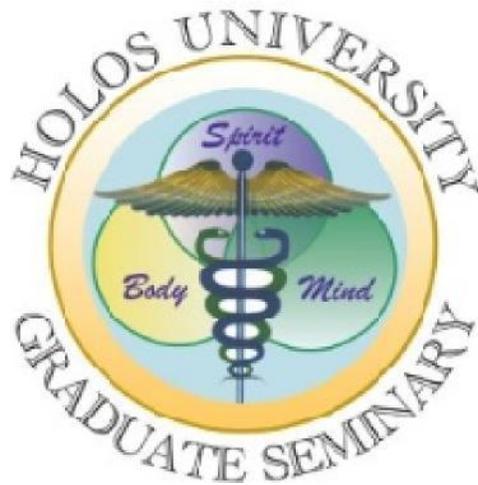


**To Determine if Labyrinth Practice Produces  
a Positive State of Mind**

Sheila D. Gunderson, Th.D.



Dissertation  
submitted to the Faculty of  
Holos University Graduate Seminary  
in partial fulfillment of the requirements  
for the degree of

**DOCTOR OF THEOLOGY**

©Copyright 2018

---

by Sheila D. Gunderson, Th.D.

All Rights Reserved

The work reported in this dissertation is original and carried out by me solely,  
except for the acknowledged direction and assistance gratefully received  
from colleagues and mentors.

---

Sheila D. Gunderson, Th.D.

## ACKNOWLEDGEMENTS

I would like to express my deepest gratitude to my academic advisor and mentor Dr. Bob Nunley. His words of wisdom, support and everlasting joy guided me through my time at Holos University.

A special note of appreciation to my dissertation chair Dr. Melinda Connor for her patience, encouragement and meticulous guidance from beginning to end of the dissertation process.

Thank you to my committee members Dr. Delphine Rossi Knowlton and Dr. Onani Meg Carver, my final editor Dr. Caitlin Connor and my statistician Dr. Jens Eickhoff for their wise expertise and experience.

To the Holos University faculty, staff and the study participants, all of whom contributed to and supported my success in academics and research, I thank you.

My heartfelt acknowledgment for the unending love and patience offered by my friends and family. I wholeheartedly believe I would not have persevered without your support.

Thank you to All, I appreciate your time and willingness to walk with me on this labyrinth journey.

HOLOS UNIVERSITY  
Bolivar, MO

DISSERTATION  
Submitted in June 2018

TITLE: To Determine if Labyrinth Practice Produces a Positive State of Mind

DATE OF APPROVAL: July 12, 2018

Sheila D. Gunderson  
Student Name

\_\_\_\_\_  
Signature

Dr. Melinda H. Connor  
Committee Chair

\_\_\_\_\_  
Signature

Dr. Delphine Rossi Knowlton  
Second Chair

\_\_\_\_\_  
Signature

Dr. Onani Marguerite Carver  
Third Chair

\_\_\_\_\_  
Signature

## **ABSTRACT**

**PURPOSE:** This is a pilot study to determine, through scientific measurement, if labyrinth practice produces a positive state of mind.

**MATERIALS:** The Marlowe-Crowne Social Desirability Scale, Hassles and Uplifts Scale, Tellegen Absorption Scale, Positive States of Mind Scale.

**PROCEDURE:** This study uses the pretest-posttest design. This design gives flexibility in the timing of testing and in execution the intervention. The subjects were tested before and after the intervention process.

**RESULTS:** No significant changes for Hassle or Uplift scores from baseline to the final session. Moderate effect size for Tellegen Absorptions scale from baseline to final session ( $d=0.5$ ), but not statistically significant. Small effect size for Marlowe-Crowne score – not significant. There are no significant changes from baseline to Session1 or Session 2 (final). Small effect sizes are detected with focus attention, responsible caretaking, sensuous nons pleasures and sensuous s pleasure.

**CONCLUSION:** As this was a pilot study with a small sample size there were no significant changes. The study did appear to indicate slight improvements in both the Marlowe-Crowne Social Desirability Scale and the Tellegen Absorption Scale. These effects gave the impression that people moved more toward truth after walking the labyrinth and tracing the labyrinth with their finger. The suggestion is to repeat this study with a longer test period and a larger sample size and modification of the finger labyrinth to the style that is grooved along the path.

## TABLE OF CONTENTS

<b>Section</b>	<b>Page Number</b>
ACKNOWLEDGEMENTS.....	iv
ABSTRACT .....	vi
TABLE OF CONTENTS .....	vii
LIST OF TABLES .....	viii
CHAPTER 1 .....	9
Introduction.....	9
Background of the Study .....	9
Statement of the Problem .....	19
Purpose of the Study .....	20
Specific Aims and Hypothesis .....	20
CHAPTER 2 Review of Literature .....	22
Definition of Terms .....	33
CHAPTER 3 Research Methods.....	44
Introduction.....	44
Inclusion and Exclusion Criteria.....	44
Recruitment And Consent Procedures .....	45
Materials .....	46
Methodology And Data Collection Management .....	48
Ethical Considerations Benefits, Costs, Compensation & Risks .....	49
CHAPTER 4 Research Findings.....	50
Statistical Analysis .....	50
Summary.....	57
CHAPTER 5 Discussion and Summary .....	58
Introduction.....	58
Discussion of the results .....	58
Suggestions for additional research .....	62
References .....	64
Appendix A: Research Participant Consent Form .....	70
Appendix B: Marketing Flyer.....	72
Appendix C: Script.....	73
Appendix D: The Marlowe-Crowne Social Desirability Scale .....	74
Appendix E: Tellegen Absorption Scale .....	76
Appendix F: The Hassles and Uplifts Scale .....	78
Appendix G: Positive State of Mind Scale .....	79
Appendix H: Labyrinth Designs .....	80

## LIST OF TABLES

<b>Table</b>	<b>Page</b>
Table 1: Demographics (N=10 participants) .....	52
Table 2: Hassle and Uplift Scale scores summary statistics.....	52
Table 3: Hassle and Uplift scale – change from baseline to session 1 and session 2 .....	53
Table 4: Hassle and Uplift scale – change from session 1 (immediately after labyrinth walk) to session 2 (after labyrinth practice) .....	53
Table 5: Tellegen Absorption Scale scores summary statistics .....	53
Table 6: Tellegen Absorption Scale – change from baseline to session 1 .....	53
Table 7: Marlowe-Crowne Social Desirability Scale scores summary statistics.....	54
Table 8: Marlowe-Crowne Social Desirability Scale – change from baseline to session 1 .....	54
Table 9: Positive States of Mind Scale scores summary statistics.....	55
Table 10: Positive States of Mind Scale – change from baseline to session 1 and baseline to session 2.....	56
Table 11: Positive States of Mind Scale – change from session 1 to session 2 (final assessment) .....	57

# CHAPTER 1

## INTRODUCTION

The intent and use of labyrinths is as varied as their locations. They are found in parks, prisons and playgrounds. Hospitals are using them in their complementary healing programs. Schools and retreat centers are using them for stress reduction. Retirement centers are using them for exercise and community building (Gersbach, 2008). The labyrinth may be molded into a field, outlined with rock or painted on a canvas that can be walked upon. Memorial parks invite their grieving clients to walk the labyrinth to release fears and find solace (Attali, 1999). Churches and cathedrals are using them to quicken the spirit and enliven the religious imagination as practitioners walk the path of life (Attali, 1999, p. VIII).

One of the overarching uses of the labyrinth in today's world is to reduce the negative impact strong emotions, such as grief, anger, or anxiety can have on an individual or group (Rhodes, 2008). Stress, for example, may be a symptom of events such as trauma, conflicts in a peer or family relationship, or pressures at school. Because of social or cultural issues, a large demographic can experience stress: for example, people in poverty or veterans. There can be a huge impact on life experience whether it is stress or any other emotion that is produced by a specific event or suffered chronically (Lust, 2012b).

## BACKGROUND OF THE STUDY

The existence of the labyrinth dates back over 4000 years. Some of the earliest evidence found has been symbols carved onto rocks, pottery and designs on building floors and walls. The labyrinth symbol has also been found woven into cloth, placed into mosaics and carved out of the earth. The sizes and designs vary greatly; you might find them created in a circle,

octagon, and even in the shape of animals with lengths ranging from three paths to over thirteen. (Lonegren, 2007)

It appears the popularity of the labyrinth has waxed and waned throughout the centuries; their original purpose is not clear (Attali, 1999). In the earliest of times some believe the labyrinth was used to create magic and sorcery; other uses included praying for good harvests or fishing. In modern day, the labyrinth is making a resurgence across the world. New labyrinths are being constructed at churches, schools, prisons and hospitals (Attali, 1999). The website, *World Wide Labyrinth Locator*, lists labyrinths all over the world. There are 318 labyrinths currently registered for public use in Minnesota alone (World Wide Labyrinth Locator, 2018).

Author Jacques Attali emphasizes in his book, *The Labyrinth in Culture and Society*, that “the labyrinth can never be reduced to some sort of local epiphenomenon. We find it occurring everywhere over thousands of years. Amazingly similar patterns recur in stone engravings and painted walls thousands of miles apart, in Scandinavia, Russia, India, Tibet, Greece, Brittany, and in Africa and America” (Attali, 1999, p. XXII). Evidence of the labyrinth is observed across history, like the ruins of Glastonbury Tor, an ancient three-dimensional labyrinth, stories such as the Wagilag sisters of Australian Aboriginal folklore, and labyrinths tiled on the floors of cathedrals such as the famous Chartres in France (Attali, 1999).

Jacques Attali has clearly laid out several examples in his book about how the labyrinth has shown itself in different countries throughout history; by way of art, legends and through its expression in architecture (Attali, 1999). He gave examples from different cultures including what is probably the most current and popular labyrinth in the world. It is made of black and brown quarry-stone and comprises the entire floor of the Chartres Cathedral (Attali, 1999). The also famous stained-glass window of the Chartres Cathedral replicates the labyrinth’s rosette center . The

labyrinth itself was built equidistant between an underground river and the peak of the cathedral ceiling (Attali, 1999). It is believed this labyrinth was built to represent the pilgrimage to Jerusalem when Christians were unable to travel there themselves (Bradley, 2009).

The Story of the Wagilag Sisters is the Australian legend of Creation which was passed down from ancient aborigine sages and has been a main theme for the artwork of Paddy Dhatangu who was considered the custodian of this religious story before passing in 1993 (Willis, 1993). An aboriginal Australian, born in the Arnhem Land in 1914, Paddy was a painter and woodcarver who has been displayed in several prestigious art galleries and books on aboriginal art (Willis, 1993). Paddy's painting of the Wagilag Sisters was done with natural earth pigments on eucalyptus bark and describes the legend of creation (Willis, 1993). This painting displays a coiled serpent which represents the treacherous path from condemnation. This path, or serpent, is recognized as one of the early depictions of a labyrinth. The references to these struggles pictured within the labyrinth can still be witnessed in Australia through song and dance and other legends passed down through the generations (Willis, 1993).

In Greek mythology, the Minotaur (a half bull, half man figure) is probably one of the most widely recognized figures in modern day, even to those unaware of the story. Art has represented the Minotaur in many forms (Willis, 1993). Picasso has sketched the Minotaur. There have been Minotaur figures etched in clay vases and even Roman mosaics found in Austria display symbology of the Minotaur myth in the center of a huge square labyrinth. The story included a labyrinth that was made to imprison people as punishment by god (Willis, 1993).

What is interesting to mention here is that the origin of the word labyrinth is unknown and is sometimes used to reference a maze (Artress, 1996). There is a difference between maze

and labyrinth. A labyrinth is unicursal, meaning one path. It is designed for the walker to find their way to the center (Artress, 1996). Mazes are multi-cursal; they comprise many entrances that create multiple paths fraught with cul-de-sacs and dead-ends (Willis, 1993, p. IX). The labyrinth, simply stated, is a pattern; this pattern is typically two dimensional; three-dimensional labyrinths are rarely found or constructed. Labyrinths are often described by the number of circuits they contain. Circuit is referring to the number of paths counted from one side to the center. (Artress, 1996)

Over time categories of patterns have developed such as the classical, concentric, medieval, and three-dimensional. There are labyrinths within these categories that have become standard patterns that have been used for centuries (Lonegren, 2007). The Classic or Crete labyrinth, the Otrid labyrinth and the Chartres labyrinth are three such labyrinths. (Mathews, 1970)

There are many labyrinth patterns from which to choose when considering which path is right for the individual or group, the setting, and the goal. A consideration if choosing between the traditional Chartres labyrinth or the classic labyrinth, is the Chartres is walked from the inside to the outside and the classic from the outside to the inside to reach the center. Anyone can create one's own unique labyrinth. In truth, the number of labyrinth patterns is infinite. When using the labyrinth pattern, you can trace it with your eyes, fingers, toes, walk it, wheel it, or be guided through it with your ears or a leading figure.

Whether created with precision or artistic expression, each pattern will have an impact on the user which may emerge as a more relaxed state or clarity in making a decision (Simpson, 2002). It is a mystery how similar patterns could present themselves across the planet across centuries. Jung's theory of the "collective unconscious," a universal thought is captured and

expressed simultaneously by groups separated by space, and time could be a plausible explanation (Jung, 1969).

One of the most ancient labyrinths is the Classic labyrinth. Some call this the Classical seven-circuit labyrinth or the Cretan labyrinth. Liz Simpson notes in her book The Magic of Labyrinths, “the oldest example to which a date can be ascribed is that of a carving on granite named the Hollywood Stone, now on display in the Museum of Antiquities in Dublin (Simpson, 2002). “The stone and its seven-circuit Cretan design were found on a pilgrim’s track that wove its way through the Wicklow Mountains in Ireland from Hollywood to the Celtic monastic settlement at Glendalough.” (Simpson, 2002, p. 28).

Steve Stutz, D. Min writes that “The Otfrid labyrinth is thought to be the second oldest labyrinth created for Christian use It was found on the endpaper of a Book of Gospels. The monk started with the Classic pattern and added four more circuits, to make an 11-circuit design”. The Otfrid labyrinth was created by the monk Otfrid of Weissenburg, in c. 871, at the Weissenburg monastery in Alsace (Mathews, 1970).

What was the Christian use of the labyrinth? Gailand MacQueen in his book, The Spirituality of Mazes and Labyrinths, states that “in medieval France, the center was called ‘heaven’ and the path itself was known as ‘the way to Jerusalem’, the goal of the pilgrim, but also the heavenly city, the goal of all Christians” (MacQueen, 2005, p. 14). The use was to recreate a pilgrimage to Jerusalem that was not possible for the Christians of the time and region to travel. In the cathedrals of the time, you could find either a walking labyrinth built into their floor or a finger labyrinth mounted outside the front doors. (MacQueen, 2005)

There is much speculation on how the Pagan labyrinth came to be in Christian cathedrals throughout Europe. It is believed that in the 12<sup>th</sup> century when labyrinths became commonplace

in cathedrals in Europe that Christians were already incorporating pagan symbolism into their churches. It appears that this was also the case with the labyrinth, to bring a Pagan symbol into the cathedral and create a Christian ritual around it in the hopes to attract and reform Pagans (MacQueen, 2005).

Without question the most recognizable of labyrinth patterns is the Chartres labyrinth. The labyrinth was named after the Chartres Cathedral in France where you will find this most beautiful and mysterious floor mosaic (Mathews, 1970). You can find this labyrinth pattern replicated across the world on jewelry, clothing, and portable labyrinths made of canvas.

The Chartres Cathedral and its labyrinth are probably most famous for its integrated construction which was not in alignment with most cathedrals and labyrinths in Europe which tended to focus their construction around the East window, having the entrance from the West, which is where the sun rises in their East window during summer solstice (Charpentier, 1972). “Chartres on the other hand faces the Northeast which emphasizes the position of the sun so that the sun will rise in the east window at the summer solstice with its entrance in the Southwest” (Strachan, 2003, p. 12). Jacques Attali referred to this as the “Less commonly known vibrational vortex that occurs on the day of the summer solstice” (Attali, 1999, p. XXII). “On this day a beam of light streams through an intentionally clear piece of the Rose window and meets a special plate, different from those that make up the floor of Chartres then strikes the metal tenon at Chartres” (Strachan, 2003, p. 82). The alignment of the labyrinth allows the light to hit the transept stone on summer solstice as Louis Charpentier noted in his book, The Mysteries of Chartres’s Cathedral, “Every year, on 21<sup>st</sup> June, when the sun is bright, as is usual at that time of year, a ray strikes this stone at midday precisely; a ray that comes through a contrived space in the stained-glass window named for Saint Apollinaire, first on the western side of the transept.” (Charpentier, 1972, p. 9).

It is speculated for this alignment to occur the window glazer, stone mason, and architect all had to work together. The precise facts are not known, but the Cathedral as well as the labyrinth have been studied by experts in sacred geometry, ancient religions, and astronomy, all finding clues to the construction of the labyrinth and cathedral as well (Strachan, 2003).

Chartres: Sacred Geometry, Sacred Space written by Gordon Strachan and The Mysteries of Chartres Cathedral by Louis Charpentier are two excellent resources.

Labyrinth carver Brian Watson explains the Chartres pattern incorporates a symmetrical, 4-axis design into the 11-circuit Otfrid design, to make a complex labyrinth path with 70 moves (Watson, 2016). This medieval labyrinth first started appearing in Europe around the 10<sup>th</sup> century which was several centuries before the Chartres Cathedral was built. By the 12<sup>th</sup> century the Chartres pattern was the most common design in Christian Europe (Mathews, 1970).

One clue that sacred geometry may have been used in the building of Chartres Cathedral is, that the famous rose stained-glass window has the same dimensions as the labyrinth. The distance up the west wall is precisely the same as the labyrinth is horizontally from the cathedral's main entrance below the window. If you could fold the window down it would lay directly atop the labyrinth (Lonegren, 2007).

Through dowsing, energy centers have been located within the Chartres Cathedral which mirror the locations of chakras in the human body. It is interesting to note the labyrinth lies upon the second chakra and to contemplate what that may indicate. The second chakra is the center of unfiltered primordial emotions, sexual energy and creativity. It is assigned to the element of water, the first of all biological life, and corresponds to the emotional fear on astrological plane (Sharamon, Baginski, 1997, p. 78).

The simplicity of the classic labyrinth design lends itself to the building of most three-dimensional labyrinths. Three-dimensional labyrinths typically surround a hill or human-made mound. The height brings in the third dimension. Glastonbury Tor is perhaps the most famous three-dimensional labyrinth. It is also the largest three-dimensional labyrinth in the world; its date of creation is unsure but is estimated to be around 1380 BCE (Lonegren, 2007). The location of Glastonbury Tor is in the middle of a plain. The plain is a dried-up wetland which means the Tor was at one-time island-like. The Glastonbury Tor was called Ynys yr Afalon (meaning "The Isle of Avalon." Some claim it is the Avalon of Arthurian legend) (Lonegren, 2007).

Author and labyrinth expert Sig Lonegren who wrote Labyrinths: Ancient Myths and Modern Uses, wrote "The Glastonbury Tor is on a geomantic corridor that was found by John Michell called The Michael Line that runs through England from St Michael's Mount in Cornwall, up through a number of Michael Churches including Brent Tor in Dartmoor, Burrowbridge Mump, Glastonbury Tor, Avebury stone ring, and other sacred spots to the northeast. This alignment, sometimes called the Beltane Alignment, because it aligns with the Beltane (May Day). Sunrise, also aligns (in the opposite direction to the Southwest) with the Samhain (Halloween) sunset." (Geomancy, 2018).

The standard instructions for walking a labyrinth can be varied according to the intent of the walker or the study being performed. The usual instructions are; before you begin stand at the entrance, take a few calming breaths, then consider the contemplation, prayer, or clear your mind. Then begin walking, concentrate on your steps don't be concerned of your speed or others that may be walking at the same time; let everything fade away. When you reach the center, sit

or stand with your eyes softly closed, looking downward away from distractions. Take three deep breaths and be aware of what you are feeling in the moment. When you are ready begin walking back, being mindful of the contemplation or prayer you held in the beginning.

“Walking the labyrinth is a meditation. You are not expected to do or produce anything; exactly the opposite, you are expected to do nothing. The same process can be used when using a desk or finger labyrinth” (Artress, 1996, p. 39).

“A unique use of the shape of the labyrinth was discovered in China, ca. A.D. 1000; labyrinths were constructed out of incense for keeping time at ceremonial rituals. At the corner, where each path turned, a different incense scent started. You could literally smell what time it was” (Curry, 2000, sec. 403). Legends and stories suggest that ancient cultures walked the labyrinth for good fortune, protection, connection with the sacred center, pilgrimages, and healing-reasons (Curry, 2000).

Some scholars say that throughout Scandinavia and the Baltic Sea you can still find remnants of stone labyrinths on the shores. It is thought fishers would walk these labyrinths hoping for a good catch and a safe return. It was even thought that walking or running a labyrinth would be beneficial to collecting strong winds and weather and capturing them within the labyrinth (Curry, 2000). “Hunters and shepherds may have even walked the labyrinth for good fortune protecting them from wolves, trolls and other evil spirits” (Curry, 2000, sec. 448).

Ancient labyrinths are often associated with protection and guarding communities and places of worship. You still can identify Roman mosaics of labyrinths that have been uncovered at archeological digs. These were presumably fashioned for protection. Among the Hopi, the

labyrinth was a representation of new life in reincarnation. Their labyrinths took two shapes, one circular and one square. The circle represented the feminine and the square represented the masculine (Curry, 2000). “It has been common to find labyrinths used at burial sites across the globe to protect the dead ancestors” (Curry, 2000, sec. 488).

Research is being put into action in the Twin Cities, Minnesota. The labyrinth has been used in the grade schools within the Minneapolis/ St. Paul, MN area, as well as other school districts across the United States. There are several ways the labyrinth can be used within the school system. Teachers can be taught to use the labyrinth to teach math and art. It can also be used by school counselors and ‘trained in’ teacher facilitators to deal with grief and loss whether it is a pet, friend, or family member. Still other labyrinth facilitators have been brought into the schools or trained for the schools to teach conflict resolution and problem-solving. No matter how the labyrinth is used, the goal is to enhance and improve the lives of children (Hancock, 2004).

Teachers are taught by a facilitator to use the labyrinth for math, art, grief and problem solving through a four-part labyrinth teachers manual (McCarthy, 2007). The manual guides the facilitator on how to introduce the labyrinth to faculty and administrators. The manual also gives instruction on how to provide follow-up activities for the children. This manual provides outlines and detailed instructions of integrating the labyrinth with curriculum which can enhance the experience for children. For example, history can come alive through the study of labyrinths through the centuries. Math can be meaningful in figuring out how many stones of a certain size will be needed to build a labyrinth of a given diameter. Children also love art projects related to the labyrinth (Hancock, 2004).

Contemporary uses for the labyrinth sometimes call for a change, both in the labyrinth and in the community. Clare Wilson of Cape Town designed a two-path labyrinth which was called the Reconciliation Labyrinth. The intent of this labyrinth was to help create a healing environment for those affected by apartheid, but Wilson realized that many of the black South Africans could not identify with the one path metaphor of the labyrinth; they could not identify that they were on the same path as whites. Black South Africans were denied education, political freedom, and safety for a very long time (Artress, 1996).

“What the two-path labyrinth created was the opportunity for two people to walk a mirrored image of each other. There were two entrances; one leading to the left and one leading to the right. Two people would enter the labyrinth at the same time and at one-point, meet and crossover onto the other side of the labyrinth; this signified walking in the path of the other. As one neared the center of the labyrinth the space was much larger than a traditional labyrinth. Here, people could greet one another and talk. The dual path also offered the opportunity for the individual to make choices. They could choose to arrive at the center together and leave together, or they could be independent of each other” (Artress, 1996, p. loc.2177).

## **STATEMENT OF THE PROBLEM**

This study includes the walking labyrinth and tracing the finger labyrinth. Empirical research on the labyrinth is minimal. Studies are needed to create a more robust foundation for strengthening the results of future studies to validate additional uses for the labyrinth and the potential benefits.

## **PURPOSE OF THE STUDY**

The purpose of this pilot study is to determine through scientific measurement the relationship between a positive state of mind and walking the labyrinth. The additional purpose of this study is to determine through scientific measurement the relationship between a positive state of mind after tracing the finger labyrinth for five consecutive days.

## **SPECIFIC AIMS AND HYPOTHESIS**

Specific Aim 1: To determine if walking the labyrinth for no longer than fifteen minutes produces an altered state of consciousness.

Hypothesis 1: Walking the labyrinth does not change a person's desire to provide socially correct information at a level of significance ( $p < 0.05$ ) as measured by the Marlowe-Crowne Social Desirability Scale.

Hypothesis 2: Walking the labyrinth does not produce a hypnagogic state at a level of significance ( $p < 0.05$ ) as measured by the Tellagen Absorption Scale.

Specific Aim 2: To determine if the walking the labyrinth for no longer than fifteen minutes promotes a positive state of mind.

Hypothesis 1: Walking the labyrinth for no longer than fifteen minutes as a method of relaxation and personal transformation produces a positive state of mind at a level of significant ( $p < 0.05$ ) improvement as measured by the Hassles and Uplifts Scale.

Hypothesis 2: Walking the labyrinth for no longer than fifteen minutes as a method of relaxation and personal transformation produces a positive state of mind at a level of significant ( $p < 0.05$ ) improvement as measured by Positive States of Mind Scale.

Specific Aim 3: To determine if the finger labyrinth promotes a positive state of mind when utilized daily for fifteen minutes as a substitute for direct labyrinth walking.

Hypothesis 1: Utilizing the finger labyrinth for fifteen minutes a day as a method of relaxation and personal transformation produces a positive state of mind at a level of significant ( $p < 0.05$ ) improvement as measured by the Hassles and Uplifts Scale.

Hypothesis 2: Utilizing the finger labyrinth for fifteen minutes a day as a method of relaxation and personal transformation produces a positive state of mind at a level of significant ( $p < 0.05$ ) improvement as measured by Positive States of Mind Scale.

## **CHAPTER 2**

### **REVIEW OF LITERATURE**

#### **Introduction**

“Over the past several decades labyrinths have enjoyed something of a renaissance and are often utilized by spiritual care practitioners and health care clinicians in order to support reflection, stress reduction, and the exploration of personal wellness in a sacred setting” (Heard, Scott, & Yeo, 2015, p. 240). The number of research studies and scholarly papers that have been produced and published about the labyrinth has been increasing over the last decade. Research continues to develop and validate additional uses for the labyrinth and the potential benefits.

At present time the labyrinth is best known as a meditative tool to promote stress reduction and reflection. Stress is a global public health problem with several negative health consequences, which include anxiety, depression, cardiovascular disease, and suicide (Lust, 2012b). The labyrinth can also be used to teach conflict resolution and problem-solving at all levels of education, and in careers, community and families (Hancock, 2004). The techniques learned can be incorporated into college classrooms and specific career areas for example teaching nursing students how to use the labyrinth to deal with grief and loss (Sandor & Froman, 2006). The following sections discuss how the labyrinth is used to address these issues and what research has been done to validate the various protocols.

#### **Academics**

Upon reviewing studies presenting postsecondary schools that deal with anxiety, it appears that the labyrinth could be incorporated to support success. Many college courses require examinations and classroom presentations to successfully complete the course, which can

increase the student's stress and anxiety. One way to use the labyrinth is to help reduce the stress that precedes classroom presentations and exams, and to increase the rates of assignment completion (Sellers, Moss, 2017).

Mental health influences the success and the ability of college students to achieve academic excellence and the potential to find and sustain a career. A health survey of college students published by the University of Minnesota reported that "mental health issues can have a profound impact on a students' ability to engage fully in the opportunities presented to them while in college. These issues affect their physical, emotional, and cognitive well-being and can lead to poor academic performance, lower graduation rates, and poor interpersonal relationships" (Lust, 2012, p. 7).

The anxiety which provokes the inability to complete coursework in postsecondary education can originate from a variety of issues including but not limited to poverty, language barriers and trauma (Lust, 2012a). These issues also inhibit the success of postsecondary employees. Finding a way to address the anxiety can be the beginning of the path toward success and strengthening resilience (Sellers, Moss, 2017). Having the skills and tools to overcome barriers to success may have positive implications for an individual that will ripple out to their family and the community.

M. Bigard published an article in the *Journal of College Counseling*. This article introduces an innovative approach of a counseling center using the labyrinth as one approach to conduct outreach, targeting the college community. The author illustrates its introduction on one university campus and outlines practical considerations for incorporating the labyrinth in college counseling center outreach efforts (Bigard, 2009).

Bigard also reminded us that “research on the efficacy of the labyrinth is still in its infancy” (Bigard, 2009, p. 141). Labyrinth research still remains in need of continued empirical studies. Bigard not only had experience with the labyrinth in an academic setting she also had experience with the labyrinth being used with trauma counseling in a psychiatric hospital (Bigard, 2009).

## **Work**

Consequently, studies have also shown how labyrinths may be beneficial in the work environment. How stress can negatively affect adults in the workplace as well as the branching negative effects into the community has been well documented and then studied in conjunction with a labyrinth research project by Dr. Paula Boardman. Dr. Boardman’s study not only investigated how stress affected workers but also investigated how labyrinth walking may be used as a tool for stress relief in the workplace (Boardman, 2017).

The study compared labyrinth walking and meditative walking with workers who continued their usual walking routine. “The quantitative piece of her study was a single factor experimental study for independent groups with pretest and posttest measures” (Boardman, 2017, p. 3). Although there was not a significant shift, there was a change for the positive with both the perceived stress scale and the Copenhagen psychological questionnaire both of which were used in the pre-and posttest interview. “What did report strongly was the labyrinth walk questionnaire with unfavorable odds of improved emotions after walking the labyrinth” (Boardman, 2017, p. 9). As a part of her study she also collected salivary cortisol levels in which there was also no significant difference between the three groups. Boardman’s study was recent, contemporary and reinforced labyrinth studies that have been done over the last two decades

indicating there is value in continuing the research towards using the labyrinth walking technique to reduce stress (Boardman, 2017).

## **Corrections**

There is also research that serves as evidence in favor of meditation-based programs as rehabilitative for incarcerated populations. “Overall, research suggests three areas in which meditation-based programs provide sufficient treatment to criminal offenders: the enhancement of psychological well-being, a decrease in substance use, and a decrease in recidivism. This suggests that meditation-based programs may be proper treatment programs and support rehabilitation for correctional populations” (Himmelstein, 2010, p. 646).

A Labyrinth program lasting six weeks was pilot tested to assess the feasibility for use within a correctional setting in Hampshire, Massachusetts. A holistic curriculum was developed which included the labyrinth taught in six 90-minute classes. The study did show an increase in inmate satisfaction with learning the skill of mindfulness meditation which also showed a decrease in blood pressure (Zucker, Sharma, 2012). “Labyrinth walking is a form of mindfulness meditation and is viewed by some as a tool to help improve quality of life with applicability in a wide array of areas” (Zucker, Sharma, 2012, p. 47).

The ongoing goal is to adapt the curriculum of labyrinth education to better meet the needs of these clients as well as to demonstrate the effectiveness of this treatment modality. Future projects include the ongoing testing of the effects of labyrinth walking on blood pressure, in addition to the identification of a variety of biomarkers that may assist in targeting care for inmate rehabilitation (Zucker, Villemarie, Rigali, Callahan, 2013, p. 104).

## **Cultural and Group Stress**

To illustrate what may occur in a group context there is research that focuses on cultural and group states of mind. Anxiety and post-traumatic stress disorder (PTSD) may be symptoms of events such as trauma, conflicts in a peer or family relationship, or pressures at school. Whether anxiety/PTSD are produced by a specific event or suffered chronically both can impact life experience. Anxiety can be experienced by a large group because of social or cultural issues, for example, people in poverty, minority groups and/or veterans (Lust, 2012b).

With recent wars and conflicts, postsecondary institutions are finding an increase in students who are veterans. Many of these veterans are returning to college with health challenges such as PTSD. This is shown in a Health and Health-Related Behaviors Minnesota Postsecondary Student Veterans Health Survey Report published by the University of Minnesota that stated that approximately one-fifth (21.3%) of veterans who completed the 2012 College Student Health Survey report they are unable to manage their stress level. Additional analysis shows that 15.4% of male veterans and 35.1% of female veterans report they are unable to manage their stress level. The adjusted aggregate survey data show that 21.0% of all students report they are unable to manage their stress level (Boynton Health Services, 2012).

Understanding who the student is and what the cultural barriers for that student are in addressing their own stress level is an important part of knowing how to provide coping techniques. One of the issues that is common among veterans is the inability, or lack of willingness, to ask for help (Lust, 2012b). Providing a technique such as tracing the labyrinth with their finger, a pen, or their eyes allows them to have the power to use this technique when they feel they need it and privacy if that is important for them.

The data drawn from the research of John W. Rhodes indicates that a large percentage of test subjects experience significant drops in the intensity of negative psychological states (i.e., agitation, anxiety, stress) after walking the labyrinth. Labyrinth-walking also tended to improve *positive* mental states, with a majority of subjects reporting increased calmness, clarity, peacefulness, and relaxation (Rhodes, 2008). It is important to remember that, as with any anxiety reducing technique, individuals will respond differently based on their own past and experiences. Using studies such as the one Rhodes conducted can show us most will experience positive results from walking the labyrinth and encourage both students and college staff to make use of this unique and portable tool.

### **Grief and Loss**

An example of how the labyrinth may benefit both the areas of grief and conflict is demonstrated in this article from *American Nurse Today*. It states that representing growth and transformation, a labyrinth can confer a sense of clarity, peace, and serenity. Psychotherapist Melissa West, author of *Exploring the Labyrinth: A Guide for Healing and Spiritual Growth*, describes the labyrinth experience as walking toward one's own core and the center of one's soul. Rev. Dr. Lauren Artress calls a labyrinth a watering hole for the spirit and a mirror of the soul. West shows her clients how walking a labyrinth can reconnect them to their souls (Bosbach, 1998, p. 12).

Dr. West believes a labyrinth can teach them about their feelings, breath, heart and the rhythm of their souls. For many people, she says, a labyrinth walk leads to personal revelations. Some walkers identify the twists, turns, and center of the labyrinth with the twists, turns, and center of their own lives. Labyrinth proponents claim walking a labyrinth can lead to deeper

relationships, a stronger sense of community, a feeling of being on a spiritual journey, a sense of inner reflection and connection to sources of guidance, a sense of living in the present, greater creativity, and stress reduction (Shindle, M., 2010).

### **Creativity and Problem-Solving**

In contrast to grief and loss J. Francisco's project surveyed, analyzed, and organized references to creativity in labyrinth literature to discover how the labyrinth could be used as a tool to facilitate creative change. Francisco discovered specific links to the creativity concepts, processes, and skills, required to facilitate transformational change when Creative Problem-Solving techniques are applied to the labyrinth experience. Francisco found using the labyrinth had the ability to generate "in-the-moment" benefits of problem solving and that using the labyrinth as a tool could be included in the Creative Thinking Skills Model (Francisco, 2006).

Janice Francisco said about her experience with the labyrinth and how it affected her achievements:

"I found that in using my *Creative Walker's Guide to the Labyrinth* with the intention of using deliberate creativity, and by recording my *Intention, Ideas & Insights* and the *Integration & Action* pieces that I had a feeling of having greater productivity or achievement in the labyrinth. I found that by writing my thoughts on mini post-it notes and sticking them in the guide I felt more grounded in the experience, almost immediately upon walking into the labyrinth. I felt that once the ideas started flowing, they continued, almost picking up speed and meaning as I went on. The experience felt like a faucet being opened a little and then to full almost at once. By moving between each section of my guide as I walked into the center, arrived at the center, and as I walked

out, I felt like there was a confirmation of the natural progression of the walk, a feeling I would describe as feeling ‘present’ in the moment and very aware of where I was in the process” (Francisco J. M., 2006, p. 58).

### **Effects on the Brain**

Finding new ways of reducing anxiety and other health challenges that affect the brain, such as depression and ADHD, is important. The summary of the results of a three-year long study showed that on average, children in the experimental groups, using a two handed finger labyrinth named a Intuipath, had higher initial baseline scores on the ADHD scale than those in the control groups using a sand tray (Harris, 2002). Higher scores are indicative of a higher frequency of ADHD symptoms (including both hyperactivity and inattention). The results suggest that both interventions caused an effect over time but the Intuipath groups had a greater reduction in ADHD symptoms than the sand tray groups after four weeks. The Intuipath group showed a slight increase in total scores, indicating a worsening of ADHD symptoms. However, the overall reduction of symptoms was still a significant improvement from the baseline measure. The results suggest that using the Intuipath over time was positively associated with improvement in behavioral symptoms. The research results suggest that when a child moved both hands simultaneously through a medium such as an Intuipath or randomly in a sand tray, a significant reduction in ADHD-type behaviors occurred (Harris, 2002).

In addition, research studies indicate that by employing the labyrinth whether by walking or tracing with your fingers brain patterns can change. On the labyrinth society’s website, there is a research bibliography of studies and articles which cites over 50 studies related to the field of labyrinth research. Research by Dr. Harris showed the kinesthetic element of tracing the

circuitous pattern of a finger labyrinth, assisted in integrating the two sides of the brain (Harris, 2002). Other studies show that people are better able to connect with the right side of the brain after walking the labyrinth and think more clearly and creatively. It has been reported that children get a better score if they walk the labyrinth before taking an exam (McCarthy, 2007).

One of the first studies to show an effect on the brain when using the labyrinth was done by Bosbach in 1998. The abstract detailed using a dual electroencephalograph ("Mind Mirror"). The author compared brain wave shifts of five subjects before and after walking the Levi labyrinth, a 60-foot diameter classical seven-circuit labyrinth near Austin, Texas. It was reported that, "In five subjects tested, two men and three women, four out of five had a significant right dominance brain wave shift following a single walk through the Levi labyrinth. Measurements were made at a resting pulse rate before walking the labyrinth and again after walking the labyrinth when pulse rate had returned to a resting rate" (Bosbach, 1998, p. 12). Although the author acknowledges that these results are very limited, he believes this to be the first time the effects of the labyrinth have been studied by examining brain wave output (Bosbach, 1998).

### **Mental Health/Integrative Technique**

A recent study conducted by Heard, Scott and Yeo explored the unique meaning and experience associated with walking a unicursal seven circuit outdoor Chartres labyrinth and 11 circuit indoor Chartres labyrinth for persons residing at a forensic mental health care facility. While labyrinths are becoming more prevalent, an understanding of the impact, particularly in the mental health context, is limited. This qualitative study supports the novel investigation of the meaning associated with participation in walking a labyrinth for persons residing at a forensic mental health care facility. This qualitative study identified themes that ran through the

participant's responses. A few of the themes included feeling relaxed, a sense of peace, and, for one participant walking the labyrinth supported or enabled meaning making (Heard et al., 2015).

Walking the labyrinth has been studied to test its compatibility with talk therapies. Reality Therapy (RT) and Solution Focused Therapy (SFT) are two examples. In 2012 a paper presenting a strategy for the use of the walking or finger labyrinth with RT concluded that using the labyrinth worked well with RT and provided direction about how to use it with this therapeutic method. The paper also suggested that further evidence-based research is necessary in order to determine the effectiveness of using the labyrinth with reality therapy (Hong & Jacinto, 2012).

George Jacinto, co-author of the Reality Therapy article, did go on to co-author another article using the finger labyrinth in Solution Focused Therapy. This article includes a literature review, history of the labyrinth and phases of how the labyrinth works in the context of SFT. Case studies were used to describe the implications for the use of SFT in association with labyrinth tracing. The conclusion was SFT and the finger labyrinth process engaged the visual auditory and kinesthetic learning pathways. "Through the process that occurs at the center of the labyrinth, the client explores life circumstances and is better able to visualize the change that needs to occur" (Nieves-Serrano, Jacinto, Chapple, 2015, p. 18). The use of the finger labyrinth may reduce the number of sessions needed for clients to reach their goal (Nieves-Serrano, Jacinto, Chapple, 2015; Harris, 2002, 2008).

### **Labyrinth Variations: finger / light projection / portable**

As more empirical studies are published using other alternative modes of stress reducing techniques academic institutions are becoming more aware and accepting of holistic types of

interventions for their students. An excellent example is from the University of Oklahoma; they installed an overhead theater lamp from which they projected the labyrinth onto the floor. It has been named the Sparq labyrinth which can be viewed on YouTube or the library's website. The Oklahoma University library explains, "What makes it unique is user choice: a touch-screen interface allows the Sparq user to select from a variety of culturally significant and aesthetically compelling labyrinth designs, and then engage with the projected pattern in a mindful and nonjudgmental awareness of the present moment. Engagement might take the form of a walk through the pattern, yoga, dance, or simply sitting in meditation (Cook, Brennan Croft, 2015).

One user of the Oklahoma University library labyrinth, a graduate teaching assistant, spoke of their experience saying

"I have ADHD and the labyrinth made a tremendous difference in reducing the level of anxiety I usually feel around finals. After taking a short break walking the labyrinth, I literally felt like a new person (no stress, anxiety, able to take deeper breaths, felt overall tranquility which is almost impossible for me to do—especially in that amount of time" (Rhodes, 2008, p. 1).

A study done by Yutalas in 2013 found that when using the labyrinth with students the symptoms of ADHD were reduced. A new finger labyrinth was designed for the study based on suggestions from physical and occupational therapists that proposed right and left sides of the brain can be balanced when using both hands simultaneously. It was noted that when both right and left sides of the brain were stimulated at the same time there was a positive effect on emotions and behaviors including stress management (Yutalas, 2013).

## **Summary**

The overarching theme that weaves through each of the specific groups affected are the barriers that hold them back from success, mainly stress. As more clinical studies are conducted using integrative medicine techniques to affect mental health, more communities and institutions will take notice. It is also obvious that to reach the goal of having integrative health practices acknowledged as legitimate by a wider scope of people including those in research, medicine and community we need to continue these research-based studies. It appears one gap in research is simply in the numbers of empirical studies conducted.

## **DEFINITION OF TERMS**

*Absorption:* Reflects an individual's cognitive capacity for involvement in sensory and imaginative experiences in ways that alter an individual's perception, memory, and mood with behavioral and biological consequences. Thus, one's level of absorption may potentially create differential treatment effects in mind–body intervention outcomes. Conducting practical clinical trials helps address the challenge of determining whether a specific mind–body modality intervention may be effective. Such trials may be strengthened by including measures of personality dimensions such as absorption (Menzies, Taylor, & Bourguignon, 2008, p. 297).

*Allopathy:* The treatment of disease using medicines whose effects are different from those of the disease being treated and which have no relationship to the disease symptoms. Allopathic is based on the principle of the law of opposites (Yasgur, 1998, p. 391).

*Antisocial:* Describes behavior or conduct that is in conflict with or disregards existing social institutions or moral codes (Bedworth, Bedworth, 2010, p. 39).

*Altruism*: A system of ethics based on the idea of the ultimate obligation of each other to achieve a selfless devotion to others, society, as opposed to the ethical doctrine of egoism and to the theological doctrines of the individual pursuit of charity beauty to. Generally, the pursuit of the good of others (Bedworth, Bedworth, 2010, p. 26).

*Anxiety*: A normal response to a threat or to psychological stress and is experienced occasionally by everyone. Normal anxiety has its roots in fear and serves an important survival function. Anxiety disorders are more common than any other category of mental health disorder and are believed to affect about 15% of adults in the United States. The causes of anxiety disorders are not fully known, but both physical and psychological factors are involved (Beers, 2003).

*Anxiety Disorder*: A category of moderately severe mental problems. The roses accompanied by tension and restlessness. A condition that is characterized by excessive fears and anxiety about persons, places or events (Bedworth, Bedworth, 2010, p. 40).

*Anxious*: 1. Eagerly desirous. 2. Fearful, uneasy, and worried (Ryan, 2014, p. 18).

*Anthropology*: The science that studies humans. The study of the relationship of mind and body (Bedworth, Bedworth, 2010, p. 37).

*Attention Deficit Hyperactivity Disorder (ADHD)*: Poor or short attention span and impulsiveness inappropriate for the child's age; some children also manifest hyperactivity (Beers, 2003, p. 1549).

*Archetype*: The original pattern or model from which all other things of the same kind are made; a prototype (Yasgur, 2017, p. 645).

*Attrition*: Loss of subjects in an experiment. The loss of subjects can threaten all facets of experimental validity (Kazdin, 2003, p. 571).

*Beck Anxiety Inventory (BAI)*: The BAI is a brief measure of anxiety with a focus on somatic symptoms of anxiety that was developed as a measure adept at discriminating between anxiety and depression. The BAI is administered via self-report and includes assessment of symptoms such as nervousness, dizziness, inability to relax, etc. The BAI has a total of 21 items (Julian, 2011).

*Breathwork*: Experiential work, using accelerated and deepened breathing that precipitate a non-ordinary state of consciousness. Breathwork is done both individually with a therapist or facilitator and in groups (Taylor, 1995, p. 236).

*Case Study*: An intensive evaluation and report of an individual subject (Kazdin, 2003, p. 572).

*Center*: The center of the labyrinth. This is a literal term, but it can be a figurative one as well. It is not a goal in walking meditation (Artress, 2006, p. 32).

*Circuit*: The term circuits refer to the number of times the path goes around the center (Artress, 2006, p. 31).

*Clinical Significance*: The extent to which the effect of an intervention makes an “important” difference to the clients or has practical or applied value (Kazdin, 2003, p. 572).

*Comparison Methods*: Methods of comparing clients with others, such as a normative sample as a means of evaluating the clinical significance of the changes achieved with an intervention (Kazdin, 2003, p. 572).

*Compassion*: A deep awareness of and sympathy for another’s suffering (Ryan, 2014, p. 60).

*Components of Prevention*: There are four major common opponents of preventative medicine (1). Vaccinations to prevent infectious diseases; (2). Screening programs (such as for high blood pressure, diabetes, and cancer).; (3). Chemoprevention; (4). Counseling aimed at helping people make healthy lifestyle choices (Beers, 2003, p. 28).

*Confidentiality*: Refers to the practice of not disclosing information obtained from a subject in an experiment without the awareness and consent of the participant. There are exceptions where confidentiality is not assured in an investigation, as, for example, when the information shows clear and imminent danger to an individual or society (Kazdin, 2003, p. 573).

*Countertransference*: The caregiver reacts unconsciously to the client's feelings, thoughts, expectations and beliefs and may project his or her own feelings, thoughts, expectations, patterns of behavior and beliefs onto the client. (Taylor, 1995, p. 236)

*Diet*: Pertains to the relationship of nutrients in the food ingested each day over a significant amount of time (Bedworth, Bedworth, 2010, p. 152).

*Differential Socialization*: The ways in which parents and others react differently to children and reinforce different behaviors for the two sexes (Bedworth, Bedworth, 2010, p. 153).

*Dissociation*: involves various elements along a spectrum including a sense of being unreal, feeling numb or disconnected from one's body, feeling depersonalization or a kind of distance from being grounded in oneself, and outright amnesia for events in one's ongoing life (Siegel, 2010, p. 69).

*Energy*: see subtle energy.

*Field*: The space between the borders of the path. Some people use the term the wall, though this creates the wrong impression unless, as in some labyrinth, there is a specific, literal wall between the circuits (Artress, 2006, p. 33).

*Focus*: To give attention, effort, etc. to one particular subject, situation or person rather than another (Turnbull, 2015, p. 599).

*Focused Interview:* An interview in which the respondent is allowed to set the initial course, but which increasingly focuses on the researcher's agenda as the interview progresses (Bedworth, Bedworth, 2010, p. 207).

*Focus Group:* In research, a panel, selected to be representative of the population, interviewed on a topic of interest (Bedworth, Bedworth, 2010, p. 207).

*Folk Medicine:* Treatment of disease traditionally practiced by laypersons within a cultural or subcultural context (Bedworth, Bedworth, 2010, p. 207).

*Geomancy/Geomagnetics:* Design principles appear to have been part of the secret knowledge possessed by a number of ancient architects who designed and built many sacred monuments and buildings throughout the world, ranging from the pyramids and obelisks of Egypt to the famous Round Towers of Ireland (Gerber, 2000).

*Gender Identity:* How a person views himself or herself as a male or female (Bedworth, Bedworth, 2010, p. 217).

*Grace:* The kindness that God shows towards the human race: It was only by the grace of God that they survived (Turnbull, 2015, p. 673).

*Grounded:* Calm, stable (Ryan, 2014, p. 151).

*Guided Imagery:* In psychology, the process of visuals observing oneself responding in a positive and controlled way to a stressor (Bedworth, Bedworth, 2010, p. 230).

*Hallucination:* A sensory perception that has no environmental stimulus to bring it about. The most common is auditory (Bedworth, Bedworth, 2010, p. 231).

*Health:* A state of physical, mental and social well-being; effective functioning, both within the person and by the person in his or her environment (Bedworth, Bedworth, 2010, p. 234).

*Helplessness*: A construct referring to the sense of having no control over important events, considered by many theorists to play a central role in anxiety and depression: learned helplessness (Bedworth, Bedworth, 2010, p. 242).

*Herbal Medicine*: The use of plants and other natural substances in the treatment of diseases: pharmacology (Bedworth, Bedworth, 2010, p. 243).

*Holism*: A belief system based on the doctrine that the individual (or situation) must be studied or viewed as a whole (physically, emotionally, mentally, and spiritually (Yasgur, 2017, p. 2732).

*Informed Consent*: Agreement to participate in research with full knowledge about the nature of treatment, the risks, benefits, expected outcomes, and alternatives. Three elements are required for truly informed consent, namely, competence, knowledge, and volition (Kazdin, 2003, p. 576).

*Joy*: Great happiness (Ryan, 2014, p. 191).

*Kundalini*: A Sanskrit word describing the evolutionary life force. In human beings it is said to lie dormant at the base of the spine until awakened. When awakened it moves through the physical, mental and spiritual aspects of one's being to purify and make the psyche more conscious. It is also the name of the Hindu goddess, Kundalini Shakti, who represents manifest energy and matter (Taylor, 1995, p. 238).

*Labyrinth*: A labyrinth is a pattern, usually in the form of a large circle, which has one path, beginning at the outer edge and leading in a circuitous way into the center. Labyrinths found in medieval churches and cathedrals are flat to the floor and called pavement or church labyrinths. They can also be made from hedges, earthen mounds, or other materials that give them dimension (Artress, 2006, p. 33).

*Labrys*: The "double axe" or "butterfly" figures between the turns on the path. In the Eleven Circuit Medieval Labyrinth there are 10 labrys (Artress, 2006, p. 32).

*Left-handed or Right-handed Labyrinth:* The first turn determines the name. In a left-handed labyrinth, the first turn goes to the left. In a right-handed labyrinth, the first turn goes to the right. The Eleven Circuit Medieval Labyrinth is always a left-handed labyrinth. The Classical Seven-Circuit Labyrinth can be either left or right-handed (Artress, 2006, p. 32).

*Linear labyrinth:* A labyrinth, such as from the Roman tradition, in which the path moves in a predictable pattern from one quadrant to the next (Artress, 2006, p. 33).

*Lunations:* The outer cusps and foils that encircle the Chartres-style Eleven Circuit Medieval Labyrinth. There are 28 per one quarter of the outer circle (Artress, 2006, p. 32).

*Meditation:* Usually involves returning attention, again and again to a primary object, whether it is your breath, a mantra, a deity, a loving feeling, or a mental image. Meditation is a natural function of the human body mind. When you meditate properly, this function kicks in and rapidly produces a distinct psycho-physiological state, one that combines low levels of physical arousal with high levels of mental alertness (Gerber, 2000, p. 209).

*Meditative State:* Hypothesis; by quieting the mind one relinquishes counter-productive benefit and habit of bodily tension and other malfunctions, allowing healthy, normal functions to reassert themselves (Benor, 2001, p. 182).

*Metaphysics:* The branch of philosophy that studies the nature of reality (Bedworth, Bedworth, 2010, p. 322).

*Metaphor:* A type of comparison in which one object is equated with another and qualities of the first are then ascribed to the second- “He was a tiresome psychoanalytical turnkey with a belt full of rusty complexes.” (Campbell, 2009, p. 605)

*Methodology:* Refers to the diverse principles, procedures, and practices that govern research (Kazdin, 2003, p. 577).

*Mindfulness*: It is not merely an activity conducted in a meditation sitting but is also a way of life. It involves paying strict attention to what is happening in the present moment without judging. As a therapeutic tool it contrasts with traditional cognitive therapy because mindfulness does not challenge or replace negative thoughts. It substitutes present awareness for negative thinking. As a negative thought enters, it is noted without judgment and allowed to pass through (Young, 2013, p. 313).

*Multi-Cursal*: They comprise many entrances that create multiple paths fraught with cul-de-sacs and dead ends. Mazes are often seen as games and are created in order to have a walker lose his or her way (Attali, 1999).

*Non-Linear Labyrinth*: A labyrinth, such as the Eleven-Circuit Medieval Labyrinth, where the path moves through the four quadrants in an unpredictable way. This creates a feeling of losing your way and challenges the mind to focus more intensely (Artress, 2006, p. 33).

*Petals*: The Chartres style labyrinth has six petals in the center. Symbolic of the six days of Creation, they also symbolize the rose and the lily. Six is also the symbol of Aphrodite. Each petal has a name (Artress, 2006, p. 32).

*Posttraumatic Stress Disorder (PTSD)*: Is an anxiety disorder caused by exposure to an overwhelming traumatic event, in which the person later repeatedly re-experiences the event (Beers, 2003).

*Psychotherapy*: A collective term for all forms of treatment using psychological rather than somatic means. A means of conversing with one or more clients in which a trained therapist facilitates a greater understanding, objectivity, and maturity in dealing with mental and emotional problems (Bedworth, Bedworth, 2010, p. 415).

*Psychospiritual*: The term designed to describe the interrelationship of the mind, emotions and spirit in one's process or experiences (Taylor, 1995, p. 239).

*Reality Therapy* (RT): William Glasser's method of psychotherapy. A therapy that leads all patients toward reality, toward grappling successfully with the tangible and intangible aspects of the real world, might accurately be called a therapy toward reality, or simply *Reality Therapy* (Glasser, 1975, p. 6).

*Reincarnation*: A theoretical process of rebirth in some other form of life (Bedworth, 2010, p. 428).

*Reinforcement*: In classical conditioning the procedure by which the unconditioned stimulus is made contingent upon the conditioned stimulus. In instrumental conditioning the procedure by which that instrumental response is made contingent upon some thought after outcome. The strengthening process that occurs during learning (Bedworth, Bedworth, 2010, p. 428).

*Sacred Geometry*: The geometry of Euclid, used for symbolic purposes, in the service of traditional and sacred architecture (Strachan, 2003).

*Sacred Setting/Space*: Is a place where one can go to get help in contacting non-physical realms. These can be places of emotion, intuition, and the spirit. These sacred spaces are located and designed to enhance contact with spiritual realms (Lonegren, 2007).

*Safety*: An ever-changing condition in which one attempts to minimize the risk of injury, illness, death or property damage to maximize success (Bedworth, Bedworth, 2010, p. 439).

*Self – Actualizing*: The ongoing process of realizing one's potential (Bedworth, Bedworth, 2010, p. 439).

*Spirit*: 1. Synonym for apparition or ghost, the surviving aspect of self after death that may be perceived by the living; 2. A transcendent aspect of self that connects the self to eternal All (Benor, 2001, p. 520).

*Solution-based Therapy (SBT)*: Problem-solving is accomplished through focusing on solutions intended to overcome problems or barriers. The client is viewed as an expert in the helping process and is capable of producing positive change while maintaining self-efficacy (Nieves-Serrano, Jacinto, Chapple, 2015, p. 3).

*Spiritual Emergency*: Rapid or dramatic psychospiritual development in which a person becomes partially or fully dysfunctional for a period of time (Taylor, 1995, p. 239).

*State-Trait Anxiety Inventory (STAI)*: It is a questionnaire used to measure via self-report the presence and severity of current symptoms of anxiety and a generalized propensity to be anxious. Versions of this measure are available for both adults and children. There are 2 subscales within this measure. First, the State Anxiety Scale (S-Anxiety) evaluates the current state of anxiety, asking how respondents feel “right now,” using items that measure subjective feelings of apprehension, tension, nervousness, worry, and activation/ arousal of the autonomic nervous system. Then the Trait Anxiety Scale (T-Anxiety) evaluates relatively stable aspects of “anxiety proneness,” including general states of calmness, confidence, and security. The STAI has 40 items, 20 items allocated to each of the S-Anxiety and T-Anxiety subscales (Julian, 2011).

*Stress*: A physical, chemical, or emotional factor that causes bodily or mental tension and may be a factor in disease causation, or a state of bodily or mental tension resulting from factors that tend to alter an existing equilibrium. Stress results from negative experiences such as arguments, scary thoughts, depression, exhaustion, divorce, and death. It can also be the byproduct of positive experiences such as the birth of a child, going back to school, getting married, or

receiving a long-awaited job promotion. It can also be caused by environmental factors such as extreme weather conditions, toxic air pollution, and the people around you (Bassett, 1995, p. 211).

*Subtle Energy:* Generally, refers to all energies beyond the gross physical. Known in the traditions by such terms as prana and qi and, for example, said to be the mechanism through which acupuncture affects the body-these energies are often held to be the “missing link” between the intentional mind and the physical body (Wilber, Patten, Leonard, & Morelli, 2008, p. 173).

*Transference:* the client to react unconsciously to the caregiver’s feelings, thoughts, expectations, patterns of behavior and beliefs and may project his or her own feelings, thoughts, expectations and beliefs onto the caregiver (Taylor, 1995, p. 240).

*Transformation:* Change of form or structure; conversion from one form to another (Newman, 2013, p. 781).

*Unicursal:* One path without loops or branches(Mathews, 1970). It has no cul-de-sacs or dead ends and is in truth designed for the walker to find his or her way to the center (Attali, 1999).

*Unitive Experience:* An experience in which one feels one with all and part of everything in creation (Taylor, 1995, p. 241).

## **CHAPTER 3**

### **RESEARCH METHODS**

#### **INTRODUCTION**

The intent of this pilot study was to determine if labyrinth practice produced a positive state of mind. The study also included the immediate effects of walking a labyrinth and the effects of tracing a finger labyrinth for five consecutive days. This was done using the Marlowe-Crowne and Tellegen Absorption Scale, which were completed before and after study, along with the Positive State of Mind Scale and the Hassles and Uplift Scale which the participants were asked to complete at three separate times.

#### **INCLUSION AND EXCLUSION CRITERIA**

No special efforts were made to recruit any specific population. This was a sample of convenience, though no vulnerable populations were recruited. There were fourteen participants consented for this pilot study. Ten of the fourteen followed through with their commitment and participated from beginning to end.

Candidates were considered eligible if they were between the ages of eighteen and seventy-five. They were to be able to read and reply in handwritten English on the required questionnaires. Candidates needed to commit to attending two on-site meetings and be willing to trace the finger labyrinth for no more than fifteen minutes for five consecutive days in a private location.

Candidates were not considered if they had severe physical or mental health issues. The inability to walk unassisted through the floor labyrinth was considered a severe physical disability. Candidates were excluded if they had attended more than two meditation workshops,

classes or trainings within the last five years. Additionally, candidates enrolled in academic courses with the PI were neither recruited nor considered.

## **RECRUITMENT AND CONSENT PROCEDURES**

Individuals were recruited by email and flyers and offered a phone number to call in and make an appointment to have inclusion and exclusion criteria reviewed. The scripted format presented below was followed. Individuals who met criterion for inclusion and exclusion of the study were scheduled for an individual consenting time. At consenting and every test session it was made clear that participants may withdraw with no penalty from the study at any time.

### **Pre-screen script:**

Call received, caller indicates interest in participating in study.

Thank you for your interest in the labyrinth study. This phone call will be confidential. May I ask you a couple of preliminary questions? (If the answer is no say thank you for your time and end the phone call.) Wonderful, again, all your answers will be kept confidential

### **(Questions 1-6 must be answered YES or go directly to script B)**

1. You will need transportation to the labyrinth site in Golden Valley. Is that possible for you?
2. The time commitment would include the initial meeting which would be approximately 1 ½ hours, then for consecutive five days there is a fifteen-minute home assignment ending finally in a one-hour debriefing. Would you be willing to commit to that time commitment?
3. Are you between the ages of eighteen and seventy-five?
4. Are you able to read and write at an eighth-grade level?

5. Do you have access to a private location to trace the finger labyrinth?

**(Questions 1-6 must be answered NO or go directly to script B)**

6. Do you have any physical or mental health issues?
7. Have you attended more than 2 meditation workshops, classes or trainings within the last five years?
8. Are you currently enrolled in an academic class with the PI?

### **Script A**

Thank you for taking the time to answer those questions I would like to set up a time for us to have the initial meeting which will be approximately 1 ½ hours long and we will meet at Unity Minneapolis Church at 4000 Golden Valley Rd. in Golden Valley where I have rented a conference room. This research study is in no way connected to Unity Church.

### **Script B**

Thank you very much for showing interest in the study. We are currently in the process of taking applications for the study. If you are selected for the study, we will contact you within five days.

### **MATERIALS**

There were four questionnaires used for quantitative measures and a demographic survey. The four data collection instruments selected were the Marlowe-Crowne and Tellegen Absorption Scale, which were completed before and after study, along with the Positive State of Mind Scale and the Hassles and Uplift Scale which the participants were asked to complete at three separate times. The Positive State of Mind Scale and the Hassles and Uplift Scales were

completed before and immediately after walking the labyrinth, then again at the close of the study.

### **Marlowe-Crowne**

The Marlowe Crowne questionnaire is a 13-item true or false short form that is a measure of subject's tendencies to give answers that they may perceive are desired by the interviewer and or reflect perceived positive social norms. This variable can produce inaccurate or misleading findings unless properly controlled for in statistical analysis. The estimated time for completion is two minutes (Reynolds, 1982).

### **Tellagen Absorption Scale**

The Tellagen Absorption Scale is a 34-item, true or false questionnaire, well validated and shown reliable, derived from Tellagen Multidimensional Personality Questionnaire. Measure the degree to which the subject perceptual, motoric, imaginative, and ideation all resources can be committed to forming a unified representation of the and intentional object. The estimated maximum completion time is six minutes (Tellagen and Atkinson, 1974, page 274).

### **Hassles and Uplifts Scale Revised**

The Hassles and Uplifts Scale revised is a 53-item scale assessing what events of daily life are currently providing positive and negative stressors. Completion time is estimated at twelve minutes (DeLongis, A., Folkman, S., & Lazarus, R.S., 1988).

## **Positive State of Mind Scale**

The Positive State of Mind Scale is a 7-item 4-point Likert scale that is used to assess the participants satisfying states of mind. The estimated completion time is three minutes (Horwitz et al., 1988).

## **METHODOLOGY AND DATA COLLECTION MANAGEMENT**

This project was created to evaluate an active intervention procedure to determine if labyrinth practice produces a positive state of mind. The protocol included using both a walking labyrinth and a finger labyrinth. The walking labyrinth was tested for its immediate effect by having the participants complete all four questionnaires prior to walking. The labyrinth was then walked for no more than fifteen minutes then the Hassles and Uplifts Scale and Positive States of Mind Scale were administered. Participants were then given instructions to trace a finger labyrinth for no more than fifteen minutes each day for five consecutive days and all agreed to the final meeting time to complete all four questionnaires.

To avoid any complications from weather an indoor facility including private table and chair space along with a walking labyrinth was located and rented at the Unity Minneapolis Church in Golden Valley, Minnesota. Follow-up consenting, questionnaires and the labyrinth walk were conducted in this facility. Tracing of the portable finger labyrinth were done at the participants private location.

## **Confidentiality of Personal Identifying Information**

To ensure personal information obtained about participants remained confidential a locked briefcase was used to transport questionnaires that were identified by code. Computer data was saved to a password locked USB which was stored in a fireproof safe along with the

questionnaires. Ongoing, two separate locked cabinets store the data. The consent forms are kept separate from the data taken during the study. After seven years all paper information will be shredded, and the USB will be deleted and destroyed.

### **ETHICAL CONSIDERATIONS BENEFITS, COSTS, COMPENSATION & RISKS**

There were no direct benefits offered, however labyrinth practice may produce a more positive state of mind. The potential broader benefits of the study were that the public may be made aware of the stress reduction and positive state of mind benefits of labyrinth practice. Cost experienced by participants were mainly time considerations. Participants spent approximately 5 to 10 hours from intake to termination. Ten dollars of travel compensation was offered. There was no additional monetary compensation or cost for participants. The finger labyrinth was provided at no cost.

There are no known risks to walking a labyrinth or utilizing a finger labyrinth. However, provisions were made for the safety of the participant. There were zero incidents throughout the study. Had a participant reported any type of a negative reaction either 911 would have been called for a physical injury, or they would have been referred to a low-cost no cost for support counseling. Referral and resource information was also provided.

## **CHAPTER 4**

### **RESEARCH FINDINGS**

As a pilot this study identified through quantitative analysis and subjective observation, by the principal investigator, valuable information needed to produce the framework for a larger research project. “A pilot study is a requisite initial step in exploring a novel intervention or an innovative application of an intervention. Pilot results can inform feasibility and identify modifications needed in the design of a larger, ensuing hypothesis testing study. Investigators should be forthright in stating these objectives of a pilot study. Grant reviewers and other stakeholders should expect no more” (Leon, Davis, & Kraemer, 2011).

### **STATISTICAL ANALYSIS**

#### **1. Methods**

**1.1 Study Design:** This is a prospective, pre-post test pilot study

**1.2 Study Outcomes:** The following quantitative study outcomes were measured at baseline (pre-intervention) and various post-intervention assessment time points:

(1) Hassle and Uplift Scale

- 53 items for Hassle and Uplift
- Each item is measured on a 0-3 Likert scale (0=“None or not applicable”, 1=“Somewhat”, 2=“Quite a bit”, 3=“A great deal”)
- Hassle: Range 0 – 159 – a higher score indicates more “hassle”
- Uplift: Range 0 -159 – a higher score indicates more “uplift”

(2) Tellegen Absorption Scale

- 34 items
- Each item is scores as “True” or “False”
- Total score is the number of “True” responses across all 34 items: Range 0 – 34 – a higher score indicates higher level of “absorptions”.

(3) Marlowe-Crowne Social Desirability Scale

- 33 True/False items.
- Higher total score across all 33 items indicates better outcome
- Interpretation: Low Scorers 0-8, Average Scorers: 9-19, High Scorers: 20-33

(4) Positive State of Mind Scale

- 7 items measured on a 1-4 Likert scale (1-unable to have it, 2-trouble having it, 3-limited in having it, 4-have it)
- Total score is sum over all 7 items
- Higher score indicates better outcome

**1.3 Effect Sizes:** The magnitude of changes in the study outcomes from baseline was assessed using Cohen's Effect Size D (=absolute difference between from pre-intervention to post-intervention divided by the standard deviation). Cohen's Effect Size D can be interpreted as follows:

- Small  $0.2 < d < 0.5$
- Medium  $0.5 \leq d < 0.8$
- Large  $d \geq 0.8$

Reference: Cohen J. Statistical Power Analysis for the Behavioral Sciences, Hillsdale, NJ: Lawrence Earlbaum Associates, 1988).

**1.4 Statistical Methods:** All outcome measures were summarized in terms of number of observation, means and standard deviations, stratified by assessment time points. Furthermore, mean changes and standard deviations from baseline to each post-test assessment time point were reported along with the corresponding Cohen's effect size D. Changes from baseline to each post-test assessment time point were evaluated using a paired t-test. All reported P-values are two-sided and  $P < 0.05$  was used to define statistical significance.

## 2.1 Results

**Table 1: Demographics (N=10 participants)**

	Mean (SD)
Age (yrs.)	60 (12.5)
	N (%)
Ethnicity	
White	9 (90)
Black or African American	1 (10)
Education highest degree received	
Some college, no degree	1 (10)
Associated degree	1 (10)
Bachelor's degree	4 (40)
Master's degree	4 (40)
Employment status	
Employed for wages	1 (10)
Self employed	4 (40)
Out of work	1 (10)
Retired	3 (30)
Student	1 (10)

**Table 2: Hassle and Uplift Scale scores summary statistics**

SUBSCALE	TIME	MEAN	SD
Hassle	Baseline	32.2	14.5
Hassle	Immediately After Labyrinth Walk <sup>1</sup>	32.7	17.0
Hassle	After Labyrinth Practice (Final) <sup>2</sup>	30.1	20.6
Uplift	Baseline	46.6	31.0
Uplift	Immediately After Labyrinth Walk <sup>1</sup>	53.3	27.2
Uplift	After Labyrinth Practice (Final) <sup>2</sup>	41.2	22.6

<sup>1</sup>Assessment conducted immediately after the labyrinth walk

<sup>2</sup>Final Assessment conducted after 5 days of finger labyrinth practice

**Table 3: Hassle and Uplift scale – change from baseline to session 1 and session 2**

<b>SUBSCALE</b>	<b>TIME</b>	<b>MEAN</b>	<b>SD</b>	<b>COHEN'S D EFFECT SIZE</b>	<b>P-VLAUE†</b>
Hassle	Immediately After Labyrinth Walk <sup>1</sup>	0.5	9.1	0.05	0.8660
Hassle	After Labyrinth Practice (Final) <sup>2</sup>	-2.1	9.9	0.21	0.5208
Uplift	Immediately After Labyrinth Walk <sup>1</sup>	6.7	21.2	0.32	0.3443
Uplift	After Labyrinth Practice (Final) <sup>2</sup>	-5.4	29.0	0.19	0.5702

† P-value for evaluating changes from Baseline

<sup>1</sup>Assessment conducted immediately after the labyrinth walk

<sup>2</sup>Final Assessment conducted after 5 days of finger labyrinth practice

**Table 4: Hassle and Uplift scale – change from session 1 (immediately after labyrinth walk) to session 2 (after labyrinth practice)**

<b>SUBSCALE</b>	<b>MEAN</b>	<b>SD</b>	<b>COHEN'S D EFFECT SIZE</b>	<b>P-VLAUE†</b>
Hassle	-2.6	7.3	0.35	0.2914
Uplift	-12.1	18.6	0.65	0.0692

† P-value for evaluating changes from session 1 to session 2 (final)

**Table 5: Tellegen Absorption Scale scores summary statistics**

<b>TIME</b>	<b>MEAN</b>	<b>SD</b>
Baseline	16.0	7.4
After Labyrinth Practice (Final) <sup>1</sup>	17.6	9.8

<sup>1</sup>Final Assessment conducted after 5 days of finger labyrinth practice

**Table 6: Tellegen Absorption Scale – change from baseline to session 1**

<b>TIME</b>	<b>MEAN</b>	<b>SD</b>	<b>COHEN'S D EFFECT SIZE</b>	<b>P-VLAUE†</b>
After Labyrinth Practice (Final) <sup>1</sup>	1.6	3.2	0.50	0.1488

† P-value for evaluating changes from Baseline

<sup>1</sup>Final assessment conducted after 5 days of finger labyrinth practice

**Table 7: Marlowe-Crowne Social Desirability Scale scores summary statistics**

<b>TIME</b>	<b>MEAN</b>	<b>SD</b>
Baseline	16.8	2.9
After Labyrinth Practice (Final) <sup>1</sup>	17.4	2.0

<sup>1</sup>Final Assessment conducted after 5 days of finger labyrinth practice

**Table 8: Marlowe-Crowne Social Desirability Scale – change from baseline to session 1**

<b>TIME</b>	<b>MEAN</b>	<b>SD</b>	<b>COHEN'S D EFFECT SIZE</b>	<b>P- VLAUE†</b>
After Labyrinth Practice (Final) <sup>1</sup>	0.6	1.6	0.38	0.2598

† P-value for evaluating changes from Baseline

<sup>1</sup>Final assessment conducted after 5 days of finger labyrinth practice

**Table 9: Positive States of Mind Scale scores summary statistics**

ITEM	TIME	MEAN	SD
1. Focused Attention	Baseline	3.2	0.8
	Immediately After Labyrinth Walk <sup>1</sup>	3.4	0.5
	After Labyrinth Practice (Final) <sup>2</sup>	3.3	0.7
2. Productivity	Baseline	3.6	0.5
	Immediately After Labyrinth Walk <sup>1</sup>	3.7	0.5
	After Labyrinth Practice (Final) <sup>2</sup>	3.7	0.7
3. Responsible Caretaking	Baseline	3.5	0.5
	Immediately After Labyrinth Walk <sup>1</sup>	3.2	0.6
	After Labyrinth Practice (Final) <sup>2</sup>	3.2	0.4
4. Restful Repose	Baseline	3.1	0.7
	Immediately After Labyrinth Walk <sup>1</sup>	3.0	0.7
	After Labyrinth Practice (Final) <sup>2</sup>	3.2	0.6
5. Sharing	Baseline	3.6	0.7
	Immediately After Labyrinth Walk <sup>1</sup>	3.6	0.5
	After Labyrinth Practice (Final) <sup>2</sup>	3.5	0.5
6. Sensuous NonS Pleasure	Baseline	3.6	0.5
	Immediately After Labyrinth Walk <sup>1</sup>	3.5	0.5
	After Labyrinth Practice (Final) <sup>2</sup>	3.5	0.5
7. Sensuous S Pleasure	Baseline	2.8	1.0
	Immediately After Labyrinth Walk <sup>1</sup>	2.6	1.2
	After Labyrinth Practice (Final) <sup>2</sup>	2.5	1.0
Total	Baseline	23.4	2.5
Total	Immediately After Labyrinth Walk <sup>1</sup>	23.0	2.2
Total	After Labyrinth Practice (Final) <sup>2</sup>	22.9	2.7

<sup>1</sup>Assessment conducted immediately after the labyrinth walk

<sup>2</sup>Final assessment conducted after 5 days of finger labyrinth practice

**Table 10: Positive States of Mind Scale – change from baseline to session 1 and baseline to session 2**

ITEM	TIME	MEAN	SD	COHEN'S D EFFECT SIZE	P-VLAUE†
1. Focused Attention	Immediately After Labyrinth Walk <sup>1</sup>	0.2	0.4	0.47	0.1679
	After Labyrinth Practice (Final) <sup>2</sup>	0.1	0.3	0.32	0.3434
2. Productivity	Immediately After Labyrinth Walk <sup>1</sup>	0.1	0.6	0.18	0.5911
	After Labyrinth Practice (Final) <sup>2</sup>	0.1	0.7	0.14	0.6783
3. Responsible Caretaking	Immediately After Labyrinth Walk <sup>1</sup>	-0.3	0.9	0.32	0.3434
	After Labyrinth Practice (Final) <sup>2</sup>	-0.3	0.8	0.36	0.2789
4. Restful Repose	Immediately After Labyrinth Walk <sup>1</sup>	-0.1	0.6	0.18	0.5911
	After Labyrinth Practice (Final) <sup>2</sup>	0.1	0.9	0.11	0.7263
5. Sharing	Immediately After Labyrinth Walk <sup>1</sup>	0.0	0.5	0.00	1.0000
	After Labyrinth Practice (Final) <sup>2</sup>	-0.1	0.9	0.11	0.7263
6. Sensuous NonS Pleasure	Immediately After Labyrinth Walk <sup>1</sup>	-0.1	0.3	0.32	0.3434
	After Labyrinth Practice (Final) <sup>2</sup>	-0.1	0.7	0.14	0.6783
7. Sensuous S Pleasure	Immediately After Labyrinth Walk <sup>1</sup>	-0.2	0.6	0.32	0.3434
	After Labyrinth Practice (Final) <sup>2</sup>	-0.3	0.7	0.44	0.1934
Total Score	Immediately After Labyrinth Walk <sup>1</sup>	-0.4	2.0	0.20	0.5338
Total Score	After Labyrinth Practice (Final) <sup>2</sup>	-0.5	2.6	0.19	0.5633

† P-value for evaluating changes from Baseline

<sup>1</sup>Assessment conducted immediately after the labyrinth walk

<sup>2</sup>Assessment conducted after 5 days of finger labyrinth practice

**Table 11: Positive States of Mind Scale – change from session 1 to session 2 (final assessment)**

	Mean	SD	COHEN'S D EFFECT SIZE	P- VLAUE†
1. Focused Attention	-0.10	0.32	0.32	0.3434
2. Productivity	0.00	0.67	0.00	1.0000
3. Responsible Caretaking	0.00	0.67	0.00	1.0000
4. Restful Repose	0.20	0.92	0.22	0.5086
5. Sharing	-0.10	0.57	0.18	0.5911
6. Sensuous NonS Pleasure	0.00	0.67	0.00	1.0000
7. Sensuous S Pleasure	-0.10	0.74	0.14	0.6783
Total Score	-0.10	2.47	0.04	0.9009

† P-value for evaluating changes from session 1 to session 2 (final)

## SUMMARY

As this was a pilot study with a small sample size there were no significant changes. The study did appear to indicate slight improvements in both the Marlowe-Crowne Social Desirability Scale and the Tellegen Absorption Scale. These effects gave the impression that people moved more toward truth after walking the labyrinth and tracing the labyrinth with their finger. The suggestion is to repeat this study with a longer test period and a larger sample size and modification of the finger labyrinth to the style that is grooved along the path.

## **CHAPTER 5**

### **DISCUSSION AND SUMMARY**

#### **INTRODUCTION**

This pilot study included walking the floor labyrinth and tracing the finger labyrinth. Unfortunately, empirical research on the labyrinth is minimal, and studies are needed to create a more robust foundation. Hopefully this increased body of knowledge will strengthen the results of future studies looking at additional uses for the labyrinth and the potential benefits. As stated earlier in chapter 1, this pilot study was conducted to determine through quantitative measures any shift towards a positive state of mind after walking the labyrinth. The additional purpose of this study was to determine through scientific measurement the relationship between a positive state of mind before and after tracing the finger labyrinth for five consecutive days.

#### **DISCUSSION OF THE RESULTS**

The findings of this pilot study as they relate to the three Specific Aims, each of which included two hypotheses, did not show significant changes. However, the outcomes did produce enough information to support the study be repeated on a larger scale. As expected this study did highlight specific methods within the study that need to be evaluated and altered to remove confounding variables and increase the significance of the study. These items will be addressed throughout this chapter.

It appears that, for most comparisons, no effect size or a small effect size was observed. Please note that the study only included ten subjects and did not provide adequate power to detect small effect sizes. The small numbers, including a demographic which was a sample of

convenience would need to be expanded to incorporate a larger, more diverse population, as well as significantly increasing the numbers of participants in order to have a valid sample for research. Nonsignificant results do not mean that there is no difference; it only means that there is not enough evidence to detect a difference.

Specific Aim One, which was to determine if walking the labyrinth for no longer than fifteen minutes produces an altered state of consciousness, included two Hypotheses. Hypothesis one stated “Walking the labyrinth does not change a person’s desire to provide socially correct information at a level of significant ( $p < 0.05$ ) as measured by the Marlowe-Crowne Social Desirability Scale.

It looks as if this hypothesis cannot be tested directly as the Marlowe-Crowne Desirability Scale and the Tellegen Absorption scale were not re-administered immediately after the labyrinth walk. Because of this there were two exposure conditions which were confounded; walking the labyrinth and tracing the finger labyrinth. There needs to be a direct assessment of both the Marlowe-Crowne Desirability Scale and the Tellegen Absorption scale immediately after walking the labyrinth and before starting the process of tracing the labyrinth.

The second Hypothesis of Specific Aim One specified that “Walking the labyrinth does not produce a hypnogogic state at a level of significant ( $p < 0.05$ ) as measured by the Tellegen Absorption Scale.” There was moderate increase (improvement) in the Tellegen Absorption Scale score of 1.6 +/- 3.2.

It would be important to continue the use of the Tellegen Absorption Scale. Research studies have found it is important to test for absorption because

“Absorption reflects an individual’s cognitive capacity for involvement in sensory and imaginative experiences in ways that alter an individual’s perception, memory, and mood

with behavioral and biological consequences. Thus, one's level of absorption may potentially create differential treatment effects in mind–body intervention outcomes. Conducting practical clinical trials helps address the challenge of determining whether a specific mind–body modality intervention may be effective. Such trials may be strengthened by including measures of personality dimensions such as absorption” (Menzies, Taylor, & Bourguignon, 2008, p. 297).

Specific Aim Two was to determine if walking the labyrinth for no longer than fifteen minutes promotes a positive state of mind. Voluntary comments made by participants prior to walking the labyrinth included “What if I get lost,” “What if I don't experience a positive state of mind” and “What if I do it wrong.” Example of comments made post labyrinth walk were, “It was difficult to make the 180° turns”, “I have motion sickness and it made me dizzy” and “That was the most amazing experience I've ever had. I entered the labyrinth feeling anxious and came out feeling calm.”

The first hypothesis for specific aim two specified that walking the labyrinth for no longer than fifteen minutes as a method of relaxation and personal transformation produces a positive state of mind at a level of significant ( $p < 0.05$ ) improvement as measured by the Hassles and Uplift Scale. The results do not support this hypothesis. The effect size for the “Hassles” domain was only  $d=0.05$  ( $p=0.8660$ ) which indicates no change. There was a slight increase in the “Uplift” domain ( $6.7 \pm 21.2$ ) with a small effect size  $d=0.32$  which was not statistically significant.

An observation made of individual participants as they made their way through the floor labyrinth was that some walked very mindfully and slowly while others treated it as a project and quickly moved through. This was not true for all participants as one stated “The walk felt

powerful. I came in upset from therapy. When I completed the labyrinth walk I was not upset about anything, felt even.” Future studies might contemplate whether to include more detailed instruction for walking a labyrinth.

The second Hypothesis for Specific Aim Two held that walking the labyrinth for no longer than fifteen minutes as a method of relaxation and personal transformation produces a positive state of mind at a level of significant ( $p < 0.05$ ) improvement as measured by Positive States of Mind Scale. The results do not support this hypothesis. There was a small decrease in the total score detect ( $-0.4 \pm 2.0$ ) with a small effect size  $d = 2.0$ , which was not statistically significant ( $p = 0.5338$ ). Although this small pilot study, with only ten participants, did not produce results that are statistically significant the results can be used for planning a follow-up study. Useful information would include the effect sizes to help determine more precisely estimated required numbers of participants

Lastly Specific Aim Three was to determine if the finger labyrinth promotes a positive state of mind when utilized daily for fifteen minutes as a substitute for direct labyrinth walking. Informal comments by participants appear to indicate that participants tended to try and rush through tracing the finger labyrinth which would frustrate them, and it became more of a task than something they enjoyed; more direction may need to be given here as well.

Hypothesis One for Specific Aim Three stated “Utilizing the finger labyrinth for fifteen minutes a day as a method of relaxation and personal transformation produces a positive state of mind at a level of significant ( $p < 0.05$ ) improvement as measured by the Hassles and Uplifts Scale.” The results indicate that after the finger labyrinth practice, there was a small decrease in the “Hassle” score of the Hassle and Uplift Scale showing  $-2.6 \pm 7.3$  with small effect size  $d = 0.35$  which was, however, not statistically significant. Interestingly, however, there was also

a negative trend towards statistical significance observed in “Uplifts” with a mean decrease of -12.1 +/- 18.6 with a moderate effect size  $d=0.65$  ( $p=0.0692$ ). Overall, the results do not support the stated hypothesis.

Hypothesis Two for Specific Aim Three was that utilizing the finger labyrinth for fifteen minutes a day as a method of relaxation and personal transformation produces a positive state of mind at a level of significant ( $p < 0.05$ ) improvement as measured by Positive States of Mind Scale. There were no changes in the total or individual items observed in the Positive States of Mind Scale after the finger labyrinth practice was implemented.

Interestingly participant comments regarding the use of the finger labyrinth was overwhelmingly negative. This may be an indicator of the decrease in uplift. Comments made included: “Wish I could have only done the walking for five days.” “Walking felt meditative, finger labyrinth was annoying, tried to go fast and kept losing place.” “Difficult to follow finger labyrinth, took three attempts to get to the middle.” “Wanted to go fast, I slowed down, and it was still hard. Frustrated going slow.” “Using finger labyrinth not enjoyable had to concentrate.” “Lost focus going too fast.” “Felt quiet at walk, very good relaxing. Grateful to have the finger labyrinth and will continue to use.” A restriction may have been not understanding meditation or mindfulness, could have made it difficult, or at least reduced, the desire to relax, or meditate, or slow down.

## **SUGGESTIONS FOR ADDITIONAL RESEARCH**

Suggestions for additional research were included throughout this chapter, with the main suggestion being to answer the specific aims of this study with a large scope empirical study. The study should include diversity in the demographics, a larger participant number and a more

thorough introduction to what is expected. In addition, a longer study length and deciding whether to continue incorporating both walking and tracing the labyrinth or focusing on one modality. The initial rationale behind incorporating both walking and tracing was that in reality people do not have as regular access to a walking labyrinth as they can a finger labyrinth.

There also needs to be a direct assessment of both the Marlowe-Crowne Desirability Scale and the Tellegen Absorption scale immediately after walking the labyrinth and before starting the process of tracing the labyrinth. There were also varying informal comments made by participants indicating some people walked it quite quickly. This suggests there should be more time for explanation, possibly more restriction toward physical ability or a different labyrinth pattern. A grooved finger labyrinth pattern is recommended. Future studies might contemplate whether to include more detailed instructions for walking a labyrinth.

## REFERENCES

- Artress, L. (1996). *Walking a Sacred Path*. New York: Penguin Group US. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&scope=site&db=nlebk&db=nlabk&AN=1117998>
- Artress, L. (2006). *Sacred Path Companion: A Guide to Using the Labyrinth to Heal and Transform*. New York: Riverhead Publishers.
- Attali, J. (1999). *The labyrinth in culture and society: pathways to wisdom*. Berkeley, Calif: North Atlantic Books.
- Bedworth, D., Albert. (2010). *The Dictionary of Health Education*. Oxford: Oxford University Press.
- Beers, M. H. (2003). *The Merrick Manual of Medical Information (2nd Home)*. New York, New York: Pocket Books: Simon and Schuster.
- Benor, D. J. (2001). *Spiritual Healing: Scientific Validation of a Healing Revolution*. Southfield, MI: Vision Publications.
- Bigard, M. (2009). Walking the Labyrinth: An Innovative Approach to Counseling Center Outreach. *Journal of College Counseling, 12*.
- Boardman, P. (2017). Investigating Labyrinth Walking as a Tool for Stress Relief in the Workplace. *International Journal of Stress Prevention and Well-Being, 1, Article 12, 2017, 11*. Retrieved from [www.nationalwellbeingservice.com/journals](http://www.nationalwellbeingservice.com/journals)
- Bosbach, S. (1998). Mind Mirror Measurements at the Levi Labyrinth. *Med-Atlantic Geomancy, 12*.
- Bradley, I. (2009). *Pilgrimage: A Spiritual and Cultural Journey (First)*. England: Lion Hudson.

- Campbell, R. J. (2009). *Campbell's Psychiatric Dictionary* (9th ed.). New York, New York: Oxford University Press.
- Charpentier, L. (1972). *The mysteries of Chartres Cathedral*. London: Research into Lost Knowledge Organization; Distributed by Thoron's. Retrieved from [http://books.google.com/books?id=\\_AhJAQAIAAJ](http://books.google.com/books?id=_AhJAQAIAAJ)
- Cook, Brennan Croft, M., Janet. (2015). Interactive Mindfulness Technology: a Walking Labyrinth in an Academic Library. *C&RL News*.
- Curry, H. (2000). *The Way of the Labyrinth: a Powerful Meditation for Everyday Life*. New York: Penguin Group.
- Francisco, J. M. (2006). Into the Labyrinth: Excursions and Applications for Creative Process. *Creative Studies Graduate Student Master's Projects*, 47–58.
- Geomancy. (2018). [geomancy.org/index.php/labyrinths/glastonbury-tor-labyrinth](http://geomancy.org/index.php/labyrinths/glastonbury-tor-labyrinth).
- Gerber, R. (2000). *Vibrational Medicine for the 21st Century: A Complete Guide to Energy Healing and Spiritual Transformation*. New York: HarperCollins.
- Gersbach, J. (2008). Labyrinths Find Their Way onto Hospital Grounds as Paths to Healing. *The Permanente Journal*, 12(4), 77–80. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3037149/>
- Glasser, W. (1975). *Reality Therapy: a New Approach to Psychiatry* (Paperback). Harper and Row.
- Hancock, G. D. (2004). *108 Ways to use the labyrinth in schools* (first). Las Vegas: Hancock & Associates.

- Harris, N. (2002). Effective, short-term therapy: utilizing finger labyrinths to promote brain synchrony. *Annals of the American Psychotherapy Association*, (September – October), 22+.
- Harris, N. (2008). Labyrinth: catalyst for therapeutic growth. *Labyrinth Articles*.
- Heard, C. P., Scott, J., & Yeo, R. S. (2015). Walking the Labyrinth: Considering Mental Health Consumer Experience, Meaning Making, and the Illumination of the Sacred in a Forensic Mental Health Setting. *Journal of Pastoral Care & Counseling*, 69(4), 240–250.  
<https://doi.org/10.1177/1542305015616102>
- Himmelstein, S. (2010). Meditation Research: The State of the Art and Correctional Setting. *International Journal of Offender Therapy and Comparative Criminology*, 55(4), 646–661. <https://doi.org/10.1177/0306624X10364485>
- Hong, Y. J., & Jacinto, G. A. (2012). Reality Therapy and the Labyrinth: A Strategy for Practice. *Journal of Human Behavior in the Social Environment*, 22(6), 619–634.  
<https://doi.org/10.1080/10911359.2012.655561>
- Julian, L. J. (2011). Measures of Anxiety: State-Trait Anxiety Inventory (STAI), Beck Anxiety Inventory (BAI), and Hospital Anxiety and Depression Scale-Anxiety (HADS-A). *Arthritis Care and Research*, 63(S11), S467–S472. <https://doi.org/10.1002/acr.20561>
- Jung, C. (1969). *Synchronicity: An Acausal Connecting Principle* (Second). New Jersey: Princeton University Press.
- Kazdin, A. E. (2003). *Research Design in Clinical Psychology*. Boston: Allyn & Bacon.
- Leon, A. C., Davis, L. L., & Kraemer, H. C. (2011). The Role and Interpretation of Pilot Studies in Clinical Research. *Journal of Psychiatric Research*, 45(5), 626–629.  
<https://doi.org/10.1016/j.jpsychires.2010.10.008>

- Lonegren, S. (2007). *Labyrinths: ancient myths and modern uses*. Glastonbury: Gothic Image.
- Lust, K. (2012a). *College Student Health Survey Report*. Boynton Health Services.
- Lust, K. (2012b). *Health and Health-Related Behaviors Minnesota Postsecondary Student Veterans Health Survey Report*. Boynton Health Services.
- MacQueen, G. (2005). *The spirituality of mazes & labyrinths*. Kelowna, B.C.: Wood Lake Books.
- Mathews, W. H. (1970). *Mazes and labyrinths; their history and development*. New York: Dover Publications.
- McCarthy, M. (2007). *SCHOOL LABYRINTH GUIDE Manual by Lesson Plans and Classroom Ideas edited by Cheryl Andrews Construction Workbook by Cheryl Andrews, Published by © 2007. Labyrinth Resource Group*.
- Menzies, V., Taylor, A. G., & Bourguignon, C. (2008). Absorption: An Individual Difference to Consider in Mind–Body Interventions. *Journal of Holistic Nursing : Official Journal of the American Holistic Nurses' Association*, 26(4), 297–302.  
<https://doi.org/10.1177/0898010107307456>
- Newman, W. A. (2013). *Dorland Pocket Medical Dictionary (Twenty-ninth)*. Philadelphia: ELSEVIER Saunders.
- Nieves-Serrano, Jacinto, Chapple, B., George, Reshawna. (2015). Use of the Finger Labyrinth in Solution Focused Therapy. *American Psychotherapy Association*.
- Reynolds, W. (1982). Development of reliable and valid short forms of the Marlow–Crowne Social Desirability Scale. *Journal of Clinical Psychology*, 38, 119–125.
- Rhodes, J. (2008). Commonly Reported Effects of Labyrinth Walking. *Labyrinth Pathways*, 31–33.

- Ryan, M. P. (2014). *Dictionary of Emotions: Words for Feelings, Moods, and Emotions*. Portland, OR: PAMAXAMA.
- Sandor, M. K., & Froman, R. D. (2006). Exploring the Effects of Walking the Labyrinth. *Journal of Holistic Nursing*, 24(2), 103–110. <https://doi.org/10.1177/0898010105282588>
- Sellers, Moss, J., Bernard. (2017). *Learning with the Labyrinth: Creating Reflective Space in Higher Education*. London: Palgrave Teaching and Learning.
- Sharamon, Baginski, S., Bodo J. (1997). *The Chakra Handbook* (6th ed.). Wilmot: Lotus Light Publications.
- Shindle, M. (2010). Walking the Labyrinth: An Exercise in Self-Healing. *American Nurse Today*, 5(4).
- Siegel, D. (2010). *The Mindful Therapist*. W.W.Norton and Company Inc.
- Simpson, L. (2002). *The magic of labyrinths: following your path, finding your center*. London: Element. Retrieved from <https://www.overdrive.com/search?q=FE539772-EC24-4267-8354-CD81D4AE22D6>
- Strachan, G. (2003). *Chartres: sacred geometry, sacred space*. Edinburgh: Floris.
- Taylor, K. (1995). *The Ethics of Caring: Honoring the Web of Life in our Professional Healing Relationships* (Second). Santa Cruz, CA: Hanford Mead.
- Turnbull, J. (2015). *Oxford Advanced Learner's Dictionary* (Eighth). New York: Oxford University Press.
- Watson, B. (2016). [bwatsonstudios.com/new-products/chartes-finger-labyrinth](http://bwatsonstudios.com/new-products/chartes-finger-labyrinth).
- Wilber, K., Patten, T., Leonard, A., & Morelli, M. (2008). *Integral Life Practice: A 21st-Century Blueprint for Physical Health, Emotional Balance, Mental Clarity, and Spiritual Awakening*. Boston: Shambhala.

Willis, R. G. (1993). *World Mythology*. Stuttgart: Macmillan.

World Wide Labyrinth Locator”,(2018), retrieved from <https://www.labyrinthlocator.com>.

Yasgur, J. (1998). *Yasgur's Homeopathic Dictionary and Holistic Health Reference*. Greenville, PA: Van Hoy.

Young, M. E. (2013). *Learning the Art of Helping: Building Blocks and Techniques* (Fifth). New Jersey: Pearson.

Yutalas, L. (2013). ADHD & Finger Labyrinth Research Summary. *Unpublished Thesis*.

Zucker, Sharma, D., Amy. (2012). Labyrinth Walking in Corrections. *Journal of Addictions Nursing*, (Twenty-three), 47–54. <https://doi.org/10.3109/10884602.2011.645253>

Zucker, Villemarie, Rigali, Callahan, D., Lorraine, Catherine, Kathryn. (2013). The Evolution of a Labyrinth Walking Program in Corrections. *Journal of Forensic Nursing*, (April-June), 101–104. <https://doi.org/10.1097/JFN.0b013e-318281057>

## **APPENDIX A:**

### **RESEARCH PARTICIPANT CONSENT FORM**

Project Title: To Determine if Labyrinth Practice Produces a Positive State of Mind

I AM BEING ASKED TO READ THE FOLLOWING MATERIAL TO ENSURE THAT I AM INFORMED OF THE NATURE OF THIS RESEARCH STUDY AND OF HOW I WILL PARTICIPATE IN IT, IF I CONSENT TO DO SO. SIGNING THIS FORM WILL INDICATE THAT I HAVE BEEN SO INFORMED AND THAT I GIVE MY CONSENT. FEDERAL REGULATIONS REQUIRE WRITTEN INFORMED CONSENT PRIOR TO PARTICIPATION IN THIS RESEARCH STUDY SO THAT I CAN KNOW THE NATURE AND RISKS OF MY PARTICIPATION AND CAN DECIDE TO PARTICIPATE OR NOT PARTICIPATE IN A FREE AND INFORMED MANNER.

#### **PURPOSE**

I am being invited to participate voluntarily in the above-titled research project. The purpose of this project is to determine if labyrinth practice produces a positive state of mind.

#### **SELECTION CRITERIA**

I am being invited to participate because I can walk unassisted through the labyrinth, complete written questionnaires and have no major mental or physical health challenges. Approximately 15 subjects will be enrolled in this study.

#### **PROCEDURE(S)**

If I agree to participate, I will be asked to consent to the following: The time commitment would include the initial meeting which will be approximately 1 ½ hours completing questionnaires and a fifteen-minute labyrinth walk. Then for the consecutive five days there is a fifteen-minute home assignment to trace the finger labyrinth. Attend a final on-site meeting to complete questionnaires.

#### **RISKS**

There is no known risk to walking the labyrinth or utilizing a finger labyrinth even so, a list of appropriate referrals has been compiled. Individuals who have a difficulty of any kind will be provided that list.

#### **BENEFITS**

A potential benefit of walking the labyrinth or tracing the finger labyrinth may be a more positive state of mind.

CONFIDENTIALITY

Your participation is solicited although strictly voluntary. We assure you that your name will not be associated in any way with the research findings. A code number will only identify the information.

PARTICIPATION COSTS AND SUBJECT COMPENSATION

There is no cost to participants for all materials; which are provided. Compensation for travel will be ten dollars in cash. A receipt will be signed at the time of payment.

CONTACTS

I can obtain further information from the principal investigator Sheila D. Gunderson, M.S. 612-801-3538. If I have questions concerning my rights as a research subject, I may call the Human Subjects Committee representative at (520) 609-1765.

AUTHORIZATION

BEFORE GIVING MY CONSENT BY SIGNING THIS FORM, THE METHODS, INCONVENIENCES, RISKS, AND BENEFITS HAVE BEEN EXPLAINED TO ME AND MY QUESTIONS HAVE BEEN ANSWERED. I MAY ASK QUESTIONS AT ANY TIME AND I AM FREE TO WITHDRAW FROM THE PROJECT AT ANY TIME WITHOUT CAUSING BAD FEELINGS. MY PARTICIPATION IN THIS PROJECT MAY BE ENDED BY THE INVESTIGATOR FOR REASONS THAT WOULD BE EXPLAINED. NEW INFORMATION DEVELOPED DURING THE COURSE OF THIS STUDY WHICH MAY AFFECT MY WILLINGNESS TO CONTINUE IN THIS RESEARCH PROJECT WILL BE GIVEN TO ME AS IT BECOMES AVAILABLE. THIS CONSENT FORM WILL BE FILED IN AN AREA DESIGNATED BY THE HUMAN SUBJECTS COMMITTEE WITH ACCESS RESTRICTED TO THE PRINCIPAL INVESTIGATOR, SHEILA D. GUNDERSON, M.S., OR AUTHORIZED REPRESENTATIVE OF THE HOLOS UNIVERSITY INSTITUTIONAL RESEARCH DEPARTMENT. I DO NOT GIVE UP ANY OF MY LEGAL RIGHTS BY SIGNING THIS FORM. **A COPY OF THIS SIGNED CONSENT FORM WILL BE GIVEN TO ME.**

\_\_\_\_\_  
Subject's Signature

\_\_\_\_\_  
Date

INVESTIGATOR'S AFFIDAVIT

I have carefully explained to the subject the nature of the above project. I hereby certify that to the best of my knowledge the person who is signing this consent form understands clearly the nature, demands, benefits, and risks involved in his/her participation and his/her signature is legally valid. A medical problem or language or educational barrier has not precluded this understanding.

\_\_\_\_\_  
Signature of Investigator

\_\_\_\_\_  
Date

**APPENDIX B:  
MARKETING FLYER**

Appendix B



LABYRINTH RESEARCH

**VOLUNTEERS  
NEEDED**

FOR DISSERTATION STUDY

**WHAT TO EXPECT:**

Selected participants will be asked to

- ❖ attend an informational session.
- ❖ have the opportunity to walk a labyrinth.
- ❖ be given a portable finger labyrinth and instructions on how to use.
- ❖ be asked to complete questionnaires regarding your labyrinth experience.
- ❖ transportation stipend to study site.

Time commitment will be minimal: dates scheduled individually

FOR MORE INFORMATION CONTACT: SHEILA D. GUNDERSON @ 612.801.3538

## **APPENDIX C: SCRIPT**

### **Pre-screen script:**

Call received, caller indicates interest in participating in study.

Thank you for your interest in the labyrinth study. This phone call will be confidential. May I ask you a couple of preliminary questions? (If the answer is no say thank you for your time and end the phone call.) Wonderful, again, all your answers will be kept confidential

### **(questions 1-6 must be answered YES or go directly to script B)**

1. You will need transportation to the labyrinth site in Golden Valley is that possible for you?
2. The time commitment would include the initial meeting which would be approximately 1 ½ hours, then for consecutive five days there is a fifteen-minute home assignment ending finally in a one-hour debriefing. Would you be willing to commit to that time commitment?
3. Are you between the ages of eighteen and seventy-five?
4. Are you able to read and write at an eighth-grade level?
5. Do you have access to a private location to trace the finger labyrinth?

### **(questions 1-6 must be answered NO or go directly to script B)**

6. Do you have any physical or mental health issues?
7. Have you attended more than 2 meditation workshops, classes or trainings within the last five years?
8. Are you currently enrolled in an academic class with the PI?

### **Script A**

Thank you for taking the time to answer those questions I would like to set up a time for us to have the initial meeting which will be approximately 1 ½ hours long and we will meet at Unity Minneapolis Church at 4000 Golden Valley Rd. in Golden Valley where I have rented a conference room. This research study is in no way connected to Unity Church.

### **Script B**

Thank you very much for showing interest in the study. We are currently in the process of taking applications for the study if you are selected for the study we will contact you within five days.

## APPENDIX D:

### THE MARLOWE-CROWNE SOCIAL DESIRABILITY SCALE

Douglas Crowne & David Marlowe  
Journal of Consulting Psychology, 1960, p. 35

Subject Number: \_\_\_\_\_

Read each item and decide whether the statement is true (**T**) or false (**F**) as it pertains to you  
Place the **T** or **F** mark in the space provided.

1. \_\_\_\_\_ Before voting, I thoroughly investigate the qualifications of all the candidates.
2. \_\_\_\_\_ I never hesitate to go out of my way to help someone in trouble.
3. \_\_\_\_\_ I never intensely disliked anyone.
4. \_\_\_\_\_ I am always careful about my manner of dress.
5. \_\_\_\_\_ My table manners at home are as good as when I eat out in a restaurant.
6. \_\_\_\_\_ It is sometimes hard for me to go on with my work if I am not encouraged.
7. \_\_\_\_\_ On occasions, I have had doubts about my ability to succeed in life.
8. \_\_\_\_\_ I sometimes feel resentful when I don't get my way.
9. \_\_\_\_\_ If I could get into a movie without paying and be sure I was not seen, I would probably do it.
10. \_\_\_\_\_ On a few occasions, I have given up something because I thought too little of my ability.
11. \_\_\_\_\_ I am always courteous even to people who are disagreeable.
12. \_\_\_\_\_ I would never think of letting someone else be punished for my wrong-doings.
13. \_\_\_\_\_ I never resent being asked to return a favor.
14. \_\_\_\_\_ I have never been irked when people expressed ideas very different from my own.
15. \_\_\_\_\_ I never make a long trip without checking the safety of my car.

16. \_\_\_\_\_ I have almost never felt the urge to tell someone off.
17. \_\_\_\_\_ I have never felt that I was punished without cause.
18. \_\_\_\_\_ I have never deliberately said something that hurt someone's feelings.
19. \_\_\_\_\_ No matter who I'm talking to, I'm always a good listener.
20. \_\_\_\_\_ I'm always willing to admit it when I make a mistake.
21. \_\_\_\_\_ I always try to practice what I preach.
22. \_\_\_\_\_ I don't find it particularly difficult to get along with loudmouthed, obnoxious people.
23. \_\_\_\_\_ When I don't know something, I don't mind at all admitting it.
24. \_\_\_\_\_ I like to gossip at times.
25. \_\_\_\_\_ There have been times when I felt like rebelling against people in authority even though I knew they were right.
26. \_\_\_\_\_ I can remember "playing sick" to get out of something.
27. \_\_\_\_\_ There have been occasions when I have taken advantage of someone.
28. \_\_\_\_\_ I sometimes try to get even rather than forgive and forget.
29. \_\_\_\_\_ At times, I have really insisted on having things my own way.
30. \_\_\_\_\_ There have been occasions when I felt like smashing things.
31. \_\_\_\_\_ There have been times when I was quite jealous of the good fortune of others.
32. \_\_\_\_\_ I am sometimes irritated by people who ask favors of me.
33. \_\_\_\_\_ I sometimes think when people have a misfortune they only got what they deserved.

**APPENDIX E:**  
**TELLEGEN ABSORPTION SCALE**

In the space to the left of each item, please indicate whether each of the following statements is **generally true** or **generally false** of you. Circle **T** for true or **F** for false.

- | <u>True/False</u> | <u>Item</u>  |
|-------------------|--|
| T / F             | 1. Sometimes I feel and experience things as I did when I was a child.   |
| T / F             | 2. I can be greatly moved by eloquent or poetic language.  |
| T / F             | 3. While watching a movie, a TV show, or a play, I may become so involved that I may forget about myself and my surroundings and experience the story as if it were real and as if I were taking part in it. |
| T / F             | 4. If I stare at a picture and then look away from it, I can sometimes "see" an image of the picture almost as if I were still looking at it.  |
| T / F             | 5. Sometimes I feel as if my mind could envelop the whole world.   |
| T / F             | 6. I like to watch cloud shapes change in the sky.   |
| T / F             | 7. If I wish I can imagine (or daydream) some things so vividly that they hold my attention as a good movie or story does.   |
| T / F             | 8. I think I really know what some people mean when they talk about mystical experiences.  |
| T / F             | 9. I sometimes "step outside" my usual self and experience an entirely different state of being.   |
| T / F             | 10. Textures -- such as wool, sand, wood -- sometimes remind me of colors or music.  |
| T / F             | 11. Sometimes I experience things as if they were doubly real.   |
| T / F             | 12. When I listen to music I can get so caught up in it that I don't notice anything else.   |
| T / F             | 13. If I wish I can imagine that my body is so heavy that I could not move it if I wanted to.  |
| T / F             | 14. I can often somehow sense the presence of another person before I actually see or hear her/him.  |
| T / F             | 15. The crackle and flames of a wood fire stimulate my imagination   |

- T / F 16. It is sometimes possible for me to be completely immersed in nature or in art and to feel as if my whole state of consciousness has somehow been temporarily altered.
- T / F 17. Different colors have distinctive and special meanings for me.
- T / F 18. I am able to wander off into my thoughts while doing a routine task and actually forget that I am doing the task, and then find a few minutes later that I have completed it.
- T / F 19. I can sometimes recollect certain past experiences in my life with such clarity and vividness that it is like living them again or almost so.
- T / F 20. Things that might seem meaningless to others often make sense to me.
- T / F 21. While acting in a play I think I could really feel the emotions of the character and "become" her/him for the time being, forgetting both myself and the audience.
- T / F 22. My thoughts often don't occur as words but as visual images.
- T / F 23. I often take delight in small things (like the five-pointed star shape that appears when you cut an apple across the core or the colors in soap bubbles).
- T / F 24. When listening to organ music or other powerful music I sometimes feel as if I am being lifted into the air.
- T / F 25. Sometimes I can change noise into music by the way I listen to it.
- T / F 26. Some of my most vivid memories are called up by scents and smells.
- T / F 27. Some music reminds me of pictures or changing color patterns.
- T / F 28. I often know what someone is going to say before he or she says it.
- T / F 29. I often have "physical memories"; for example, after I have been swimming I may still feel as if I am in the water.
- T / F 30. The sound of a voice can be so fascinating to me that I can just go on listening to it.
- T / F 31. At times I somehow feel the presence of someone who is not physically there.
- T / F 32. Sometimes thoughts and images come to me without the slightest effort on my part.
- T / F 33. I find that different odors have different colors.
- T / F 34. I can be deeply moved by a sunset.

# APPENDIX F:

## THE HASSLES AND UPLIFTS SCALE

DAILY HASSLES, HEALTH, AND MOOD

### Appendix

#### The Hassles and Uplifts Scale

HASSLES are irritants—things that annoy or bother you; they can make you upset or angry. UPLIFTS are events that make you feel good; they can make you joyful, glad, or satisfied. Some hassles and uplifts occur on a fairly regular basis and others are relatively rare. Some have only a slight effect, others have a strong effect.

This questionnaire lists things that can be hassles and uplifts in day-to-day life. You will find that during the course of a day some of these things will have been only a hassle for you and some will have been only an uplift. Others will have been both a hassle AND an uplift.

**DIRECTIONS:** Please think about how much of a hassle and how much of an uplift each item was for you today. Please indicate on the left-hand side of the page (under "HASSLES") how much of a hassle the item was by circling the appropriate number. Then indicate on the right-hand side of the page (under "UPLIFTS") how much of an uplift it was for you by circling the appropriate number.

Remember, circle one number on the left-hand side of the page and one number on the right-hand side of the page for each item.

PLEASE FILL OUT THIS QUESTIONNAIRE JUST BEFORE YOU GO TO BED.

#### HASSLES AND UPLIFTS SCALE

How much of a hassle was this item for you today?

How much of an uplift was this item for you today?

**HASSLES**

- 0 = None or not applicable
- 1 = Somewhat
- 2 = Quite a bit
- 3 = A great deal

**UPLIFTS**

- 0 = None or not applicable
- 1 = Somewhat
- 2 = Quite a bit
- 3 = A great deal

**DIRECTIONS:** Please circle one number on the left-hand side and one number on the right-hand side for each item.

0 1 2 3	1. Your child(ren)	0 1 2 3	18. Enough money for necessities (e.g., food, clothing, housing, health care, taxes, insurance)	0 1 2 3
0 1 2 3	2. Your parents or parents-in-law	0 1 2 3	19. Enough money for education	0 1 2 3
0 1 2 3	3. Other relative(s)	0 1 2 3	20. Enough money for emergencies	0 1 2 3
0 1 2 3	4. Your spouse	0 1 2 3	21. Enough money for extras (e.g., entertainment, recreation, vacations)	0 1 2 3
0 1 2 3	5. Time spent with family	0 1 2 3	22. Financial care for someone who doesn't live with you	0 1 2 3
0 1 2 3	6. Health or well-being of a family member	0 1 2 3	23. Investments	0 1 2 3
0 1 2 3	7. Sex	0 1 2 3	24. Your smoking	0 1 2 3
0 1 2 3	8. Inimacy	0 1 2 3	25. Your drinking	0 1 2 3
0 1 2 3	9. Family-related obligations	0 1 2 3	26. Mood-altering drugs	0 1 2 3
0 1 2 3	10. Your friend(s)	0 1 2 3	27. Your physical appearance	0 1 2 3
0 1 2 3	11. Fellow workers	0 1 2 3	28. Contraception	0 1 2 3
0 1 2 3	12. Clients, customers, patients, etc.	0 1 2 3	29. Exercise(s)	0 1 2 3
0 1 2 3	13. Your supervisor or employer	0 1 2 3	30. Your medical care	0 1 2 3
0 1 2 3	14. The nature of your work	0 1 2 3	31. Your health	0 1 2 3
0 1 2 3	15. Your work load	0 1 2 3	32. Your physical abilities	0 1 2 3
0 1 2 3	16. Your job security	0 1 2 3	33. The weather	0 1 2 3
0 1 2 3	17. Meeting deadlines or goals on the job	0 1 2 3	34. News events	0 1 2 3
			35. Your environment (e.g., quality of air, noise level, greenery)	0 1 2 3
			36. Political or social issues	0 1 2 3
			37. Your neighborhood (e.g., neighbors, setting)	0 1 2 3
			38. Conserving (gas, electricity, water, gasoline, etc.)	0 1 2 3
			39. Pets	0 1 2 3
			40. Cooking	0 1 2 3
			41. Housework	0 1 2 3
			42. Home repairs	0 1 2 3
			43. Yardwork	0 1 2 3
			44. Car maintenance	0 1 2 3
			45. Taking care of paperwork (e.g., paying bills, filling out forms)	0 1 2 3
			46. Home entertainment (e.g., TV, music, reading)	0 1 2 3
			47. Amount of free time	0 1 2 3
			48. Recreation and entertainment outside the home (e.g., movies, sports, eating out, walking)	0 1 2 3
			49. Eating (at home)	0 1 2 3
			50. Church or community organizations	0 1 2 3
			51. Legal matters	0 1 2 3
			52. Being organized	0 1 2 3
			53. Social commitments	0 1 2 3

Received March 21, 1986

Revision received July 20, 1987

Accepted August 4, 1987 ■

## APPENDIX G:

### POSITIVE STATE OF MIND SCALE

**INSTRUCTIONS:** This questionnaire is about the kind of satisfying states of mind that you may have experienced in the last seven days. Be sure to answer every question. If you are unsure how to answer a question, give the best answer you can. Please fill in the appropriate bubble.

Example:

1. **Ways of coping:** being able to get through difficult times when necessary.  
 Unable to have it  trouble having it  limited in having it  have it well

1. **Focused Attention:** Feeling able to attend to a task you want or need to do, without many distractions from within yourself.  
 Unable to have it  trouble having it  limited in having it  have it well
2. **Productivity:** Feeling of being able to stay at work until a task is finished, do something new to solve problems or express yourself creatively.  
 Unable to have it  trouble having it  limited in having it  have it well
3. **Responsible Caretaking:** Feeling that you are doing what you should do to take care of yourself or someone else.  
 Unable to have it  trouble having it  limited in having it  have it well
4. **Restful Repose:** Feeling relaxed, without distractions or excessive tension.  
 Unable to have it  trouble having it  limited in having it  have it well
5. **Sharing:** Being able to commune with others in an empathetic, close way, as in talking, walking, going out or just being together.  
 Unable to have it  trouble having it  limited in having it  have it well
6. **Sensuous Nonsexual Pleasure:** Being able to enjoy bodily senses, enjoyable intellectual activity, doing things you ordinarily like, such as listening to music, enjoying the outdoors, lounging in a hot tub.  
 Unable to have it  trouble having it  limited in having it  have it well
7. **Sensuous Sexual Pleasure:** Being able to feel erotic, enjoy sexual exchange, as in any form of kissing, caressing, self-stimulation or intercourse.  
 Unable to have it  trouble having it  limited in having it  have it well

**APPENDIX H:**  
**LABYRINTH DESIGNS**

The design of the finger labyrinth is an 11 circuit Chartres.



The design of the walking labyrinth is a 7 circuit Chartres.

