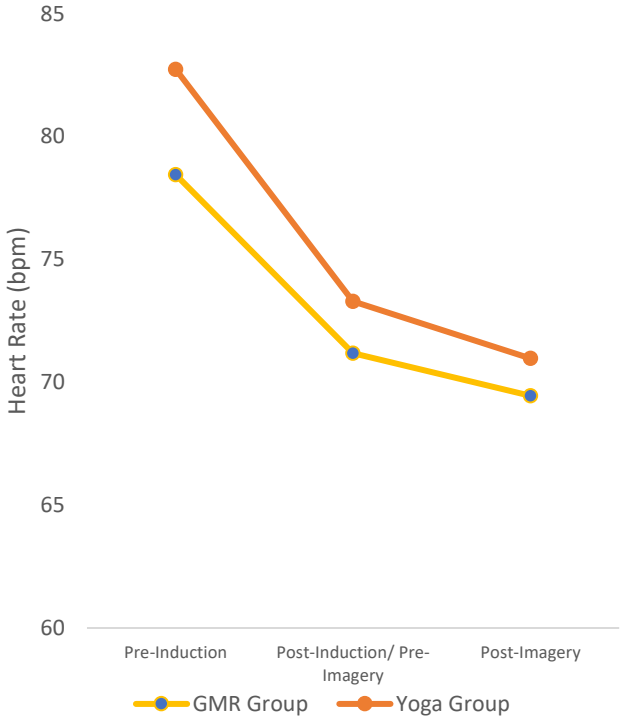

Figure 6. Mean Resting Heart Rate Over Time by Induction Group

ANOVA results between and within subject variables are displayed in Table 5. At a confidence level of .05, there was no significant difference between the induction groups, or within the induction group x HR interaction over time. There was, however, a significant difference found in the change in HR over time, supported by a substantially large effect size of 0.52.

Table 5 - 3x2 Mixed Repeated Measure ANOVA for HR Effect x Type of Induction

	F	*df*	*p*	*Eta²*
Within Subject				
HR x Induction	1.81	2	0.296	0.01
HR	66.89	2	.000*	0.52
error		120		
Between-subject				
Induction	0.66	1	0.419	0.01
error		60		
*Significance at .05	Effect size:	small= .01	medium = .06	large = .14

Since there were three phases of measurement, paired t-tests were used to compare the interactions between the different HR timings. As shown in Table 6, a significant change was observed at the .05 level between all HR measurements, with larger effect sizes observed in the change in HR between Pre-Induction to Post-Induction and Pre-Induction to Post-Imagery.

Table 6 - Paired t-tests for All Participants

Combined	**M**	**SD**	***t***	***df***	***p***	**Cohen's *d***
Pre-Induction to Post-induction/Pre-Imagery	8.35	7.95	8.274	61	.000*	1.05
Post-Induction/ Pre-Imagery to Post-Imagery	2.03	4.23	3.779	61	.000*	0.48
Pre-Induction to Post-Imagery	10.39	9.37	8.725	61	.000*	1.11
	*Significance at .05		Effect size:	small= .2	medium = .5	large = .8

Based on the quantitative findings, it is indicated to fail to reject the null hypothesis that there was no significant difference between induction groups, and reject the null hypothesis that there would be no significant difference between HR readings over time.

Qualitative Findings

Personal narratives from three writing prompts were evaluated for thematic content, by comparing the narratives from each induction prompt for recurring terms and language. The recurring content and concepts (called *secondary codes* moving forward) were distilled into larger themes that capture the essence of the participant experience. The larger themes or *primary codes* provided a framework for experiential narratives. Secondary and primary codes were derived from participant responses in an effort to include all narrative content. The themes of the primary codes were derived from the frequency and content of the secondary codes. Whenever possible, the secondary code content was derived from direct quotes from participant narratives, with the intent to reduce the potential for researcher bias in developing the codes. The larger primary themes and groupings appeared relevant across the three different prompts, resulting in four primary codes that emerged for all three narrative-prompts: physical/sensory experience, beyond words experience, beneficial experience, and unfavorable experience. Vaitl et al. (2005) suggested four parameters for examining and breaking down elements of experiences while engaged in a NOS: awareness span, activation span, self-awareness span, and sensory dynamics. Although the four primary codes have not directly mirrored the four elements outlined by Vaitl et al., when viewed with the secondary code content, these four domains of experience and their respective ranges are addressed within the coded material. This suggests that the categorized primary and secondary codes have approximated a wholistic translation of the reported experiences.

Prompt 1: What was your experience during the induction?

GMR Induction Group.

Within the GMR induction group, most participants reported experiences of deep relaxation and calm within a consistent expression of enjoyable experience. Several participants noted the utter stillness of the experience, and several participants acknowledged that they felt tension leave them. A number of participants reported an increase in body awareness, with two going so far as to state that they felt "at one" with their body. A few participants acknowledged the existence of tension despite the relaxation efforts of the GMR. A small number also reported experiences at the boundaries of normal cognitive functioning and that they appeared to be approaching a NOS.

- *"It felt as if I was out of control of my body in a relaxing way"*
- *"A sense of preparation and relaxation."*
- *"I felt very relaxed to the point that the floor was completely unnoticeable, and I felt like I could fall asleep."*
- *"It was a free experience, it allowed me to be aware of my senses and I also felt exhilarated."*
- *"My experience was relaxing; a way to destress and become more aware of the muscles in my body"*
- *"The relaxing of the muscles, however I was still a bit tense"*

Yoga Induction Group.

Within the yoga induction group, there was a wider diversity of experiences. A substantial number of participants reported an increased awareness of the body through the movement experiences, and several noted that they became aware of the changes in their own breathing or heart rate during the experience. A large number of participants expressed relaxation, calm, and enjoyment, as well as a smaller variety of positive experiences including a sense of familiarity with the yoga practice. A smaller, but still sizable number of participants reported difficulties posed by the induction

experience, acknowledging the exertion and tension inherent in the physically active postures. Nearly all the unfavorable experiences were reported alongside beneficial experiences, but two participants captured this in statements that directly contrasted the active and inactive polarity of the induction.

- *"I felt relaxed and more connected with my body"*
- *"I was familiar with the yoga poses used, so there was some safety in that. It felt good to stretch during savasana, I kept getting distracted by thoughts passing through my brain"*
- *"Very good, I needed to stretch before trying to relax. You cannot relax when you are tense."*
- *"Stretching of lower back, feeling of doing a light work-out"*
- *"The experience of performing repeated yoga postures was both relaxing and invigorating. After the first repetition I was able to turn off my mind and simply let the movement take over."*
- *"Calming though physically strenuous"*
- *"More mindful but also weak and out of breath"*

Coded participant responses for both induction groups are displayed in Table 7.

Table 7 - Qualitative Replies - Prompt 1: What was your experience during the induction?

	GMR Induction Prompt 1	**Occurrences**	**Yoga Induction Prompt 1**	**Occurrences**
Primary Code	***Physical/Sensory Experience***		***Physical/Sensory Experience***	
Secondary Codes	Increased Body Awareness	5	Increased Body Awareness through Movement	12
	At one with body	2		
	Out of control of body	1	Awareness of physiological response (Breathing, HR)	5
Primary Code	***Beyond Words Experience***		***Beyond Words Experience***	
Secondary Codes	Grounded	1	Turn off mind and let movement take over	1
	Near Sleep	1		
			Mindful	1
			Like younger self	1
Primary Code	***Beneficial Experience***		***Beneficial Experience***	
Secondary Codes	Relaxing	26	Relaxing	14
	Calm	10	Enjoyable	10
	Release of stress/tension	5	Calm	9
	Enjoyable	4	Increased ease	4
	Stillness	3	Familiarity	3
	Warm	1	Focused	1
	Free	1	Invigorated	1
			Relief	1
			Looser	1
Primary Code	***Unfavorable Experience***		***Unfavorable Experience***	
Secondary Codes	Tension	2	Distraction	5
	Stress	1	Difficult	4
			Tension	3
			Like a Workout	3
			Hot	1
			Rushed	1
		Primary Code	***Contrasted Experience***	
		Secondary Codes	Mindful but weak and out of breath	1
			Calming though physically strenuous	1

Prompt 2: What was your experience during the Music & Imagery?

GMR Induction Group.

Responses to the second prompt shared a very consistent message of positive experiences of calm and relaxation. The experience of the imagery was particularly captivating, as there were multiple occurrences of participants reporting experiences of feeling as if they really saw the images, or really felt like they had traveled to a different location. There was a consistent sensory element of experience as well, with several participants feeling tactile warmth, and a few more even suggesting they felt the touch of the described sun on their skin, as well as a participant who experienced a sense of tingling. Beyond these large trends of experience there was a small number of participants who were unable to fully immerse themselves into the experience, instead reporting distraction and tension.

- *"Felt like I was in a different place, not laying on a mat on the floor"*
- *"I honestly felt warmer once you talked about the sun's rays"*
- *"The music seemed to be more calming I really felt like I was becoming calmer. My body felt tingly as if I was floating"*
- *"Vivid imagery and sense of safety and peace"*
- *"Calming, with vivid imagery"*
- *"Extremely peaceful and relaxing, very calming. I was one with nature"*
- *"Very relaxed but I felt tired as well. The music was very soothing"*

Yoga Induction Group.

The yoga induction group offered a variety of responses to the second prompt. There was consistent expression of relaxation, peace, calm, and overall pleasant experience within the imagery, with some participants even reporting a restorative quality. A substantial number of participants noted the vividness of their experience, with reports of feelings of truly seeing the imagery and truly traveling to the described place. There were two unique sensory experiences reported in the tactile ("tingling")

and visual ("wash of colors") areas of experience. A number of participants reported broader, harder-to-describe experiences, feeling connections to the music, to the surroundings, and to the self. A subset of participants reported experiences that were less enjoyable, with a few participants acknowledging distraction and/or disconnection from the imagery experience.

- *"I felt at peace. The vivid imagery took me to a whole other place."*
- *"Listening to the music I felt comforted, safe, warm and at peace with my physically and imaginary settings."*
- *"I felt out of body and relaxed"*
- *"Very visualizing, I felt calm and stress free, very relaxed"*
- *"I was calm and felt safe. The music represented these feelings. There were no distractions and I could easily imagine the surroundings"*
- *"I liked it a lot, however I kept trying to create my own picture with the music instead"*

Coded participant responses for both induction groups are displayed in Table 8.

Table 8 – Qualitative Replies - Prompt 2: What was your experience during the M&I?

	GMR Induction Prompt 2	**Occurrences**	**Yoga Induction Prompt 2**	**Occurrences**
Primary Code	***Physical/Sensory Experience***		***Physical/Sensory Experience***	
Secondary Codes	Actively saw described imagery	5	Actively saw described imagery	8
	Felt the sun on skin	3	Tingling- "energy reverberated through body"	1
	Warm	3	Wash of colors behind eyelids	1
	Tingling	1		
	As if floating	1		
Primary Code	***Beyond Words Experience***		***Beyond Words Experience***	
Secondary Codes	Actively felt as if taken someplace else	3	Actively felt as if taken someplace else	4
	As if at-one with nature	1	Present/mindful	2
			Out of body	1
			Music represented feelings	1
			Reconnected with part of self	1
			At peace with surroundings	1
Primary Code	***Beneficial Experience***		***Beneficial Experience***	
Secondary Codes	Calm	14	Relaxed	14
	Relaxed	10	Peaceful	7
	Peaceful	8	Calm	7
	Enjoyable	3	Relieved of stress	5
	Soothing	2	Safe	4
	Safe	1	Good	3
			Enjoyed	2
			Rested	2
			Soothing	2
			Enjoyable	2
			Focused	2
Primary Code	***Unfavorable Experience***		***Unfavorable Experience***	
Secondary Codes	Tension	1	Distracted	2
	Distraction	1	Sad	1
			Tense	1
			Disliked Imagery	1
			Loud	1

Prompt 3: Did you perceive the induction impacted the M&I experience in anyway? If so, how? If not, why not?

GMR Induction Group.

There was a strong trend of participants expressing that the GMR induction helped or enabled them to engage in the M&I experience. The mechanics through which this was achieved were identified as increasing relaxation, calm, and focus, as well as directing awareness into the body as a means of channeling concentration. Many participants reported the induction as deepening their experience of the visual imagery, and this was further grounded by experiences where participants felt it deepened beyond the visual into the existential, immersing them in the experience and letting go of their current surroundings. A small number of participants reported that they felt the induction did not interact with the M&I experience, and one participant was unable to disengage from pre-existing stress.

- *"It gave me almost a head-start to relax so that when the music came on I could be 100% relaxed"*
- *"It prepared the body for the imagery experience. Took the relaxation to another level."*
- *"It gave the body a chance to fully slow down and be more receptive to the music & imagery"*
- *"I feel that being more in tune with myself and out of tune with the rest of the room made it easier to picture the images clearly."*
- *"I think the introduction impacted the imagery experience because it made me focus on what my body was feeling instead of thinking about random stresses. Overall, I think it helped me focus"*
- *"I think it did, I needed the tension to release from my body so that I could be one with the imagery described"*
- *"The induction made it so that I wasn't worried"*

- *"No it didn't"*

Yoga Induction Group.

A substantial number of participants reported that they felt the yoga induction helped or enabled them to engage in the M&I experience. This was achieved by increasing relaxation and focus and other supportive elements of the experience, as well as activating the body and bringing attention to the connection to the body and movement. The active movement phase of the yoga was reported to narrow the range of thoughts and allowed for reduced distraction and increased commitment to the immediate task. A number of participants expressed that the overall experience induced hard-to-describe experiences akin to NOS. The difficult elements of the yoga were noted as sources of stress and tension (physiological and psychological); however, this was often juxtaposed against a beneficial component of the experience. A small number of participants also reported that they did not perceive any interaction between the induction and M&I.

- *"I felt 'primed' – ready to soak up the M&I … moving through the Yoga poses helped me to diffuse energy and I felt I was able to fully relax"*
- *"I do think the induction brought me to focus more. It sharpened my awareness. I was engaged in the experience despite the fact that I had lots of internal thoughts"*
- *"After the exercise your heart rate is still up and tired. The imagery experience is like good meditation, allowing the person to work on the mind, heart, and breathing"*
- *"I feel like it allowed my muscles to be in a relaxation state equivalent to my mind. Allowing for full body imagery."*
- *"I believe it helped the body to relax and cue the mind into an altered state, i.e. moved away from the everyday."*
- *"The induction raised my heart rate and made me sweat a little. I feel as though I was even more calm during the music because there was such a contrast in the experience."*

- *"Before you kinda woke the muscles up, and then after you relaxed them"*
- *"No. During the induction I was only focused on the movement of my muscles. During the imagery I was only focused on my breathing. To me the only affect was that I noticed a gradual slowing of my heart rate and breathing."*

Coded participant responses for both induction groups are displayed in Table 9.

Table 9 – Qualitative Replies - Prompt 3: Did you perceive the induction impacted the M&I experience in anyway? If so, how? If not, why not?

	GMR Induction Prompt 3	**Occurrences**	**Yoga Induction Prompt 3**	**Occurrences**
Primary Code	***Physical/Sensory Experience***		***Physical/Sensory Experience***	
Secondary Codes	Actively saw described imagery	10	Connected with body	5
	Increased Body Awareness	7	Awareness of breathing	5
			Awareness of body through movement	3
			Actively saw described imagery	1
Primary Code	***Beyond Words Experience***		***Beyond Words Experience***	
Secondary Codes	Immersed in the imagery experience	4	Altered-State	3
	Forgot surroundings	3	Mindful/Present	3
	"Let myself go"	1	Like Meditation	2
	Grounded	1		
Primary Code	***Beneficial Experience***		***Beneficial Experience***	
Secondary Codes	Helped/Enabled	17	Helped/Enabled	18
	Relaxed	16	Relaxed	16
	Calmed	6	Focused	5
	Made Easier	6	Calmed	3
	Focused	5	Comforted	3
	Free	2	Peace	2
	Satisfying	2	Clear Headed	2
			Released tension	2
Primary Code	***Unfavorable Experience***		***Unfavorable Experience***	
Secondary Codes	Lack of impact	2	Tension	3
	Stressful thoughts	1	Lack of Impact	3
			Tired	2
			Stress response	1
			Startled	1

CHAPTER 5 – Discussion

Influence of Inductions

Based on quantitative findings, there was a significant change in heart rate between exposure to both types of inductions and to M&I. From pre-induction to post-induction, there was a consistent decline in mean HR for each induction group, supported by a large effect size and reasonably sized *n*. A similar significant decline was also observed from post-induction/pre-imagery to post-imagery, albeit with a moderate effect size. Due to the sequential ordering of the experience, the two changes in HR cannot be compared to one another; to do so would require a study to compare HR change after inductions only and M&I only. The consistent decline in average HR supports the inference that participants are entering a relaxed state after being exposed to both inductions. The decline in heart rate during the M&I experience indicates that M&I has the potential to immerse listeners into states of relaxation that approach NOS. The quantitative findings support that GMR, yoga, and M&I all consistently reduced physiological functioning as measured by HR.

The qualitative findings suggest that both GMR and yoga served to enable and assist preparing for M&I. Narratives from both induction groups showed that both induction experiences were perceived as aiding the listener to prepare for the M&I. It is worth noting that there was not a universal experience within the inductions, and there were dissenting participants from each induction group who did not perceive an influence by the induction on the M&I experience. Overall the evidence of the study suggests objectively and subjectively that both induction experiences served their intended purpose to induce a relaxed state and prepare for M&I for a majority of participants.

Comparison of GMR and Yoga

Within the quantitative findings, there was no significant difference found between the change in heart rate for either induction group. From the perspective of physiologic measurements, each induction behaved similarly in reducing the HR throughout the induction experience, and each was

followed by a M&I experience that resulted in a similar, lesser HR reduction. The latter information is important to note because it highlights that each induction resulted in similar physiological change throughout the M&I experience, promoting the inference that both inductions provided a similar physiological preparation for M&I.

The qualitative data offers a larger, more complex dataset for comparison. Using Vaitl et al.'s (2005) parameters, experiences bordering on NOS can be viewed through four dynamics: awareness, activation, self-awareness, and sensory dynamics. This framework is helpful for examining whether the narrative content was expressed similarly in reference to these frameworks.

In terms of the experience of each induction, both participant groups consistently expressed a feeling of preparation through relaxation, and an increased sense of body awareness; however, these effects seemed to be engaged through differing means, with the GMR induction inspiring elements of stillness and inactivity as focusing agents, while the yoga induction highlighted the function of movement and activity as a means of ultimately approaching relaxation. This highlighted the difference in activation for the two experiences, with yoga clearly resulting in an experience that utilized more arousal. Some elements of sensory experience were noted in both induction experiences, though yoga participants reported more awareness of their respiration and heart rate. Ultimately, in comparing the reports of the induction experiences, both achieved similar end states of relaxation, but GMR appeared to function as a reducing experience that slowly eliminated movement and energy, while yoga appeared to channel and expand the activity and energy, ultimately achieving an effective relaxation by offering a contrasting escalation prior to reverting to a relaxed state.

The bulk of the M&I experiences were expressed similarly from both induction groups with large numbers of participants experiencing positive, relaxing, and calming M&I. Each M&I group reported impacts on their self-awareness, though this was articulated in a wider variety of ways within the yoga group. Sensory experience was an interesting domain to compare within the two experiences, as there

were both similarities and differences. Both induction groups experienced vibrant visual imagery, and there was even a similar sensory report of "tingling" in each group. However, the GMR induction group reported a unique experience of feeling the imagery and described feeling the sun on their skin. This tactile experience was distinctly described multiple times, as were feelings of warmth. The GMR experience used a continuous focus on the parts of the body, which may have promoted a heightened sensitivity or awareness of sensory/tactile experience. There was also a larger number of unfavorable experiences reported in the yoga induction group's M&I experience. This may have been related to the agitating elements of the yoga experience that appeared to increase awareness and/or recognition of agitating events.

The narrative reports of perceived impacts were relatively similar. There was a consensus across inductions that both experiences helped prepare for the M&I, though there was a small number of individuals who did not report an impact. GMR induction responses offered more reports of immersion in the imagery location and visual imagery (one form of sensory experience), while yoga induction responses focused more on experiences relating to self-awareness and awareness of the body (another form of sensory experience), and experiences bordering on NOS. Yoga induction respondents also reported a larger number of unfavorable experiences, similar to reports in the second prompt. Once again, this may be related to the stimulating elements of physical exertion required by the movement phase of yoga, reflecting its more activating qualities. Though these trends are distinct to each induction, they are offered from this study only to acknowledge their existence in participant experiences as reported, rather than infer any decisive statements about either induction.

Overall, the quantitative and qualitative findings aligned to report the same finding that GMR and yoga were observed to have similar preparatory effects for M&I. Qualitative narratives provided a broader spectrum of experience that offered points of variation between the narratives of the two induction groups, but there were largely consistent similar reports of relaxing effects.

Limitations

This study was limited by a number of factors. Resting HR as the physiological measurement provides the least sensitive biometric measurement with any validity. Other measures including HR variation, which monitors the frequency of changes in resting HR, would have provided more accurate and in-depth readings to interpret.

The research space utilized for this study may have impacted findings as well. The room was located adjacent to public areas and consequently was subject to occasional sound pollution, which may have impacted responses to inductions and M&I.

The use of the SR's voice instead of a pre-recorded script may have been a factor that impacted the findings. Band, Quilter, and Miller's (2001) study used pre-recorded inductions to reduce variation; however, the use of live-script reading allowed the SR to tailor the pace of both inductions to the respiration rate of the participant, which may have improved the immersion effect.

Since the participants were briefed on the experimental parameters and purpose at the start of their participation, there may have been a priming effect that biased their responses to how the inductions impacted them. By informing participants of possible experiences as a result of participation, there may have been the potential to unintentionally sway participants to align with the procedural description provided by the SR, which may have manifested as an alignment with elements that were under review.

CHAPTER 6 – Conclusion

Implications for Practice & Research

The quantitative findings offer a few different take-away elements from this study. The physiological and narrative results offer grounds to begin exploring the integration of yoga into M&I. Given the base parameters and limitations of this study, there is a range of possible research and experimentation that could occur. Due to the limited existing research on inductions used in M&I, one of the goals of this study was to contribute to that body of literature by offering data from standard induction interventions as well as experimental ones, thus providing information for both new and pre-existing frontiers. The student researcher hopes this will prompt additional curiosity for examining the subtleties of the differences and similarities in how inductions function and provide overall impetus to the M&I community to critically evaluate and discuss the intentional application of inductions within the M&I method. This could lead to more induction modifications that will have an improved effect and provide additional formalized guidance for students and early professionals rather than the current model of induction education, which is more theoretical and intuitive.

This study may also provide grounds for a more detailed or improved replication/modification of study design that allows for more detailed measurements like HR variability. There is also the possibility of utilizing the Tellegen Absorption Scale (Tellegen & Atkinson, 1974), utilized by Band, Quilter, and Miller (2001), or a more recent iteration, the Modified Tellegen Absorption Scale (Jamieson, 2005), as an additional metric; however, either of these tools would require modification to either the experimental procedure or the scale's application since they are designed primarily for hypnotherapy assessment rather than M&I. There is the potential to have participants experience both types of induction and thus have a shared frame of reference for all results; however, this would require substantial modification to the design to account for learning effect and require a significant increase in time commitment for participants, which might result in a less robust sample size.

The qualitative findings offer further details that may enrich current induction practices within M&I. Within each type of induction there were themes that displayed uniquely to each group, suggesting that each induction may house unique abilities to influence different experiential domains. The GMR induction group demonstrated a fairly common trend of notably tactile sensory experience, and though this will require additional study to verify, it may indicate the potential to use an induction to increase one of the sensory domains of imagery experience. This could be useful when working with clients who image primarily through sensory systems, fitting into their natural tendencies, or may provide a means of encouraging tactile experience for clients who have difficulty accessing somatic elements of M&I.

Yoga provided a regular theme of discussion around contrast and energy. Multiple narratives described a positive experience of energy buildup and release through the yoga induction. This experience of effectively building and then releasing energy may be relevant to clients who have a hard time going into an immediate relaxation pose, as occurs with typical inductions like GMR. The difficulties and tensions posed by the requirements of the movements may act as a type of focusing agent, bringing attention away from other distractions. There were also several reports of experiencing a sense of familiarity within the yoga movements from participants who had experienced yoga before. For these listeners, there were descriptions of the repetitive movement acting to distill the static and energy of the conscious mind and allow it to slow down and enter a more mindful state. This could suggest a difference in experience between participants who had practiced yoga before and those who had not. For participants who had never experienced yoga, there was a learning requirement to engage in the different movements; even though it was guided, the participants had to cognitively learn how to coordinate the body through the movements in potentially unfamiliar sequences. This likely required more conscious processing and problem solving to meet the needs of the induction. Participants who had practiced yoga before had developed a familiarity and muscle memory related to the movements,

thereby requiring less cognitive engagement, thus entering a relaxed, mindful state with comparative speed and ease. This leads to the potential to investigate yoga specifically, a relative pandora's box of research possibilities. Sharma et al. (2007) found a difference in the stress-reducing effects of savasana when used without prior training versus with training. This supports studies taking prior experience into account, potentially highlighting whether there is any variation in the effects of the same induction on these different groups.

Though the yoga induction utilized in this study was methodically structured based on current induction practices, it is not an established technique and thus would potentially benefit from additional analysis, experimentation, and refinement. Investigating the use of savanna or surya namaskara exclusively is one possibility. There is also the potential to substitute a vast number of active poses in the place of surya namaskara, though this would potentially also affect the study design and participant eligibility based on the intensity of the selected movement sequence. Due to the similarities between PMR and the entry elements of savasana, there may be the potential to investigate the comparison and/or substitution of one for the other. Perhaps most exciting, and almost overwhelming, is the potential to investigate different yoga modalities, and even other disciplines that utilize movement/relaxation/sensory focus. This study utilized a framework based in the Ashtanga tradition of yoga; however, there exists a wide range of yoga forms, most possessing unique elements and strengths meant to be applied to different participant outcomes. This could mean, for example, that a yoga practice based on the goal of improving relaxation and flexibility results in a different induction experience and outcome than a yoga practice that focuses on strength and balance.

Ultimately, over the course of addressing the initial questions of this study, new questions were raised and new paths for investigation were uncovered. The initial findings imply that yoga is viable for use as an induction with M&I and that there are a variety of avenues that can be explored using both yoga and other induction-based research. It is the hope of this student researcher that this contributes

to a curiosity that leads to additional experimentation, discussion, and refinement of procedural and technical induction methods used in both M&I and other related receptive music experiences that utilize inductions.

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Appendix A – Consent Form

RADFORD UNIVERSITY
College of Visual and Performing Arts

Adult Informed Consent – Nonsurvey Research

Title of Research: Comparative use of Yoga and Guided Muscle Relaxation to Prepare for a Structured Music & Imagery Experience

Researcher(s): Dr. Patricia Winter, Director of Music Therapy, 1-540-831-6160;

Anthony Kaseoru M.S. Music Therapy Candidate

We invite you to take part in a research study that will investigate the use of yoga in combination with a brief music & imagery experience. If you choose to take part in the study you will be asked to experience either a guided muscle relaxation or a short series of yoga postures. For either experience we will measure the resting heart rate before and after. Once you have experienced one of these you will be asked to listen to a verbal description of relaxing imagery while listening to a song. Your heartrate will also be measured after this experience, and you will be asked to fill out a brief questionnaire.

This study has no more risk than you may find in daily life. Some risks to you may be muscle soreness and strain & momentary drowsiness; there are no other indicated risks.

If you decide to be in this study you may benefit from being a part of it. Some benefits to you may be: stretching and/or relaxing of muscles, and possible experiences of relaxation.

You can choose not to be in this study. If you decide to be in this study, you may choose not to answer certain questions or not to be involved in parts of this study. You may also choose to stop being in this study at any time without any penalty to you.

There are no costs to you for being in this study. There is no payment or compensation for you taking part in this study unless you register through Radford University's SONA system. The SONA system provides 1 credit for each 30 minutes of participation in a research study; the academic value of 1 credit is determined by Radford University professors who accept SONA credits. This study will take approximately 30 minutes and provide the opportunity to earn up to 1 credit within the SONA system.

If you decide to be in this study, what you tell us will be kept private unless required by law to disclose (examples of required legal disclosures could include the expressed intention to harm oneself or others). We will present the results of this study, but your name will not be linked in any way to what we present.

You should not be in the study if you have any health problems that would increase your risk of harm by taking part in this study. This includes any physical condition that would prevent you from engaging in up to 10 minutes of moderate exercise including repeated bending, kneeling, and lowering the body to the floor. You must be also be free of any significant hearing impairment to take part in this study. You should be between the ages of 18-65 to take part in this study.

If at any time you want to stop being in this study, you may leave the study without penalty or loss of benefits by contacting: Anthony Kaseoru or Dr. Patricia Winter.

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If you have questions now about this study, ask before you sign this form.

If you have any questions later, you may talk with Anthony Kaseoru or Dr. Patricia Winter.

If you have any injury related to being in this study, you should call: Radford Student Counseling Services, 1-540-831-5226, or Life in Balance Counseling Center, 1-540-381-6215.

This study was approved by the Radford University Committee for the Review of Human Subjects Research. If you have questions or concerns about your rights as a research subject or have complaints about this study, you should contact Dr. Laura J. Jacobsen, Interim Dean, College of Graduate Studies and Research, Radford University, ljacobsen@radford.edu, 1-540-831-5470.
Being in this study is your choice and choosing whether or not to take part in this study will not affect any current or future relationship with the researchers, the College of Visual & Performing Arts, or Radford University.

If all of your questions have been answered and you would like to take part in this study, then please sign below.

_____ _____

Date Signature

I/We have explained the study to the person signing above, have allowed an opportunity for questions, and have answered all of his/her questions. I/We believe that the subject understands this information.

_____ _____

Signature of Researcher(s) Date

Note: A signed copy of this form will be given to the subject for the subject's records.

Appendix B – Writing Prompts and Demographic Questions

Subject Number____

What was your experience during the induction?

What was your experience during the music?

Did you perceive that the induction impacted the imagery experience in any way? If so, how? It not, why not?

To which gender identity do you most identify?

- ☐ Male
- ☐ Female
- ☐ Transgender Male
- ☐ Transgender Female
- ☐ Non-binary/Non-conforming
- ☐ Prefer Not To Answer

Age:

- ☐ 18-20
- ☐ 21-25
- ☐ 26-30
- ☐ 31-35
- ☐ 36-40
- ☐ 41-45
- ☐ 46-50
- ☐ 51-55
- ☐ 56-60
- ☐ 61-65

Educational background (Include year in school if “Some Undergraduate”):

- ☐ Some Highschool
- ☐ Highschool Diploma/GED
- ☐ Some Undergraduate Education, _____ years
- ☐ Undergraduate Degree
- ☐ Some Master Education
- ☐ Master’s Degree
- ☐ Some Post Masters Education

Appendix C – Recruitment E-mail

You are invited to take part in a research study that will investigate the use of yoga in combination with a brief music & imagery experience. If you choose to take part in the study you will be asked to experience either a guided muscle relaxation or a short series of yoga postures. For either experience the student researcher will measure the resting heart rate before and after. Once you have experienced one of these you will be asked to listen to a verbal description of relaxing imagery while listening to a song. Your heartrate will also be measured after this experience, and you will be asked to fill out a brief questionnaire. The experience will take approximately 30 minutes to participate in and will take place in an available room in either CHBS or Porterfield Hall on Radford University based on scheduling. Participants should be able to engage in up to 10 minutes of moderate physical activity including repetitive bending, stooping, and lowering the body to the ground. Participants should also be between the age of 18-65 and possess no severe hearing impairments. Participation is confidential and there is no more risk involved in this study than those typically encountered in daily life. Participants may choose to stop participating in the study at any time. To schedule a time to participate or if you have any questions about this study please contact Anthony Kaseoru at akaseoru@radford.edu.

Anthony Kaseoru
Music Therapy, Department of Music
akaseoru@radford.edu

Appendix D – Recruitment Flyer

College of Visual and Performing Arts

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RESEARCH STUDY IN MUSIC, IMAGERY, AND YOGA

CONFIDENTIAL STUDY

MEET ONLY ONCE

COME EXPERIENCE A BRIEF, RELAXING MUSIC & IMAGERY EXPERIENCE

- ***PARTICIPATE IN A STUDY INVESTIGATING THE USE OF YOGA WITH MUSIC & IMAGERY***
- ***PARTICIPANTS MUST BE BETWEEN THE AGE OF 18-65, CAPABLE OF ENGAGING IN UP TO 10 MINUTES OF MODERATELY STRENUOUS PHYSICAL ACTIVITY, AND POSSESS NO SIGNIFICANT HEARING IMPAIRMENTS***
- ***SESSION LASTS THIRTY MINUTES, MEETING ON CAMPUS IN CHBS OR PORTERFIELD***
- ***WEAR LOOSE COMFORTABLE CLOTHING***
- *FOR MORE INFORMATION OR TO PARTICIPATE CONTACT:*

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Appendix E – Text for SONA Participant Recruitment Program

This research study will investigate the use of yoga in combination with a brief music & imagery experience. If you choose to take part in the study you will be asked to experience either a guided muscle relaxation or a short series of yoga postures. For either experience the student researcher will measure the resting heart rate before and after. Once you have experienced one of these you will be asked to listen to a verbal description of relaxing imagery while listening to a song. Your heartrate will also be measured after this experience, and you will be asked to fill out a brief questionnaire. The experience will take approximately 30 minutes to participate in and will take place in an available room in either CHBS or Porterfield Hall on Radford University based on scheduling. Participants should be able to engage in up to 10 minutes of moderate physical activity including repetitive bending, stooping, and lowering the body to the ground. Participants should also be between the age of 18-65 and possess no severe hearing impairments.

Appendix F – GMR Induction Script

"Lie back in a comfortable position. Invite the eyes to gently close or simply relax their gaze. Notice the breath, the rise and fall… in & out… in & out…

Feel the support of the ground beneath you. You may be aware of any other sounds in the room, or thoughts in the mind. Allow yourself to notice them and let them go while continuing to breath… in & out… in & out…

Begin to notice sensation in the body… focusing on the body one part at a time, starting by noticing the left foot. Feel whatever tension may be there and invite it to relax. Slowly allow this sensation to move through the left foot up the leg, acknowledging any tension and inviting relaxation. As this feeling rises through the leg, continue to breath … in & out… in & out…

Bring attention to the right foot. Experiencing and tension there and offer relaxation. Slowly move this feeling through the foot and up the right leg. The feeling rises while always breathing… in & out… in & out…

As the right leg completes its relaxation move to the left fingers & hand. Allow any parts of the body that feel they need to be moved to do so to relax and feel comfortable. In the left find any tension there an invite relaxation to take its place. Begin working this feeling through and up the left arm, as the body sinks comfortably into the floor, breathing… in & out… in & out…

When the left arm is complete move on to the right hand, noticing any tension there and offering relaxation in its place. Bring this feeling up and through the right arm, as the body remains grounded, accepting peace and stillness. Breathing … in & out… in & out…

As the right arm finishes relaxing, move to the muscles of the pelvis and hips, adjusting them as needed to help them relax and let go of any held tension. Gradually bring this feeling up the muscles back and along the spine. The body continues to slowly relax, continuing to breath… in & out… in & out…

Awareness rises up into the muscles of the shoulders and neck, taking as much time as is needed to feel any tension before letting go and bringing relaxation in its place. The body continues to sink into the floor, all the while breathing… in & out… in & out…

Rising up to the head, the last muscles of the face and scalp can be noticed. Any tension found there can be noticed and released and relaxation offered in its place. Lying there in full awareness of the body in this space, breathing in & out… in & out…"

****MEASURE HR****

"Invite calmness and experience the music and images that will follow."

Appendix G – Yoga Induction Script

"While following the directions through the following yoga postures only push the body as far as you are physically comfortable. If you begin to feel pain discontinue the action or decrease your engagement to a tolerable level. When you're ready step to the front of the mat."

Sun Salutation A 1

"While breathing in, raise the arms up toward the sky above the head, allowing them to meet in the middle. Exhale and bend at the waist, allowing the upper body and arms to fall loosely toward the feet and floor. Inhale and straighten the lower back while reaching the arms toward the feet. Exhale and bend at the waist relaxing the upper body again. Place the hands on the outsides of the feet crouch and step back into a plank, or held push-up. If holding the plank ever becomes too much bend the knees to lower to the floor. Exhale and lower the body to the floor. Inhale, push the hands into the floor and use the core muscles to raise and extend the head and upper chest toward ceiling into the cobra posture. Flip the feet so the soles are flat against the floor while keeping the hands grounded in front and lift the hips toward the sky into the downward dog posture. Continue to breathe in and out in this posture, allowing the heels to drop toward the mat, encouraging the spine to stay in a straight line as the hips lift toward the ceiling." [Hold posture for 3 breath cycles] "Allow the legs to lower into a crouch and step the feet forward toward the hands, exhaling into a relaxed forward bend. Inhale and straighten the back, exhale and release. Inhale and gradually straighten the spine while raising the arms overhead back into a standing position. Exhale and lower the arms to the side of the body."

Sun Salutation A 2

"Breathing in, raise the arms up toward the sky above the head, allowing them to meet in the middle. Exhale and bend at the waist, allowing the upper body and arms to fall loosely. Inhale and straighten the lower back while reaching toward the floor. Exhale and bend at the waist relaxing the

upper body again. Place the hands on the outsides of the feet crouch and step back into plank. Exhale and lower the body to the floor. Inhale, push the hands into the floor and raise and extend the head and chest into cobra. Flip the feet against the floor, keep the hands grounded and lift the hips toward the sky into downward dog. Continue to breathe in and out in this posture, allowing the heels to drop toward the mat, encouraging the spine to stay in a straight line as the hips lift toward the ceiling." [Hold posture for 3 breath cycles] "Lower the legs into a crouch and step the feet forward toward the hands, exhaling into a relaxed forward bend. Inhale and straighten the back, exhale and release. Inhale and gradually straighten the spine while raising the arms overhead back into a standing position. Exhale and lower the arms to the side of the body."

Sun Salutation B 1

"While breathing in, raise the arms up toward the sky above the head, while bending the knees into a slight crouch. Hold this position and breathe in & out." [Hold posture for 3 breath cycles] "On the next exhale bend forward at the waist, allowing the upper body to fall loosely. Inhale and straighten the lower back while reaching toward the floor. Exhale and bend at the waist relaxing the upper body again. Place the hands on the outsides of the feet crouch and step back into plank. Exhale and lower the body to the floor. Inhale, push the hands into the floor and raise and extend the head and chest into cobra. Flip the feet against the floor, keep the hands grounded and lift the hips toward the sky into downward dog. After exhaling, bring the right foot forward between the hands. Keep the left leg planted behind, allowing the left foot to angle out slightly away from the body while the right foot remains straight. Straighten the torso into a standing posture. Keep the left leg straight behind while allowing the right leg to bend 90 degrees and stay directly above the ankle. Adjust your leg as you need to keep the 90 degree bend in front. Align the hips forward and raise the arms above the torso while inhaling. Exhale and lower the torso and hands back down to the carpet.

Place the hands on the outsides of the feet crouch and step back into plank. Exhale and lower the body to the floor. Inhale, push the hands into the floor and raise and extend the head and chest into cobra. Flip the feet against the floor, keep the hands grounded and lift the hips toward the sky into downward dog. After exhaling, bring the left foot forward between the hands. Keep the right leg planted behind, allowing the right foot to angle out slightly away from the body while the left foot remains straight. Straighten the torso into a standing posture. Keep the right leg straight behind while allowing the left leg to bend 90 degrees and stay directly above the ankle. Align the hips forward and raise the arms above the torso while inhaling. Exhale and lower the torso and hands back down to the carpet. Place the hands on the outsides of the feet crouch and step back into plank. Exhale and lower the body to the floor. Inhale, push the hands into the floor and raise and extend the head and chest into cobra. Flip the feet against the floor, keep the hands grounded and lift the hips toward the sky into downward dog. Continue to breathe in and out in this posture, allowing the heels to drop toward the mat, encouraging the spine to stay in a straight line as the hips rise toward the ceiling. [Hold posture for 3 breath cycles] Lower the legs into a crouch and step the feet forward toward the hands, exhaling into a relaxed forward bend. Inhale and straighten the back, exhale and release. While breathing in, raise the arms up toward the sky above the head, while bending the knees into a slight crouch. Hold this position and breathe in & out. [Hold posture for 3 breath cycles] Exhale, straighten the legs and lower the arms to the side of the body"

Sun Salutation B 2

"While breathing in, raise the arms up toward the sky above the head, while bending the knees into a slight crouch. Hold this position and breathe in & out." [Hold posture for 3 breath cycles] "On the next exhale bend forward at the waist, allowing the upper body to fall loosely. Inhale and straighten the lower back while reaching toward the floor. Exhale and bend at the waist relaxing the upper body again.

Place the hands on the outsides of the feet crouch and step back into plank. Exhale and lower the body to the floor. Inhale, push the hands into the floor and raise and extend the head and chest into cobra. Flip the feet against the floor, keep the hands grounded and lift the hips toward the sky into downward dog. After exhaling, bring the right foot forward between the hands. Keep the left leg planted behind, allowing the left foot to angle out slightly away from the body while the right foot remains straight. Straighten the torso into a standing posture. Keep the left leg straight behind while allowing the right leg to bend 90 degrees and stay directly above the ankle. Align the hips forward and raise the arms above the torso while inhaling. Exhale and lower the torso and hands back down to the carpet.

Place the hands on the outsides of the feet crouch and step back into plank. Exhale and lower the body to the floor. Inhale, push the hands into the floor and raise and extend the head and chest into cobra. Flip the feet against the floor, keep the hands grounded and lift the hips toward the sky into downward dog. After exhaling, bring the left foot forward between the hands. Keep the right leg planted behind, allowing the right foot to angle out slightly away from the body while the left foot remains straight forward. Straighten the torso into a standing posture. Keep the right leg straight behind while allowing the left leg to bend 90 degrees and stay directly above the ankle. Align the hips forward and raise the arms above the torso while inhaling. Exhale and lower the torso and hands back down to the carpet. Place the hands on the outsides of the feet crouch and step back into plank. Exhale and lower the body to the floor. Inhale, push the hands into the floor and raise and extend the head and chest into cobra. Flip the feet against the floor, keep the hands grounded and lift the hips toward the sky into downward dog. Continue to breathe in and out in this posture, allowing the heels to drop toward the mat, encouraging the spine to stay in a straight line as the hips rise toward the ceiling. [Hold posture for 3 breath cycles] Allow the legs to lower into a crouch and step the feet forward toward the hands, and allow the body to come to a sitting rest.

Corpse Pose – ***PUT HR MEASUREMENT TOOL ON PARTICIPANT HAND FIRST***

"Lie down face up on the mat and allow the limbs to rest openly slightly away from the body. Bring the backs of the hands to rest on the floor and as you breathe in begin to tense all the muscles in the body, from the toes-to-torso, from limb to face. And when you're ready exhale while sighing and let the muscles go, inviting release and relaxation. Repeat this again, inhaling and tensing everything you can, exhaling, sighing, and releasing. One final time inhale while tensing all parts of the body from bottom to top, exhale, sigh, and release all muscles. The body finds stillness, and all the muscles, from the arms and legs, to the back and chest, to the tongue and face relax themselves. While lying in stillness any thoughts that may come to mind or sounds that are noticed can be acknowledged and released as stillness and quiet take hold."

****Wait 3 minutes****

****MEASURE HR****

"Now, invite calmness and experience the music and images that will follow."

Appendix H – Structured Music & Imagery Script

"As the music begins you find yourself sitting safely alone on a hilltop. You sit in a clearing looking down at the forests, and rivers and mountains all around. The moon and stars are high above in a clear sky before dawn as the sun's glow quietly and slowly approaches the horizon. You are safe and comfortable in this place as you sit and observe the valleys below. As you sit there in awareness of the sensations of this place… feeling the support of the ground under your hands and feet… the scent of the grass around you… the feeling of the breeze in the air as it blows past. The sky continues to slowly brighten and you can feel the comforting presence of this place, of life and awakening. And as the first full rays of light stretch across the world in front of you, you feel the support of this time and space. It is a place you can always return to, just as the sun rises each day. As the first warm rays of sun reach you, feel and sense peace. As the music ends you can hold on to that for as long as you wish."

****MEASURE HR****

"When you are ready, allow your awareness to return to the room around you. Feel the floor beneath you, as you slowly reconnect with the body… starting with small movements in the fingers and toes, gradually working your way to larger stretches as you feel them. And whenever you are ready you can sit up and open your eyes"

Appendix I – Local Services Contact Information Handout

Local Counseling Services

Free to RU Students:

Radford Student Counseling Center

Tyler Hall (off of Tyler Ave), Lower Level

Radford University Campus

540-831-5226

Private Practice:

Life in Balance Counseling and Wellness Center

400 Roanoke St

Christiansburg VA 24073

540-381-6215

Local Music Therapy and Guided Imagery & Music Practice

Private Practice:

MusicVisions, LLC

Jim Borling, MT-BC, FAMI

20 Walnut Ave

Roanoke. VA 24016

540-797-3753