THE ETHEREAL PATH TO WELL-BEING:

AN EXPLORATION OF THE CONNECTIONS BETWEEN

MEDITATION, SPIRITUALITY, AND PSYCHOLOGICAL HEALTH

A Thesis Submitted to the Committee of Graduate Studies in Partial Fulfillment of the Requirements for the Degree of Master of Science in the Faculty of Arts and Science

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Abstract

The Ethereal Path to Well-Being: An Exploration of the Connections Between Meditation, Spirituality and Psychological Health

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The traditions of spirituality and meditation have been found to connect to psychological health in the form of increased happiness, empathy, and decreased anxiety. The present study aimed to better understand how these practices might connect to such beneficial outcomes. A sample of 363 undergraduate student participants completed a questionnaire that measured their meditation practice, mindfulness, spirituality, happiness, empathy, and anxiety. Contrary to expectations, meditators and non-meditators did not significantly differ in their psychological health outcomes. These findings have implications for how meditators and non-meditator groups should be differentiated in research. Regarding spirituality, the purpose and meaning and innerness dimensions of the construct significantly predicted happiness and decreased anxiety, while the unified interconnectedness dimension significantly predicted empathy. The transcendence dimension of spirituality did not significantly predict psychological health. This pattern of results has implications for spiritual care interventions that intend to augment psychological health.

Key words: Meditation, spirituality, psychological health, happiness, empathy, anxiety.

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Introduction

Meditation is a salient part of many spiritual and religious traditions and has historically been associated with enlightenment, healing, and other psychological benefits (Hussain, 2010). Although different conceptualizations of meditation exist, the term has often been used to describe both a mental training practice and a resultant transformed state of consciousness (Matko & Sedlmeier, 2019). In recent years, meditation has been under the spotlight of psychological inquiry to determine whether the purported benefits of the practice can hold up to scientific scrutiny. Consequently, the amount of research on meditation has immensely increased in past decades and the term has become a popular buzzword in the psychological community (Van Dam et al., 2018). This popularity increase is reflected by the fact that meditation practices have been incorporated into mental and physical health interventions such as Kabat-Zinn's mindfulness-based stress reduction (Kabat-Zinn, 2003; Lang et al., 2012; Teixeira, 2008), as well as some educational curricula from elementary to post-secondary levels (Meiklejohn et al., 2012; Weare, 2019). Numerous investigations have been conducted to connect meditation to psychological factors. For example, researchers have found that meditation practice leads to increased happiness, increased empathy, and decreased anxiety (e.g., Crowley et al., 2020; Kreplin et al., 2018; Luberto et al., 2018; Sedlmeier et al., 2012; Shapiro et al., 2016). These findings draw some connections between meditation and overall psychological health. However, no existing study has addressed university student-related meditation effects on all of these psychological health outcomes at once. Like meditation, research on spirituality has also rapidly expanded in recent years to evaluate claims made by spiritual advocates.

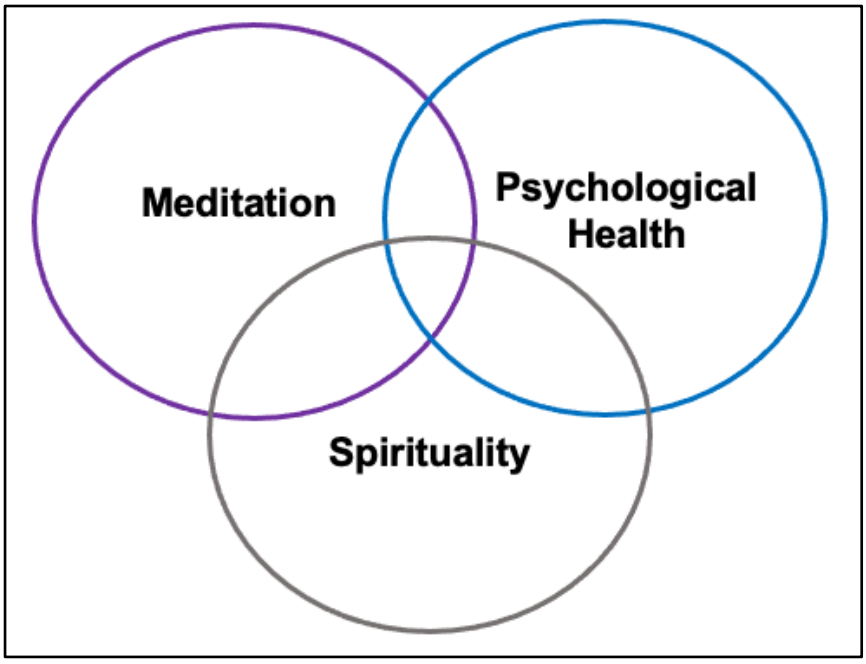
Spirituality is generally considered a multifaceted construct that often involves aspects of purpose, interconnectedness, an inner understanding of the self, and a sense of transcendence (de Jager Meezenbroek et al., 2012; Howden, 1992). Spiritual adherents and sages have praised these dimensions of spirituality and indicated that they provide physical, mental, and mystical benefits (e.g., Ramakrishna, 2011; Tzu, 2006; Vivekananda, 1976; Yogananda, 2016). Psychological research on spirituality has discovered that spirituality is related to the same outcomes that are linked with meditation: happiness, empathy, and decreased anxiety (Chaves et al., 2015; Giordano et al., 2014; Greenfield et al., 2009; Huber & MacDonald, 2012; Ryff, 2021; Wade et al., 2018). However, less is known about which facets of spirituality produce these links. Taken together, spirituality and meditation are similar in that they are both connected to adaptive psychological health (see Figure 1 for a visual depiction of this theoretical claim). Therefore, it is worthwhile to further evaluate and understand these constructs and their connections.

Despite the number of studies that have been conducted on meditation and spirituality, there is still much unknown about the connections between these variables and happiness, empathy, and anxiety. Understanding the factors that predict adaptive psychological health is important as this knowledge can potentially inform interventions that target these outcomes. In a broad sense, the present investigation aimed to explore the connections between meditation; spirituality; and psychological health through the proxies of happiness, empathy, and anxiety. Two main research objectives were addressed. The first objective was to evaluate whether the connection between meditation and psychological health was influenced by mindfulness and spirituality. The second goal

was to evaluate which dimensions of spirituality were the strongest predictors of happiness, empathy, and anxiety.

Figure 1

Visual Depiction of the Theoretically Proposed Relations Between Meditation, Spirituality, and Psychological Health



Note. Overlap denotes variance shared by two variables. The variance overlap is not to scale. Previous research would suggest that meditation, spirituality, and psychological health are overlapping constructs. The psychological health outcomes of interest for the current investigation were happiness, empathy, and anxiety.

Meditation

The practice of meditation originated in Eastern religious, spiritual, and philosophical traditions and has existed across a variety of cultures, both Eastern and Western, for thousands of years (Shapiro, 2017; Walsh, 1982). Many traditions have

viewed meditation as a technique that can bring about mystical subjective experiences and enduring altered states of consciousness (Yogananda, 2016). For some spiritual systems, these altered states of consciousness are considered the ultimate goal of life and are known by many names such as enlightenment, samadhi, and nirvana (Abe, 1969; Shapiro, 2017; The Bhagavad Gita, 2007). In this way, spirituality and meditation are related in that some spiritual traditions utilize meditation to achieve metaphysical goals.

When meditation initially became a topic of study in the West, many scholars believed that the ethereal nature of Eastern meditation's altered states of consciousness could not be scientifically reconciled (Walsh, 1982). However, over time, researchers began to examine the observable outcomes of the practice. For instance, some of the early studies of meditation in the 1950s and 60s investigated physiological outcomes and later, in the 1970s, meditation research began to examine clinical outcomes (Loizzo, 2014). A substantial amount of the objectivistic meditation research has been conducted in a post-positivistic manner attempting to empirically demonstrate connections between meditation and psychological outcomes. Although current meditation research takes both qualitative, experiential and quantitative, statistics-based forms, the focus of the current investigation was on the objectivistic, quantitative-based effects of meditation on a nonclinical population.

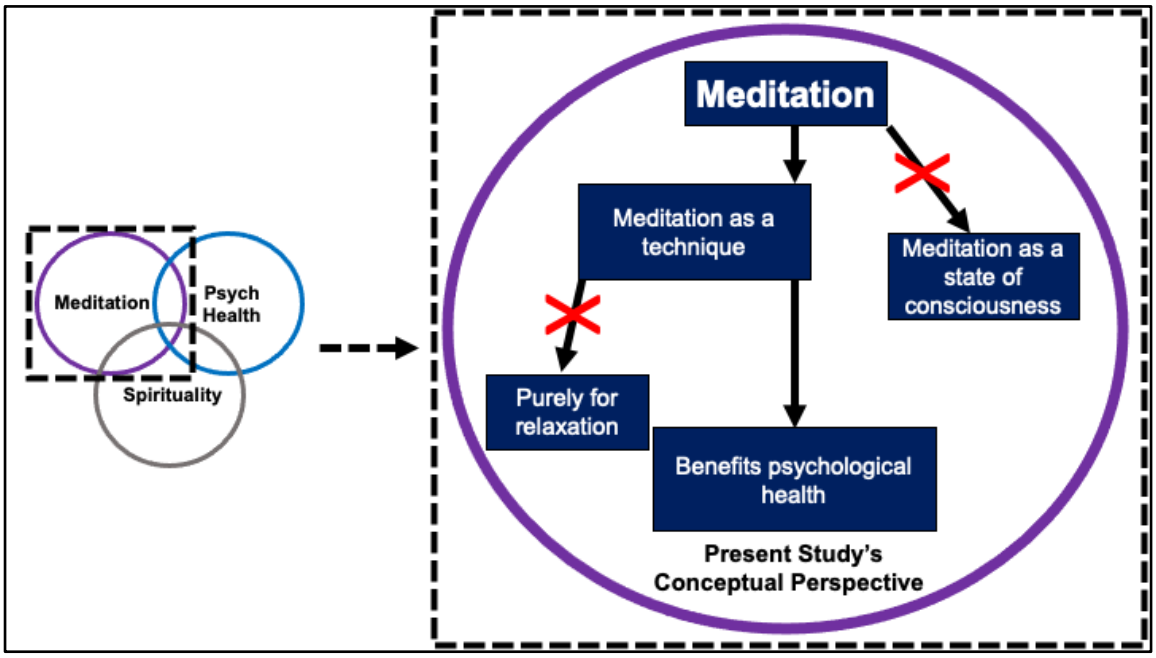
There is much contemporary ambiguity in the conceptualization of meditation in the field of psychology. Therefore, despite the steep increase in the amount of meditation research over time (Van Dam et al., 2018), the field is still within its conceptual and theoretical infancy. Some researchers have viewed the practice as merely a relaxation technique (Lippelt et al., 2014). Others have suggested that meditation is a therapeutic

strategy that can be utilized to relieve the symptoms of mental and physical health issues (Bond et al., 2009). Still others, have conceptualized meditation in the more traditional sense and asserted that the practice allows one to transcend waking consciousness and achieve an enlightened state (Tillemans, 2013). These divergent definitions highlight an overarching distinction between conceptualizations: meditation as a technique to achieve beneficial outcomes, as in the first two definitions (Bond et al., 2009; Lippelt et al., 2014); and meditation as an experiential state of consciousness, as in the third definition (Nash et al., 2013; Tillemans, 2013). Within the technique perspective of meditation inquiry, there has been debate as to whether meditation is purely for relaxation or if it provides the practitioner with additional psychological health benefits. Although there is empirical evidence that meditation bolsters relaxation (Sedlmeier et al., 2012), there has been considerable additional support for the benefits of meditation on other psychological health outcomes such as increased happiness (Campos et al., 2016; Crowley et al., 2020), increased empathy (Kreplin et al., 2018; Leppma & Young, 2016; Luberto et al., 2018), decreased anxiety (Burgstahler & Stenson, 2020; Edwards et al., 2018), decreased stress (Sedlmeier et al., 2012; Sedlmeier et al., 2018), increased emotion regulation (Sedlmeier et al., 2012; Sedlmeier et al., 2018) and decreased depressive symptoms (Lv et al., 2020; Wahbeh, 2018). Therefore, it could be argued that viewing meditation as purely a relaxation technique underestimates the advantages of the practice (Refer to Figure 2 for a visual depiction of meditation's conceptual perspective for the current study). Scholars who acknowledge the psychological benefits of meditation outside of relaxation have cited mindfulness as a construct that might facilitate the positive outcomes (Baer et al.,

2008; Campos et al., 2016; Carmody & Baer, 2008; Josefsson et al., 2011; Sedlmeier et al., 2012).

Figure 2

Visual Depiction of the Current Study's Conceptual Perspective on Meditation



Note. Meditation has been defined in a variety of different ways. The current investigation conceptualized meditation as a technique that can bring about psychological benefits.

Mindfulness

Mindfulness has been described as a mental state characterized by a non-reactive, openhearted, and non-judgmental attention to and awareness of the present moment or experience (Brown & Ryan, 2003; Kabat-Zinn, 2015). Mindfulness is a practice that has been developed in traditional cultures throughout the world and history. However, the

concept of mindfulness is generally considered to have originated in Eastern Buddhist traditions (Kabat-Zinn, 2015; Shapiro & Weisbaum, 2020).

The Western interest in the clinical and therapeutic effects of mindfulness amplified in the late 1970s and 80s when Jon Kabat-Zinn created his mindfulness-based stress reduction program (MBSR). The MBSR program has since been used extensively in Western healthcare systems (Kabat-Zinn, 2013; Shapiro & Weisbaum, 2020). Today, mindfulness is involved in several contemporary interventions utilized in psychological health settings such as dialectical behaviour therapy (Linehan, 1993) and mindfulness-based cognitive therapy (Segal et al., 2002). These interventions have viewed mindfulness as not only a state of being but also a dispositional trait that can be fostered and strengthened. Dispositional mindfulness has been defined as a relatively stable individual characteristic of maintaining mindful mental states (Fuochi & Voci, 2020). Brown and Ryan (2003) developed the Mindful Attention Awareness Scale (MAAS) to measure dispositional mindfulness by posing questions focused on the stability of attention and awareness in a variety of life situations.

The benefits of cultivating dispositional mindfulness are numerous and have been supported by research. For instance, Tomlinson and colleagues (2018) conducted a review of research investigating the connection between dispositional mindfulness and psychological health. They found that dispositional mindfulness was related to decreased depressive and anxiety symptoms, associated with adaptive cognitive processes such as reduced rumination and greater executive functioning, and linked with greater emotion regulation capabilities. Mettler and colleagues (2019) found that dispositional mindfulness in university students predicted better university adjustment even when self-

efficacy and perceived social support were statistically controlled. Further, a longitudinal study on female college students found that dispositional mindfulness was related to adaptive physical health (e.g., healthy eating habits, higher sleep quality; Murphy et al., 2012). Finally, like meditation, research has found connections between dispositional mindfulness and happiness, empathy, and anxiety outcomes (Campos et al., 2016; Fuochi & Voci, 2020; Keng et al., 2011; Tomlinson et al., 2018).

Mindfulness and Meditation

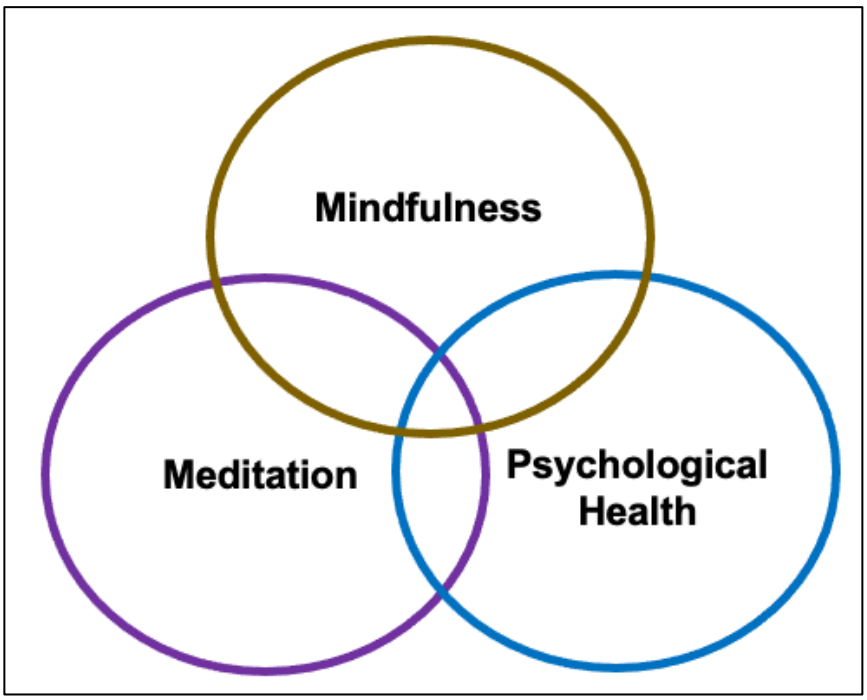
Mindfulness is not meditation *per se*, rather, it has been suggested that mindfulness is a tool that can be used within meditation to cultivate desired meditative states (Olendzki, 2009). Meditation has been found to be associated with increased dispositional mindfulness (Baer et al., 2008; Eberth & Sedlmeier, 2012; Sedlmeier et al., 2012; Sedlmeier et al., 2018). Yet, it should be noted that mindfulness and meditation are related but separate constructs as mindfulness can be practiced in the absence of meditation techniques (see Figure 3 for a visual depiction of this theoretical assertion). For instance, Jon Kabat-Zinn's MBSR program aims to foster mindfulness by utilizing body awareness, yoga, and explorations of habitual thought patterns in addition to meditation (Kabat-Zinn & Hanh, 2009). The connection between mindfulness and meditation raises questions about the importance of dispositional mindfulness within meditation techniques. The field of spirituality research also has an extensive history and its own share of conceptual deliberation.

Spirituality

Spiritual traditions have existed for thousands of years, and many spiritual belief systems originated from traditional religious philosophies such as early Christianity,

Figure 3

Visual Depiction of the Theoretically Proposed Relations Between Meditation, Mindfulness, and Psychological Health



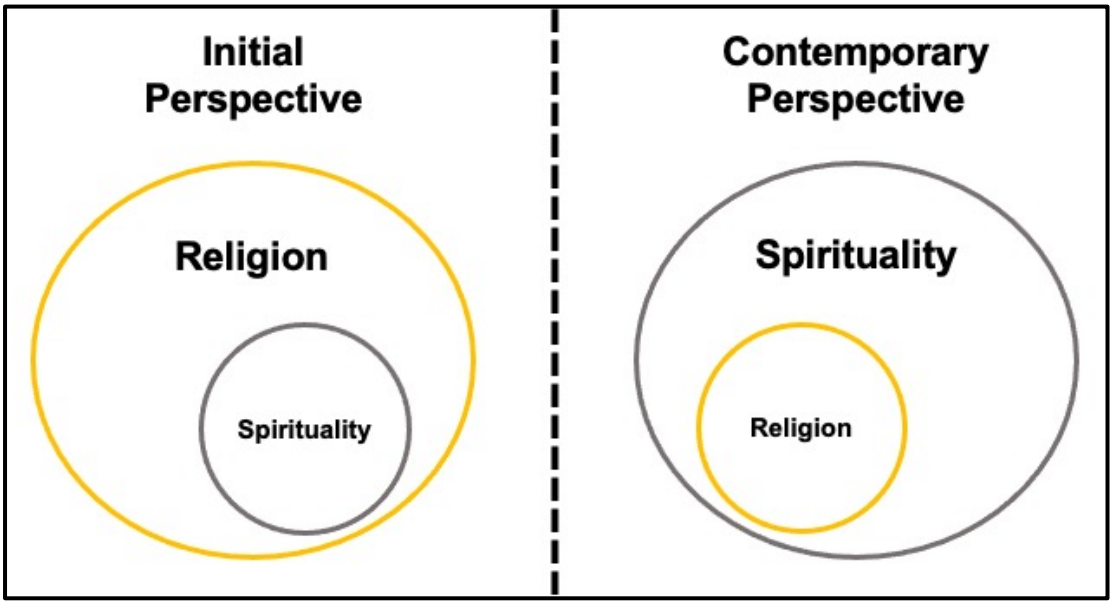
Note. Overlap denotes variance shared by two variables. The variance overlap is not to scale. Previous research would suggest that meditation, mindfulness, and psychological health are overlapping constructs. Meditation and mindfulness are associated, and, in turn, both relate to happiness, empathy, and anxiety psychological health outcomes.

Buddhism, Hinduism, and Taoism (Abe, 1969; Dimkov, 2020; Sheldrake, 2009; Vohra-Gupta et al., 2007). Similar to meditation, the number of spirituality research articles has greatly increased in recent years (Koenig, 2008). In the field of Western psychology, spirituality has undergone many conceptual fluctuations over time and has often been confounded with religion, as these constructs are intimately connected. Initially, the concept of religion was thought to subsume spirituality suggesting that one had to be

religious to be spiritual. However, today, spirituality is generally thought to subsume religion. In other words, all religion has aspects of spirituality but not all spirituality involves aspects of religion (Koenig, 2008; Moberg, 2010; see Figure 4). This modern theoretical distinction likely stems from the definitions of religion and spirituality in the research literature. Scholars tend to define religion as a search for the sacred that includes dogma systems, rituals, and institutions (e.g., churches, mosques, temples). Spirituality is also considered a search for the sacred but does not necessarily include dogma, rituals, or institutions (Grof, 2008; Koenig, 2008; Moberg, 2010; Zinnbauer et al., 1997).

Figure 4

Visual Depiction of the Theoretically Proposed Relations Between Religion and Spirituality.



Note. Initially, the concept of religion was thought to subsume spirituality. However, today, spirituality is generally thought to subsume religion (Koenig, 2008; Moberg, 2010). This diagram is strictly for illustrative purposes; the relative size of the conceptual circles is not to scale.

Within the field of spirituality, some researchers have maintained that spirituality is mystical and subjective (Peck, 2009; Vaughan, 1991), and therefore cannot be empirically operationalized. Others have asserted that spirituality can be conceptualized, operationalized, and measured like any other intangible construct in psychology, despite its metaphysical focus (Moberg, 2010). Based on this latter assumption, spirituality can be investigated in a positivistic manner. There have been some definitional commonalities within the psychological literature on spirituality (Howden, 1992; Peck, 2009). Spirituality scholars have additionally recognized the importance of including Eastern philosophical perspectives into definitional accounts of spirituality because many such traditions originated in an Eastern context. (Grof, 2008; Howden, 1992; Sedlmeier et al., 2012). Scales that aim to operationalize spirituality based on these theoretical conceptualizations have been developed over time. (e.g., de Jager Meezenbroek et al., 2012; Gomez & Fisher, 2003; Howden, 1992).

In spirituality research, there are ample conceptual inconsistencies across investigations. Numerous researchers and theorists have attempted to create concise definitions of spirituality (Delgado, 2005; Grof, 2008; Peck, 2009; Zinnbauer et al., 1997), however, no single definition has become standardized across the field. Spirituality has been conceptualized and operationalized in both unidimensional and multidimensional ways. Unidimensional spirituality measures often tap either global spirituality or a single element of spirituality. However, the most common and accepted view of spirituality is that it is a multidimensional construct; a single sentence definition cannot accurately describe it (Gomez & Fisher, 2003; Howden, 1992; O'Connell et al., 2006; Piedmont, 1999).

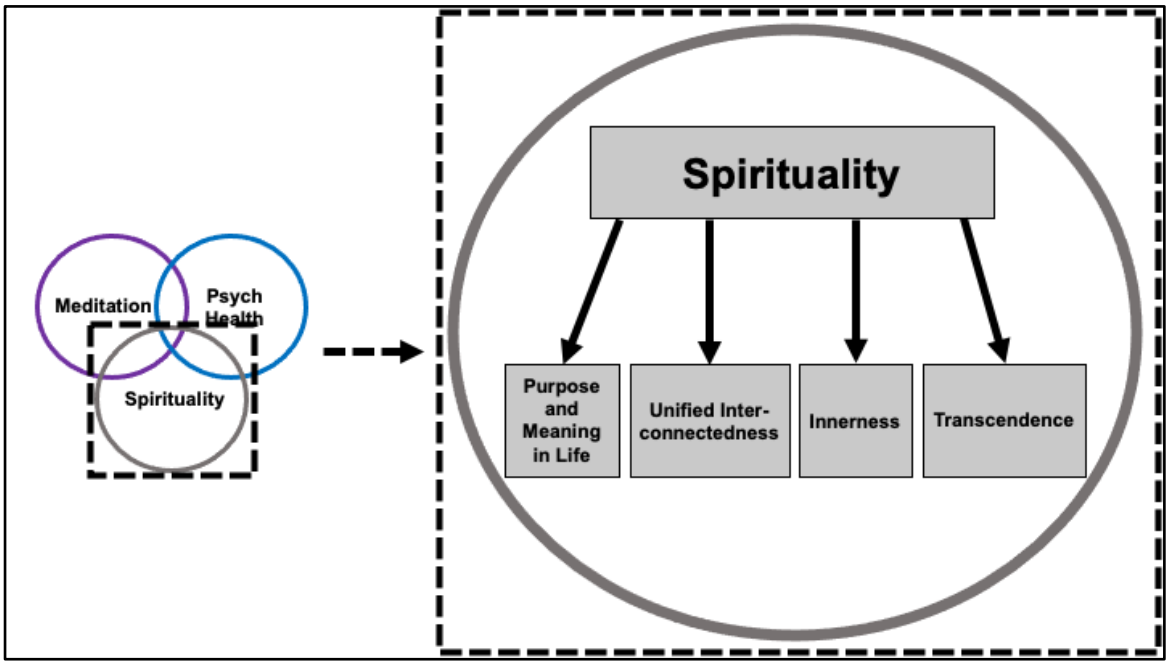
Dimensions of Spirituality

Fortunately, in the multidimensional literature on spirituality, there are four common dimensions that have emerged in theoretical commentaries. Eastern spiritual practitioners and sages have also identified these four dimensions in their commentaries on spirituality (e.g., Abe, 1969; Dimkov, 2020; Kriyananda, 2010; Ramakrishna, 2011; The Bhagavad Gita, 2007; Tzu, 2006; Yogananda, 1982; Yogananda, 2016). First, spirituality provides people with a *purpose and meaning in life*. Some spiritual individuals believe that their spirituality will provide them with life's answers, while for others, the spiritual tradition itself constitutes their purpose (Delgado, 2005; Frankl, 1985; Karakas, 2010; Sheldrake, 2009). The second dimension of spirituality is *unified interconnectedness*. This dimension has been represented as a sense of relationship with all life; a feeling of harmony with the self and others; and a feeling of oneness with a universal element, supreme being, or God (Hungelmann et al., 1985; Zinnbauer et al., 1999). The third dimension of spirituality has been described as a sense of *innerness*, or the process of discovering wholeness, identity, and a sense of inner strength or resilience (Carroll, 2001; Delgado, 2005; Howden, 1992). Finally, *transcendence* has been viewed as a fourth dimension of spirituality. Transcendence has been explained as the ability to exceed the limits of usual experience and rise above or overcome physical or psychological conditions (Lapierre, 1994; Long, 2000; Piedmont, 1999; Reed, 1987; Zinnbauer et al., 1999; see Figure 5 for a visual depiction of spirituality's conceptualization). In response to this theoretical dialogue on the dimensionality of spirituality, Howden (1992) created the Spirituality Assessment Scale (SAS). The SAS

includes four subscales, each one tapping a dimension of spirituality (i.e., purpose and meaning in life, unified interconnectedness, innerness, and transcendence).

Figure 5

Visual Depiction of the Current Study's Conceptual Understanding of Spirituality



Note. The current investigation conceptualized spirituality as being composed of four dimensions: purpose and meaning in life, unified interconnectedness, innerness, and transcendence.

The concept of spirituality has been shown to connect to psychological health in the form of happiness, empathy, and anxiety, across a variety of investigations (e.g., Chaves et al., 2015; Giordano et al., 2014; Wade et al., 2018). With the multidimensional view of spirituality in mind, perhaps certain dimensions of spirituality differentially relate to these psychological outcomes. In any case, to better understand the connections between spirituality and the psychological health outcomes of happiness, empathy, and

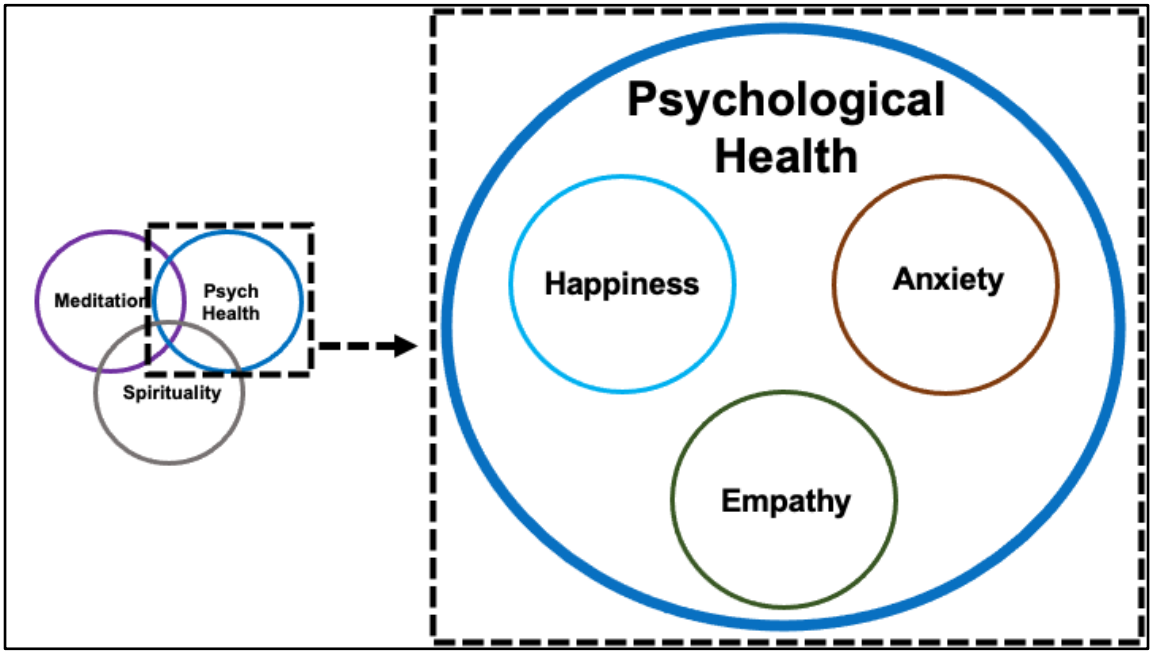
anxiety, it is first necessary to know how these outcomes are conceptualized in the literature.

Psychological Health Outcomes: Happiness, Empathy, and Anxiety

For the purposes of the current investigation, psychological health was assessed through the proxy measures of happiness, empathy, and anxiety (Figure 6).

Figure 6

Present Investigation's Psychological Health Outcomes of Interest



Note. Happiness, empathy, and anxiety were the psychological health outcomes of interest in this study. This is not an exhaustive list of psychological health variables; only the variables implicated in the current study are depicted. The present investigation was not concerned with connections between happiness, empathy, and anxiety. Thus, the inner circles are not overlapping to increase illustrative clarity.

Happiness

The psychological discussion on the construct of happiness gained popularity in the 80s and 90s which coincided with the emergence of positive psychology. Ed Diener was the trailblazer that instigated the Western psychological dialogue on happiness (Myers & Diener, 2018). Prior to the positive psychology movement, Western psychology predominantly focused on the negative aspects of human thoughts and behaviours (e.g., abnormal psychology, despair, failure) while largely neglecting the positive features of human existence (e.g., creativity, love, joy; Gillham & Seligman, 1999). Positive psychology aimed to acknowledge and understand positive emotions and character traits and emphasized a complete view of human psychological functioning and flourishing (Mahipalan & Sheena, 2019; Seligman et al., 2005).

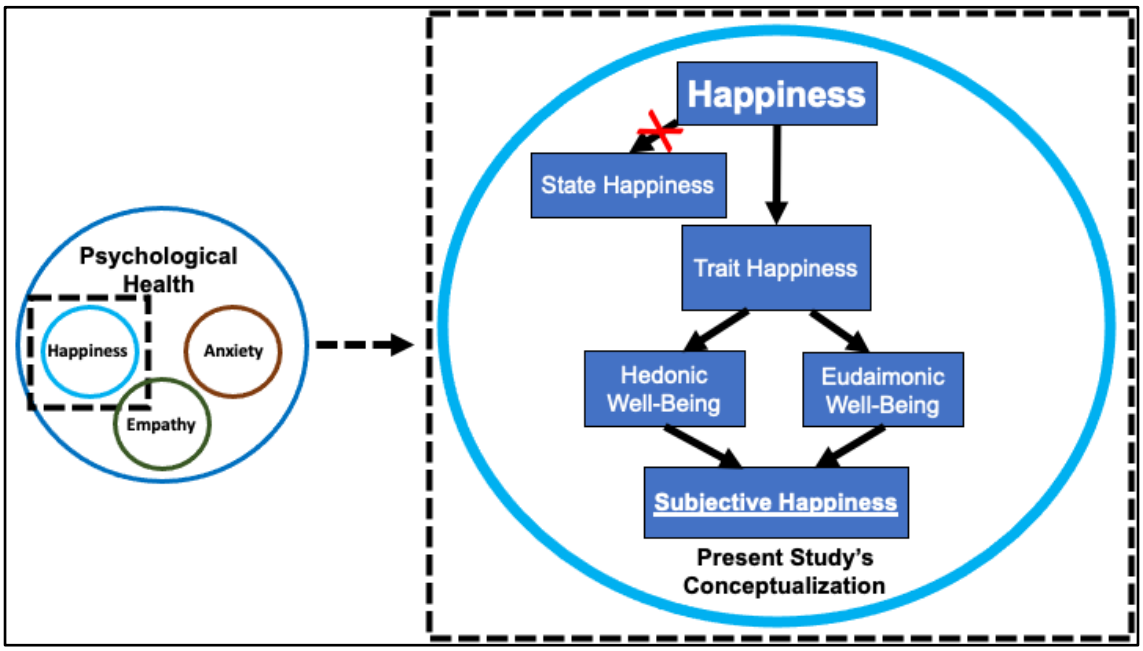
In the field of happiness research, initial theoretical discussions revolved around *subjective well-being* which incorporated feelings of positive affect and life satisfaction (Myers & Diener, 2018). In later years, theorists developed the concepts of *hedonic* well-being and *eudaimonic* well-being. Hedonic well-being involved the positive affect and life satisfaction aspects of well-being that were implicated in subjective well-being. Eudaimonic well-being concerned optimal functioning in life (e.g., self-fulfillment, purpose in life, sense of autonomy, personal growth; Hervás & Vázquez, 2013). Today, the construct of happiness is viewed as a combination of both hedonic and eudaimonic aspects of well-being. Within the literature of well-being and happiness, scholars have also differentiated between state and trait varieties of these constructs. The state of happiness could be influenced by external environments and situations (e.g., success, loss), whereas trait happiness implied that there was an element of stability in the overall

happiness of a specific person (Diener et al., 2002). This sentiment of a state-trait distinction has been seconded by other researchers in both the realms of psychology (Lyubomirksy & Lepper, 1999; Myers & Diener 1995) and philosophy (Bremner, 2011).

Trait Happiness. Sonja Lyubomirsky is a prominent trait-based happiness theorist who asserted that people could make subjective, trait-based judgements of others. For example, she posited that people could identify others that are generally happy, despite the situation they found themselves in. Conversely, she noted that there were individuals who appeared to be consistently unhappy, even in seemingly positive circumstances. Lyubomirsky found that the literature lacked an adequate measure of overall subjective happiness, or a subjective, self-report appraisal of whether a person was generally happy or unhappy. Such a measure would tap into a more global psychological experience of happiness (Diener, 1994; Lyubomirsky & Lepper, 1999). Alongside Heidi Lepper, Lyubomirsky designed the subjective happiness scale (SHS) in response to the lack of subjective happiness measures in the literature. To Lyubomirsky and Lepper (1999), a trait-based, self-report determination of happiness was possible because, according to Freedman (1978), although individuals could vary widely in their expression and sources of happiness, there was substantial agreement as to what happiness means and whether it has been achieved. Indeed, other researchers have supported the trait-based approach to happiness and have utilized Lyubomirsky and Lepper's (1999) SHS to conduct investigations on the construct (e.g., Aknin et al., 2020; Satici & Satici, 2022; Refer to Figure 7 for a visual depiction of the current study's conceptual perspective on happiness).

Figure 7

Visual Depiction of the Present Study's Conceptual Perspective on Happiness



Note. The current investigation conceptualized happiness as *subjective happiness*. Subjective happiness is a trait-based type of happiness which encompasses both *hedonic* (life satisfaction, positive affect) and *eudaimonic* (self-fulfillment, personal growth) aspects of well-being.

Research on subjective happiness has found that the concept is associated with a variety of adaptive psychological outcomes such as hope (Sariçam, 2015), decreased rumination (Lu, 2015), increased self-esteem (Yue et al., 2014), and mental and physical health (Lyubomirsky et al., 2005). Since subjective happiness bolsters psychological health, it is important to understand the connections between the construct and related concepts like meditation and spirituality. Another psychological health outcome related to meditation and spirituality is the interpersonal outcome of empathy.

Empathy

Early psychological deliberations on the concept of empathy began in 1909 with Edward Tichener, a German experimental psychologist (Wispé, 1987). In his discourse, Titchener applied empathy to aesthetics in terms of projecting the self into a scene to fully grasp its beauty. Around the same time, Theodore Lipps formalized the concept of empathy as an understanding of how others are known (Wispé, 1987), which is more complementary to how empathy is conceptualized in modern psychology. Following Lipps' early formalization of empathy, Antonin Prandtl wrote an influential book on the concept. Prandtl (1910) proposed the idea that empathic understandings of others had two dimensions and could either manifest as a thinking-based "empirical empathy", or, as a feeling- or emotional-based empathy (Wispé, 1987).

Cognitive and Affective Empathy. Prandtl's (1910) bidimensional distinction appears to parallel the cognitive and affective dichotomy of empathy; today, many psychology scholars agree that empathy is a multidimensional construct that can be differentiated into cognitive and affective types (Hall & Schwartz, 2019). Cognitive empathy has been described as an understanding of another person's internal states (i.e., thoughts and emotions). Conversely, affective empathy has been described as the experience of affective or emotional states that are comparable with another person's affective state. It was this "emotion congruence" that researchers suggested was the hallmark of affective empathy and dissociated it from concepts such as sympathy or compassion (Clark et al., 2019). Despite their distinction, affective and cognitive empathy have been found to correlate with one another. These correlations are often moderate in nature and have ranged from $r = .28$ to $r = .36$ across studies examining

cognitive and affective empathy (e.g., Besel & Yuille, 2010; Dimitrijevic et al., 2012; Pajevic et al., 2018). Researchers have suggested that individuals must be able to utilize both empathic systems to act appropriately in interpersonal social contexts (Dvash & Shamay-Tsoory, 2014).

Davis' Conceptualization of Empathy. Aside from the cognitive and affective distinction of empathy, the construct has also been viewed as both a state and a trait. State empathy is a transient experience of cognitive or affective empathy while trait empathy describes a tendency to display cognitive or affective empathy across situations and circumstances (Clark et al., 2019). An influential empathy researcher, Mark Davis (1983), developed a trait empathy measure, the Interpersonal Reactivity Index (IRI), based on his multidimensional understanding of the construct. The IRI has since been extensively used in the psychological literature. Davis (1983) viewed empathy as a set of four distinct dimensions that are common in that they all involve responsivity to others. The dimensions were *Empathic Concern (EC),* or other-oriented feelings of concern for less-fortunate others; *Perspective-Taking (PT)*, or the tendency to embrace the points of view of others; *Personal Distress (PD),* or subjective experiences of unease in response to less-fortunate others; and *Fantasy (FS),* or the ability to imaginatively experience the thoughts and feelings of fictitious individuals from movies, books, and other media. Davis' (1983) dimensional structure of empathy has since been supported by independent research (e.g., Chrysikou & Thompson, 2016; Pulos et al., 2004).

Davis also recognized the affective and cognitive distinction of empathy and accounted for it during scale development. In his work, Davis (1983) suggested that the EC and PD facets evaluated affective empathy while the PT and FS dimensions assessed

cognitive empathy. However, researchers have questioned the accuracy of using the PD and FS subscales as proxy measures of affective and cognitive empathy, respectively. For instance, Wang et al. (2020) found that a two-factor model with EC measuring affective empathy and PT measuring cognitive empathy provided better fit indices than a two-factor model with both EC and PD measuring affective empathy and both PT and FS measuring cognitive empathy. Indeed, several meta-analyses have found that studies often use solely the EC subscale to measure affective empathy and the PT subscale to measure cognitive empathy (Jolliffe & Farrington, 2004; Urbonaviciute & Hepper, 2020; Vachon et al., 2014; van Langen et al., 2014). Therefore, it appears as though EC and PT might be the most effective measures of affective and cognitive empathy within the IRI.

Issues With the Fantasy Subscale of the Interpersonal Reactivity Index.

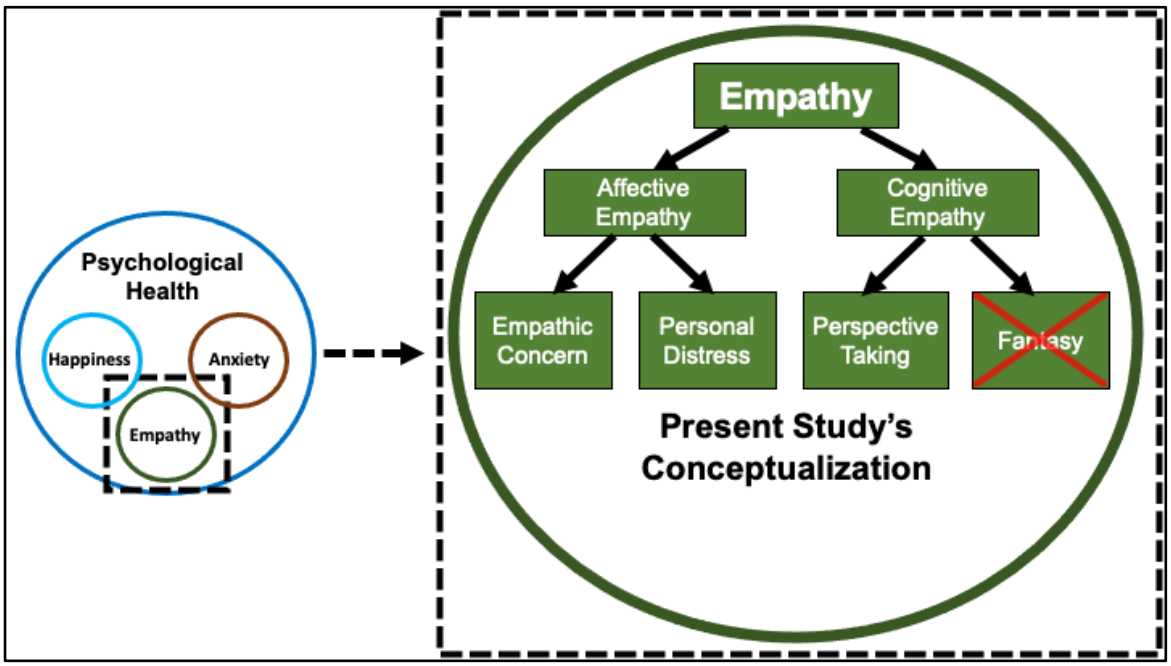
Scholars have questioned whether empathy toward fictional characters accurately taps real-life empathy (Baron-Cohen & Wheelwright, 2004; Nomura & Akai, 2012). For example, Baron-Cohen and Wheelwright (2004) suggested that the FS subscale might be measuring something broader or different than empathy. This suspicion was confirmed when Nomura and Akai (2012) conducted a study where they substituted real people with fictional characters in Davis' measure for the PT, EC, and PD subscales. Then, they presented the original scale and the fictional version of the scale to participants. The researchers found that PT, EC, and PD scores were significantly correlated across the original and fictional versions of the scale, suggesting that empathy for real people and empathy for fictional characters was similar. Despite this, in Davis' (1983) original scale validation, the FS subscale was not found to correlate with PT, EC, or PD. If the FS subscale were tapping an aspect of empathy, one would expect this subscale to

significantly correlate with at least one of the other subscales. Therefore, Nomura and Akai (2012) concluded that the FS subscale may be assessing a broader or different construct than empathy just as Baron-Cohen and Wheelwright (2004) suggested. Due to the validity concerns with FS, some researchers have utilized Davis' measure without its inclusion (e.g., Birnie et al., 2010; Fuochi & Voci, 2020; Su et al., 2005). Regardless of this concern, Davis' conceptualization of empathy has been widely used in psychology and been applied to research on meditation (e.g., Ardenghi et al., 2021; Leppma & Young, 2016; see *Meditation and Empathy* section on p. 27) and spirituality (e.g., Giordano et al., 2014; see *Spirituality and Empathy* section on p. 35; Refer to Figure 8 for a visual depiction of Davis' conceptualization of empathy).

Empathy has been found to be connected to adaptive psychological outcomes such as resilience and psychological well-being (Dionigi et al., 2020; Vinayak & Judge, 2018), prosocial behaviour (Davis, 2015), and romantic and non-romantic relationship quality (Boele et al., 2019; Davis, 2017). These beneficial outcomes of empathy underscore the importance of investigating constructs that are connected to increased empathy, such as, in the case of the current investigation, meditation and spirituality. Anxiety is the final psychological health outcome of interest for the current investigation.

Figure 8

Visual Depiction of Davis' Conceptualization of Empathy.



Note. The current investigation embraced Davis' (1983) understanding of Empathy. In his view, empathy was made up of *empathic concern, personal distress, perspective taking, and fantasy* dimensions. The empathic concern and personal distress dimensions assess affective empathy and the perspective taking and fantasy dimensions assess cognitive empathy. Researchers have questioned the validity of the fantasy dimension in Davis' conceptualization and, hence, fantasy was not incorporated into the conceptualization of empathy in this study.

Anxiety

The concept of anxiety has a long history, with early discussions of anxiety-like afflictions traced to ancient Greek philosophers such as Hippocrates (Crocq, 2015). Over the course of time, anxious afflictions have been known by many different names (e.g.,

neurasthenia) and have been diagnosed by a variety of different criteria, often in ways disproportionally attributed to women (Crocq, 2015; Tasca et al., 2012). The variation in the diagnostic understanding of anxiety persisted into the 20th century (Crocq, 2015). However, the advent of the Diagnostic and Statistical Manual of Mental Disorders (DSM) in the 50s, prompted the initial systemization of mental health disorder diagnosis. With the DSM-3 in 1980, came specific constellations of manifest symptoms that were associated with anxiety disorders (Horwitz, 2013). Today, in the DSM-5, anxiety-related disorders are categorized on the basis of sharing common neurobiological, genetic, and psychological features. Despite the historical disorder-oriented view of anxiety, contemporary psychological dialogue views anxiety as not only a mental disorder, but also as something that can manifest on a continuum from low to high, manifest below the clinical diagnostic level, and even be adaptive in some cases (Endler & Kocovski, 2001).

Adaptative and Maladaptive Anxiety. In the sub-diagnostic literature, anxiety is generally differentiated into a construct that has adaptive and maladaptive types (Endler & Kocovski, 2001; Lewis, 1970). Adaptative anxiety is anxiety in response to real, imminent threats in which a fear response may incite self-preserving behaviour. Adaptive anxiety is considered a beneficial alert mechanism that is thought to have evolutionary underpinnings (Bateson et al., 2011; Gutiérrez-García & Contreras, 2013). On the other hand, maladaptive anxiety is characterized as fear or apprehension that is out of proportion for a particular situation. At the extreme, maladaptive anxiety may manifest as a diagnostic mental health disorder but does not necessarily have to; many individuals with high levels of maladaptive anxiety are not diagnosed with a formal anxiety disorder

(Endler & Kocovski, 2001). Nonclinical maladaptive anxiety was the focus of the present investigation.

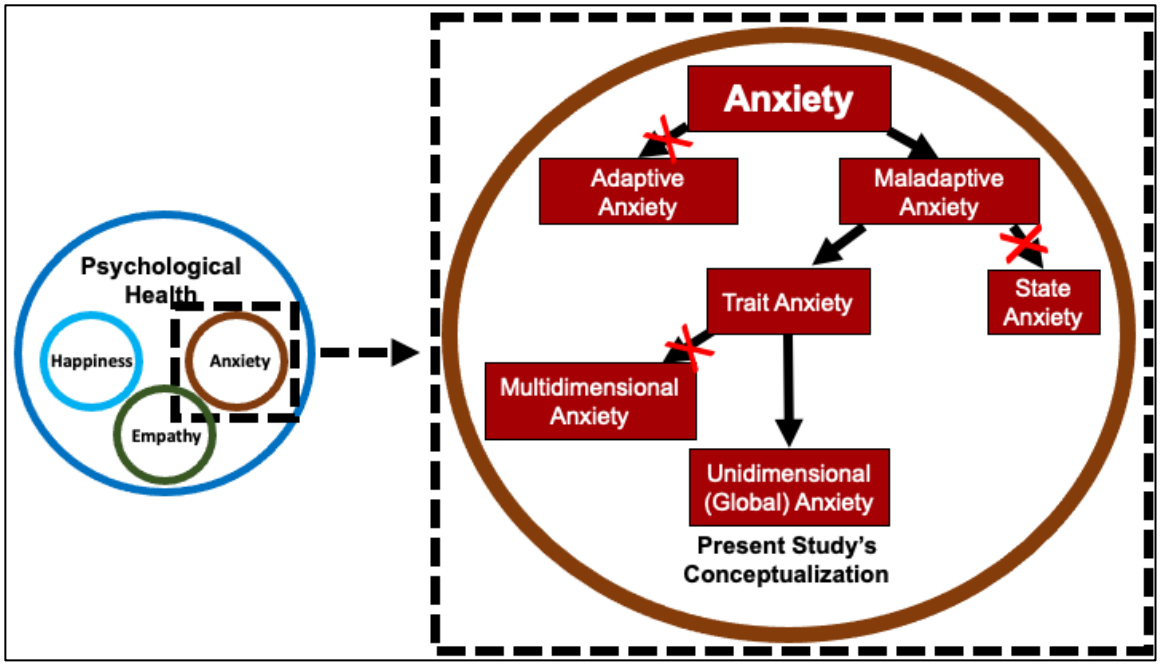
State and Trait Anxiety. One of the most accepted views of anxiety is that it can be measured as both a state and a trait (Spielberger, 1966; Spielberger et al., 1971). Spielberger and colleagues (1971) represented state anxiety as transitory unpleasant feelings of apprehension, tension, nervousness, or worry in response to anxiety-provoking stimuli or situations. In contrast, trait anxiety was denoted as a general tendency to perceive situations as threatening or fear-inducing. The state-trait anxiety distinction has been supported by many scholars across the literature (e.g., Endler et al., 1976; Lau et al., 2006; Leal et al., 2017; Satpute et al., 2012; Saviola et al., 2020). Notwithstanding the distinction between state and trait anxiety, the constructs are highly related. For instance, those with greater trait anxiety were more likely to score higher on state anxiety in anxiety-provoking situations than those with lower trait anxiety (Lau et al., 2006; Zhao et al., 2015). For the purposes of the current study, trait anxiety was evaluated rather than transient state conditions.

Unidimensional and Multidimensional Views of Anxiety. Spielberger and colleagues (1971) conceptualized trait anxiety as a unidimensional construct, one in which global trait anxiety could be quantified. Consequently, the research team developed the State-Trait Anxiety Inventory (STAI) which operationalized this unidimensional understanding. However, in the literature on anxiety, some scholars have questioned the validity of conceptualizing trait anxiety in a unidimensional manner. These researchers have favoured a multidimensional view of trait anxiety in which the dimensions are differentiated by the type of anxiety-provoking stimuli one encounters

(e.g., social evaluation threat, physical danger threat; Balsamo et al., 2013; Endler & Kocovski, 2001; Leal et al., 2017). Despite these theoretical contentions, Spielberger and colleagues' (1971, 1983) STAI has remained the most commonly used self-report, non-clinical, measure of anxiety in psychology. As such, for the current study, the unidimensional conceptualization of trait anxiety as measured by the STAI was applied. This decision ensured that the findings discovered here could be compared to the collection of other studies that have utilized the STAI to measure trait anxiety. Refer to Figure 9 for a visual depiction of the current study's conceptualization of anxiety.

Figure 9

Visual Depiction of the Present Study's Conceptual Perspective on Anxiety



Note. The current investigation adopted the conceptualization of anxiety as a maladaptive, unidimensional (global), trait-based construct.

Anxiety has been found to be consistently negatively related to adaptive psychological outcomes. For instance, higher levels of anxiety have been linked to lower levels of psychological well-being (Lawton et al., 2017), quality of life (İzci et al., 2018), and higher levels of rumination and depression (Wang et al., 2019). Hence, determining the factors that may bring about reduced anxiety such as meditation and spirituality, is important for psychological health research.

Meditation and Psychological Health

Happiness, empathy, and anxiety have been found to be among the outcomes often impacted by meditation (e.g., Bibeau et al., 2016; Campos et al., 2016; Crowley et al., 2022; Kreplin et al., 2018; Leppma & Young, 2016; Luberto et al., 2018; Sedlmeier et al., 2012; Sedlmeier et al., 2018). These investigations have evaluated the connections between meditation and improved psychological health in the form of increased happiness and empathy, and decreased anxiety.

Meditation and Happiness

Concerning the connection between meditation and happiness, Crowley and colleagues (2022) conducted a study that compared the changes in happiness for university students engaged in a meditation course (n = 74) and students participating in a non-meditation course (n = 73). Each course meeting occurred for 75 minutes, twice a week, for one semester. In the meditation course, participants engaged in class participation, weekly written contemplations, readings, and small group discussions, as well as two to three mindfulness-type meditations per class. The non-meditation control group engaged in a class with the same overall structure as the meditation class. However, the topic of interest in the control course was health and wellness within the

context of sport and exercise and the sessions did not include any meditation sessions. Participants' subjective happiness levels were measured with Lyubomirsky and Lepper's (1999) SHS before and after each course intervention. Crowley and colleagues (2022) found that students in the meditation class, but not the non-meditation class, displayed significant increases in subjective happiness at the end of the semester. The research team suggested that their study further supported the assertion that meditation can augment happiness. The meditation-happiness connection has been widely noted in the literature (e.g., Campos et al., 2016; Dambrun et al., 2019; Ramesh et al., 2013).

Meditation and Empathy

To investigate the connection between meditation and empathy, Leppma and Young (2016) conducted a quasi-experimental investigation to determine the effect of a loving kindness meditation (LKM) intervention on empathy of masters-level counselling students. Loving kindness meditation has been defined as a type of mindfulness meditation that focuses on feelings of warmth and kindness for oneself and others (Salzberg & Kabat-Zinn, 2004). Participants (n = 103) in an introductory counselling course were assigned to either a wellness group that included the LKM intervention or an interpersonal skills group that served as the non-meditation control. The researchers evaluated participants' empathy levels before the group intervention and after the group intervention to determine if the LKM manipulation gave rise to any significant differences. Empathy was measured using Davis' (1983) IRI scale. The researchers utilized a mixed model ANOVA to determine whether there was an empathy difference across groups (treatment and control) and within groups (pre-test and post-test). For the affective empathy subscales of Davis' IRI measure (EC and PD), Leppma and Young

(2016) found significant increases in EC scores for the treatment group but not for the control group. For the cognitive subscales (PT and FS), there was a significant increase in PT and FS for the meditation group but not for the control group. The researchers further asserted that the effect sizes for the cognitive empathy effects were larger than the effect size for affective empathy. The authors therefore suggested that a LKM intervention may be an effective method to augment empathy, especially the cognitive form, in counseling university students.

One of the relevant limitations of this study is that the researchers used all of Davis' (1983) subscales to evaluate affective and cognitive empathy. Recall however, that scholars have often elected to use only the EC subscale to tap affective empathy and only the PT scale to tap cognitive empathy (Jolliffe & Farrington; 2004; van Langen et al., 2014; Wang et al., 2020) since there are validity concerns with including the other subscales, especially FS (Baron-Cohen & Wheelwright, 2004; Nomura & Akai, 2012). Thus, there may be some issues with drawing conclusions about the meditative effects on empathy since the FS and PD subscales were included in Leppma and Young's (2016) discussion. Despite potential concerns with this study, the meditation-empathy connection has been supported by other research throughout the literature (Bibeau et al., 2016; Kreplin et al., 2018; Luberto et al., 2018; Lutz et al., 2008; Sedlmeier et al., 2012).

However, not all studies examining the connection between meditation and empathy have found significant effects. For example, Ridderinkhof and colleagues (2017) conducted an experiment to examine whether a brief, five-minute mindfulness meditation could cultivate empathy in comparison to two control groups. An intervention group engaged in a five-minute mindfulness meditation, one of the control groups experienced a

five-minute relaxation exercise, and another control group engaged in an active control exercise that included the non-specific elements of mindfulness (i.e., sitting quietly, listening to voice-guided instructions). One-hundred and sixty-one participants were randomly assigned to one of the three groups. After the exercise, participants completed tasks that measured their mind reading accuracy, empathic responding, and prosocial behaviour. The researchers found no significant differences across groups on the empathy measures and, as a result, suggested that the mindfulness exercise did not increase empathy (Ridderinkhof et al., 2017). Perhaps no effect was found because the mindfulness exercise was very brief and an isolated instance. Still, given the inconsistency in the literature on meditation and empathy, more research is still needed to elucidate the connection between these constructs.

Meditation and Anxiety

The connection between meditation and anxiety was examined by Sedlmeier and colleagues (2012) who conducted a meta-analysis of articles measuring the different psychological effects of meditation for healthy individuals published from 1970 to 2011. Studies in the meta-analysis were classified on the basis of their dependent measure of interest (e.g., trait anxiety, attention, well-being). Studies were excluded if they involved clinical adult participants, within-subjects repeated measure examinations without a control group, or short-term rather than long-term effects of meditation. One hundred and sixty-three studies adhered to the inclusion criteria and effect sizes were determined across the studies for specific dependent variables. Of interest, Sedlmeier and colleagues (2012) discovered a moderate overall effect size of .32 for the effect of meditation (across all types) on trait anxiety.

Sedlmeier and colleagues (2018) followed up on the original 2012 meta-analysis by conducting another using studies between the years of 2011 and 2015. The inclusion criteria were largely the same, however, this time, additional measures were taken to control for potential inflated effect sizes. For instance, only journal articles, not book chapters, were included because there was suspicion that book chapter effect sizes may have been inflated. In this meta-analysis, the researchers found a small overall effect size of .13 for the effect of meditation (across all types) on trait anxiety.

The inconsistency in effect sizes between the two meta-analyses could have arisen for a variety of reasons. For instance, excluding book chapter effect sizes could have controlled for effect size inflation in meditation anxiety studies, or perhaps, older studies may not have been as methodologically sound and hence inflated effect size estimates. Another potential explanation could be that the older effect size estimate was not inflated and the 6 studies with a total N of 300 participants in the updated meta-analysis did not accurately capture the effect size determined on the basis of 30 studies with a total N of 1,896 in the original meta-analysis. No matter the explanation, other investigations have also suggested a significant connection between meditation and trait anxiety (e.g., Burgstahler & Stenson, 2020; Pearl & Carlozzi, 1994; Stinson et al., 2020). Despite all of the studies connecting meditation and psychological health, the mechanism by which this connection occurs is still unclear. However, mindfulness may offer an explanation for the positive effects of meditation.

Meditation, Mindfulness, and Psychological Health

Mindfulness has been found to mediate the association between meditation and happiness. This finding suggests that meditation increases mindfulness which, in turn,

increases happiness (Campos et al., 2016). Campos and colleagues (2016) performed a cross-sectional study aimed at determining whether meditation frequency was related to happiness and whether dispositional mindfulness mediated this relationship. A convenience sample of 365 participants (183 meditators and 182 non-meditators) was recruited online to complete a survey which included scales measuring meditation frequency, dispositional mindfulness, and happiness. Campos and colleagues (2016) used a multidimensional measure of mindfulness with five dimensions – observing, describing, acting with awareness, non-judging, and non-reactivity (Baer et al., 2008). This measure also provided an overall dispositional mindfulness score. In an initial correlation analysis, frequency of meditation was significantly related to all mindfulness dimensions, total mindfulness, and happiness. Further, all mindfulness dimensions and total mindfulness was significantly correlated with happiness. Next, the research team conducted a multivariate analysis of covariance (MANCOVA) to examine differences between meditation frequency groups in mindfulness and happiness. They split participants into four groups based on their frequency of meditation (i.e., daily, 3-4 times per week, once a week, never). Their MANCOVA model, adjusting for age, most notably found significant group differences between the daily meditating group and the non-meditators across all mindfulness dimensions, total mindfulness, and happiness scores (see Campos et al., 2016 for all other significant group differences). The research team then tested which facets of mindfulness significantly predicted happiness to determine which variables should be included in their mediation model. They found that the awareness and observing facets of mindfulness significantly predicted happiness. The observing facet of mindfulness refers to noticing or attending to external or internal experiences (i.e., sights,

emotions), while the awareness aspect of mindfulness denotes attention to one's activities in the present moment (Baer et al., 2008). Finally, Campos et al. (2016) tested a mediation model with meditation frequency as the predictor, awareness and observing facets of mindfulness as mediators, and happiness as the criterion. They found that only the observing facet of mindfulness gave rise to significant partial meditation of the relationship between meditation frequency and happiness. In other words, the implication is that the connection between meditation frequency and happiness can be explained, in part, by an individual's observing facet of mindfulness.

One limitation of Campos and colleagues' (2016) study was how they decided to measure the construct of happiness. They utilized the Pemberton Happiness Index (PHI; Hervás & Vázquez, 2013). The PHI includes domains of remembered well-being and experienced well-being. Remembered well-being is comparable to trait happiness, whereas experienced well-being is comparable to state happiness. Campos et al. (2016) measured overall well-being by adding scores from both remembered and experienced well-being subscales. In comparison to using the SHS scale, which was created specifically to tap subjective trait happiness, using the PHI in this way confounds state and trait aspects of happiness. Therefore, it is difficult for Campos and colleagues (2016) to make the assertion that meditation frequency and mindfulness are connected to a more enduring experience of happiness. Hence, the importance of mindfulness in the meditation to happiness connection still needs to be investigated for subjective trait happiness.

Other researchers have implied that mindfulness is an important aspect of meditation that allows it to lead to positive outcomes in general (Baer et al., 2008;

Carmody & Baer, 2008; Josefsson et al., 2011; Sedlmeier et al., 2012). Campos et al. (2016) partially supported this assertion as one of the facets of mindfulness was a significant mediator in the relationship between meditation frequency and happiness. Outside of happiness, mindfulness has also been found to predict empathy and anxiety (Keng et al., 2011). Therefore, like happiness, it is conceivable that mindfulness could be a key factor in the relationship between meditation and empathy and meditation and anxiety. Yet, few investigations to date have been conducted to address the importance of mindfulness in the meditation to empathy and anxiety connections. More work is needed to test the hypothesized importance of mindfulness in meditation outcomes.

If meditation leads to higher levels of psychological health in the form of increased happiness, empathy, and decreased anxiety; one would expect regular meditators to display higher levels of these outcomes than non-meditators. Indeed, previous cross-sectional research has found such group differences in these outcomes (e.g., Campos et al., 2016; Singh et al., 2014; Somaraju et al., 2021). Despite these studies, there is still work to be done in this area of inquiry. For instance, each of these investigations only examined one of the three outcomes: happiness, empathy, or anxiety. A limitation of these studies is that they did not include mindfulness as a covariate in their analyses despite evidence that suggests mindfulness is closely related to meditation (Campos et al., 2016; Sedlmeier et al., 2012). As a result, the researchers could not make conclusions about meditation effects themselves because the effects were potentially confounded by mindfulness. Furthermore, it is unclear whether all of these cross-sectional effects would hold for a university-centric sample. These limitations imply a research gap that can be filled by the present investigation.

Spirituality and Psychological Health

Spirituality has, like meditation, been found to associate with the psychological health-related outcomes of happiness, empathy, and anxiety (Chaves et al., 2015; Giordano et al., 2014; Wade et al., 2018).

Spirituality and Happiness

The connection between spirituality and happiness has been displayed in several studies across the literature. As an example, Wade and colleagues (2018) conducted a study to determine whether religion and spirituality could predict happiness in a sample of outpatients suffering from neurological disorders. The research team recruited a convenience sample of 354 outpatients and gave them a variety of scales to complete. Spirituality was measured using the Spiritual Well-Being Scale (SWBS; Ellison, 1983) and happiness was tapped by the PHI (Hervás & Vázquez, 2013). The researchers input the self-report data into two regression models. One regression used remembered happiness as the criterion and the other regression used experienced happiness as the criterion. The authors found that spiritual conviction significantly predicted both remembered and experienced happiness in the neurological outpatients. The spirituality-happiness association has also been reported elsewhere in the literature (e.g., Holder et al., 2010; Mahipalan & Sheena, 2019).

There are limitations to the scale choice in the study by Wade and Colleagues (2018). Both the SWBS and PHI present questions tapping the construct of well-being (de Jager Meezenbroek et al., 2012). Due to this confound, one plausible explanation for the findings could be that spirituality and happiness were only associated by virtue of the overlap in question content. It might have been better to choose a spirituality measure

whose focus was not on well-being itself. Additionally, the sample was made up of neurological outpatients and thus, more research is needed to determine if spirituality predicts trait happiness in a non-clinical population.

Spirituality and Empathy

Many researchers have also identified a relationship between spirituality and empathy. For instance, Giordano and colleagues (2014) conducted a study to explore whether spirituality could predict empathy levels in university counselling students. To achieve this goal, 146 graduate-level students were recruited to complete Davis' (1983) IRI empathy scale and Howden's (1992) SAS. For the IRI, the researchers only collected data on the EC and PT subscales which assessed affective and cognitive empathy, respectively. The SAS measure included subscales tapping the four theoretically determined dimensions of spirituality previously mentioned in this review (i.e., purpose and meaning in life, unified interconnectedness, innerness, transcendence). The researchers performed two hierarchical multiple regression analyses, one for the EC criterion and one for the PT criterion. Each regression had two steps; in step one, demographic variables (age, race, and gender) were entered into the model and in step two, the four spirituality subscale predictors were added. The researchers found that the purpose and meaning in life subscale of spirituality significantly predicted EC and the unified interconnectedness subscale of spirituality was as significant predictor of PT. This pattern of findings implied that a spiritual purpose and meaning was related to affective empathy while the unified interconnectedness aspect of spirituality was related to cognitive empathy. Further research has seconded the sentiment that spirituality is predictive of empathy (Huber & MacDonald, 2012; Stewart & Lawrence, 2021).

In the study by Giordano et al. (2014), the researchers also included religious commitment as a predictor variable alongside the spirituality subscales in the second step of their hierarchical regression. The authors did this because they suggested that these constructs were interconnected. However, in regression analyses, any variable included in the model can influence the relative *beta* coefficients of the other predictors. Thus, an investigation that involves the predictive connections between the dimensions of spirituality and empathy in the absence of religious commitment is still needed. Furthermore, this study was conducted on the specific population of counselling students, who may require a high level of empathy for their occupation. A similar investigation with a general university sample is required.

Spirituality and Anxiety

The connection between spirituality and anxiety was shown in a cross-sectional study by Chaves and colleagues (2015) that aimed to investigate the predictive relationship between spirituality and anxiety in university students. Six-hundred and nine university students from Brazil were recruited to complete Brazilian-validated versions of the STAI (Spielberger et al., 1971) and Pinto and Pais-Ribeiro Spirituality (Chaves et al., 2010) scales. The Pinto and Pais-Ribeiro Spirituality instrument measured two dimensions of spirituality: a ‘belief’ dimension which involved a relationship with the transcendent, and an ‘existential’ dimension which involved questions about the meaning of life and the interconnectedness of oneself and others. These subscales of spirituality were combined into an overall spirituality score. Researchers tested a regression model including the predictor of interest, spirituality, and some additional health-related predictors known to associate with anxiety. It was found that the total spirituality score

significantly predicted decreased trait anxiety (Chaves et al., 2015). Other research in the literature has supported this predictive assertion (e.g., Janzen, 2005; Koenig, 2012; Steiner et al., 2017)

In Chaves and colleagues' (2015) study, the researchers conducted a simultaneous multiple regression with many health-related variables (e.g., restlessness, fatigue, muscular tension, etc.) and the variable of interest, spirituality. Thus, it was much harder to tease apart the predictive relationship between spirituality and trait anxiety when all other additional variables were potentially impacting the overall model. Since spirituality was the variable of interest, it may have been more appropriate to conduct a hierarchical multiple regression in which the additional variables were added in step one and spirituality was added in step two. In such a case, the R^2 change, or effect size, of the predictive relationship between spirituality and trait anxiety could have been determined. Hence, although the study suggested a connection between spirituality and trait anxiety, additional research is required to reinforce this claim.

The Dimensions of Spirituality and Psychological Health

The theoretical basis for the spirituality and psychological health connection is relatively lacking in the literature, however, the dimensions implicated in the conceptualization of spirituality may offer some suggestions. For instance, some theorists have suggested that one of the major aspects leading to happiness is a feeling of purpose and meaning in life (Frankl, 1972; Kruse & Schmitt, 2019; Ryff, 2014), which implies a connection between spirituality's purpose in life dimension and the happiness construct. Regarding empathy, the spirituality dimension of unified interconnectedness could drive the association. For example, May (2017) argued that the notion of interconnectedness, or

a perceived “oneness” with other humans, could induce feelings of empathy. The innerness aspect of spirituality appears to be most relevant to anxiety. Research has found connections between anxiety and parts of the innerness dimension, namely, feelings of a strong understanding of one’s own identity (Masten et al., 2006), and inner strength or resilience (Hjemdal et al., 2011). Finally, the transcendence dimension may be implicated in all of these psychological health outcomes as Piedmont (2004) suggested connections between transcendence and happiness, empathy, and anxiety. Additional research has supported the sentiment that transcendence predicts happiness (Galea et al., 2007), empathy (Miniotti, 2022), and decreased anxiety (McMahon & Biggs, 2012). Unfortunately, despite the theoretical dialogue that exists about the dimensions of spirituality, there is a dearth of research that involves operational measures with these dimensions implicated. Therefore, the current investigation attempted to account for the dimensionality of spirituality in the understanding of its connection to positive psychological outcomes.

The Current Investigation

The theoretical framework that was utilized for the current research was post-positivistic in nature, so, the constructs involved were empirically measured and statistically analyzed. The present investigation assumed that meditation is more than simply a relaxation technique; the practice can reinforce psychological health in the form of increased happiness, empathy, and decreased anxiety. Furthermore, spirituality was depicted here as a multidimensional construct that could be evaluated with a valid and reliable scale, just like other abstract constructs in psychology. Thus, the variables of interest were assessed via scores on scales that are accepted in the literature.

Researchers have found that both meditation and spirituality are related to happiness, empathy, and anxiety (e.g., Chaves et al., 2015; Crowley et al., 2020; Huber & MacDonald, 2012; Luberto et al., 2018; Sedlmeier et al., 2012; Wade et al., 2018). Regular meditators have been found to have higher happiness, empathy, and lower anxiety than non-meditators (Campos et al., 2016; Singh et al., 2014; Somaraju et al., 2021). However, these meditation studies have not statistically controlled for mindfulness or spirituality; have not all investigated university-aged individuals; and have not investigated happiness, empathy, and anxiety in a single study. Spirituality has also been found to predict these outcomes, but few investigations have broken the construct down into the purpose, interconnectedness, innerness, and transcendence theoretically determined dimensions to see if certain dimensions differentially predict happiness, empathy, and anxiety. The present investigation utilized MANOVA, MANCOVA, and multiple regression analyses to explore the connections between meditation, spirituality, and the psychological outcomes of interest. More specifically, the major research questions (RQs) were RQ1: Do regular meditators show increased levels of happiness, empathy, and decreased levels of anxiety when compared with non-meditators when mindfulness and spirituality are controlled? and, RQ2: Which dimensions of spirituality predict happiness, empathy, and anxiety outcomes? Concerning RQ1, it was expected that significant psychological health differences would be found between meditators and non-meditators before controlling for mindfulness and spirituality. However, the main hypothesis was that meditators would not display significantly different levels of happiness, empathy, and anxiety than their non-meditating counterparts when mindfulness and spirituality were controlled. This prediction was made due to the

theoretical importance of mindfulness in meditative benefits and the idea that spirituality overlaps with meditation in terms of the psychological health outcomes. For RQ2, it was expected that the purpose of life dimension would most strongly predict happiness, the unified interconnectedness dimension would most strongly predict empathy, the innerness dimension would most strongly predict anxiety, and the transcendence dimension would predict a significant amount of variance in each outcome (see *The Dimensions of Spirituality and Psychological Health* section on p. 37 for the rationale behind these hypotheses).

Breakdown of Research Questions and Hypotheses

RQ1: Do regular meditators show increased levels of happiness, empathy, and decreased levels of anxiety when compared with non-meditators when mindfulness and spirituality are controlled?

H1: Meditators will not display significantly different levels of happiness, empathy, and anxiety than their non-meditating counterparts when controlling for mindfulness and spirituality.

RQ2: Which dimensions of spirituality predict happiness, empathy, and anxiety outcomes?

H2: The purpose of life and transcendence dimensions of spirituality will most strongly predict happiness.

H3: The unified interconnectedness and transcendence dimensions of spirituality will most strongly predict empathy.

H4: The innerness and transcendence dimensions of spirituality will most strongly predict anxiety.

Methods

Participants

A total of 392 undergraduate students were recruited from Trent's SONA participant recruitment system. Students enrolled in select first- and second-year psychology courses participated in the study in exchange for course credit. Participants were required to be 18 years of age or older to participate. In the process of managing and screening the data, a subset of participants was removed from the final sample (refer to the *Data Exclusions* section on p. 55 for details on exclusionary criteria). Hence, the final sample of the present investigation comprised 363 students. The majority of participants identified their gender as female (78.5%) and their ethnicity as White or Caucasian (69.4%). Participants ranged from 18 to 50 years old (M = 20.29, SD = 4.57). See Table 1 for the full demographic information of the present study's sample.

Procedure

This study was approved by Trent University's Research Ethics Board (approval number 28096). To recruit participants, a description of the study was advertised to eligible students on Trent's SONA research participation system (see Appendix A). The study was described as an in-person lab study conducted at Trent University, Symons Campus. Participants interested in the study were able to sign up for a session timeslot in accordance with their own schedules. The study's questionnaire was hosted on Qualtrics (2022). Despite the capability of conducting the study exclusively online, the decision was made to require students to complete the questionnaire in a computer lab on campus. This decision was made in light of data quality concerns. Research indicates that

Table 1

Participant Demographics

Variable	Number	Percentage (%)
Gender		
Female	285	78.5
Male	57	15.7
Non-Binary	12	3.3
Genderfluid	6	1.7.
Transgender Male	2	0.6
Two-Spirit	1	0.3
Transgender Female	0	0
Biological Sex		
Female	304	83.7
Male	59	16.3
Ethnicity		
White or Caucasian	252	69.4
Asian or Pacific Islander	41	11.3
Black or African American	25	6.9
Multiracial or Biracial	23	6.3
Hispanic or Latinx	15	4.1
Native American or Alaskan Native	4	1.1
Unspecified	3	0.8
First Language English?		
Yes	306	84.3
No	57	15.7
Spiritual or Religious Identification		
Religious	124	34.2
Spiritual	101	27.8
Agnostic	84	23.1
Atheist	52	14.3
Unspecified	2	0.6
Ever Meditated?		
Yes	237	65.3
No	126	34.7
Meditation Frequency		
Never Meditated	126	34.7
Less than once a month	120	33.1
Once or twice a month	61	16.8
Once a week	25	6.9
Two to four times a week	24	6.6
Every day	7	1.9

Note. Demographic information was collected from 363 undergraduate student participants from Trent University.

answering survey questions in the presence of a research confederate decreases the number of items participants neglect to answer (Gregory & Pike, 2012; Webster, 1997).

Several days prior to attending the study session, participants were emailed a copy of the informed consent form to review (see Appendix B). Participants were instructed to meet the principal investigator (PI) in a waiting area near the study's computer lab at their predetermined session time. At the designated time, the individuals were greeted by the PI and escorted to the computer lab in which the study questionnaire was completed. The computer lab accommodated 20 working computers and, thus, up to 20 participants were able to sign up for a single study session and complete the survey concurrently. Once all of the participants were seated at a computer, they were asked to read the electronic version of the letter of informed consent which was displayed on the computer monitor. Following this, the PI verbally reviewed the key components of the consent form and provided the opportunity for participants to ask questions about the study procedure. After answering any pertinent questions, participants were able to provide consent to participate and begin the questionnaire.

Once consent was obtained, participants viewed a paragraph that stated the importance of answering the questionnaire honestly, carefully, and attentively:

> We rely on participants to read the following questionnaire questions carefully and answer to the best of their ability. Put another way, the results of this study are only as good as the responses we receive from participants. We understand that it is sometimes difficult to give questionnaires complete attention throughout and to answer questions carefully and honestly. You can help us maximize the

quality of our data and our results by responding honestly to the following questionnaire questions. Thank you.

When the participants had read this statement and clicked the arrow to continue, they were presented with a brief demographic questionnaire (e.g., age, sex, ethnicity, religious affiliation; see Appendix C for the full demographics form). Next, participants answered the study's questionnaire; Appendix D depicts the questionnaire which contained several measures that evaluated the study's variables of interest: meditation practice, spirituality, mindfulness, happiness, empathy, and anxiety. The questionnaire also collected responses on a measure of religious orientation, but these data were not analyzed in the present investigation. Note that participants always received the demographic questions first. The order in which the remaining measures of interest were presented was randomly assigned for each participant on Qualtrics (2022). This randomization precluded systematic response fatigue or order effects in resultant participant data.

Following completion of the questionnaire, participants received a physical copy of the study's debriefing form (see Appendix E) and a document summarizing the research process in psychology (see Appendix F). The research process document constituted an optional educational aid for the student participants. Participants were instructed to read the debriefing form and were able to ask any final questions before departing the computer lab. The participants were subsequently allocated SONA credits for their participation which translated to course credit in their respective Trent psychology courses.

Measures

Meditation Practice

To assess participants' meditation practices, they were first asked whether they had ever engaged in a formal meditation. A definition of a formal practice was provided for participants to support this question ("Formal practice is when you set aside time to engage in meditation. For example, scheduling 15 minutes to sit and focus on your breath is formal meditation practice. However, taking a moment to notice your breath during the day would be informal practice"; adapted from Galla et al., 2016). Participants were required to select *yes* or *no* for this question. If participants answered *yes*, they were provided with additional questions concerning meditation frequency, average meditation duration, commitment to their meditation practice, and the type of meditation their practice most closely aligned with. For the purposes of the current investigation, the meditation frequency question ("How often do you engage in your meditation practice?") was included in subsequent data analyses and used to differentiate between meditators and non-meditators (see *Meditator/Non-Meditator Grouping* section on p. 54 for an explanation of the grouping criteria). This meditation frequency question was answered on a five-point scale (1 = *less than once a month,* 2 = *once or twice a month,* 3 = *once a week,* 4 = *two to four times a week,* 5 = *every day*). The remaining meditation questions were used for analyses appearing in other research projects. Please see Table 1 for the meditation frequency data. The current study's meditation frequency data appeared comparable to other research that evaluated the meditation frequency of undergraduate students (e.g., Frewen et al., 2011; Proeve, 2020).

Spirituality

The Spirituality Assessment Scale (SAS; Howden, 1992) was utilized to assess participants' spirituality levels. The SAS is a 28-question scale that includes four subscales based on the theoretical conceptualization of spirituality found in the literature (see *Dimensions of Spirituality* section on p. 12). These subscales are *purpose and meaning in life* (PM; e.g., "My life has meaning and purpose."), *unified interconnectedness* (UI e.g., "I feel a connection to all of life."), *innerness* (IN; e.g., "I have discovered my own strength in times of struggle."), and *transcendence* (TR; e.g., "I have the ability to rise above or go beyond a physical or psychological condition."). Each item on the SAS was answered on a six-point scale from 1 (*strongly disagree*) to 6 (*strongly agree*).

For each subscale, the scores were computed by summing the number scores associated with each item response. For example, a selection of *strongly agree* on an item produced a score of six and a response of *strongly disagree* for another item translated to a score of one. There are four questions in the PM subscale and therefore, the scores could range from 4 to 24. There are nine questions in the UI subscale and scores could range from 9 to 54. There are also nine items in the IN subscale and scores could range from 9 to 54. Finally, there are six items in the TR subscale and scores could range from 6 to 36. The SAS also generates an overall spirituality score from all 28 questions which ranges from 28 to 168. See Table 2 for the descriptive statistics and reliability coefficients of the entire SAS scale and SAS subscales.

Table 2

Descriptive Statistics of the SAS, MAAS, SHS, IRI, and STAI

Variable	Mean	*SD*	Range	α	Skew	Kurtosis
Spirituality (SAS)						
Purpose and Meaning in Life (PM)	19.34	3.45	6.00-24.00	0.79	-1.03	1.18
Unified Interconnect-edness (UI)	41.09	6.12	17.00-54.00	0.77	-0.60	0.58
Innerness (IN)	38.11	7.74	11.00-54.00	0.85	-0.65	0.52
Transcendence (TR)	25.11	4.91	11.00-36.00	0.71	-0.33	-0.18
Total	123.66	19.04	67.00-166.00	0.92	-0.50	0.17
Mindfulness (MAAS)						
Total	3.20	0.83	1.20-5.73	0.87	0.23	-0.11
Subjective Happiness (SHS)						
Total	4.40	1.33	1.00-7.00	0.86	-0.28	-0.59
Empathy (IRI)						
Empathic Concern (EC)	20.92	4.87	3.00-28.00	0.82	-0.77	0.55
Perspective Taking (PT)	19.37	5.11	5.00-28.00	0.81	-0.53	-0.11
Personal Distress (PD)	12.41	4.93	1.00-26.00	0.74	0.22	-0.14
Trait Anxiety (STAI)						
Total	49.77	11.29	20.00-77.00	0.93	0.07	-0.41

Note. N = 363. SAS = Spirituality Assessment Scale, MAAS = Mindful Attention Awareness Scale, SHS = Subjective Happiness Scale, IRI = Interpersonal Reactivity Index, STAI = State-Trait Anxiety Inventory.

A factor analysis performed by Howden (1992) supported the theoretical division into the four spirituality subscales. Satisfactory internal consistency was demonstrated by Howden (1992) as the *Cronbach alpha* for the total scale was .92; for PM, *alpha* was .91; for UI, *alpha* was .80; for IN, *alpha* was .79; and for TR, *alpha* was .71. In terms of divergent validity, spirituality scores derived from this scale were shown to not correlate with religiosity and attendance at religious events, highlighting its distinctiveness from religion (Howden, 1992). The weakness of this scale is that convergent validity has not been sufficiently investigated, however, its strength lies in its dimensional conceptualization of spirituality that is based on previous theorists' understanding of the construct. The SAS has been used to quantify overall spirituality and scores on each dimension in the literature (e.g., Gill et al., 2010; Giordano et al., 2014, 2015).

The present study produced similar reliability coefficients as those determined in previous research utilizing the SAS with university samples (e.g., Giordano et al., 2014, 2015; Prosek et al., 2017). Concerning mean scores of the subscales, the current sample's means were compared to means from a university student sample from research by Giordano et al. (2015). The current sample's mean for PM (M = 19.34, SD = 3.45) was significantly lower than Giordano and colleagues' (2015) sample (M = 20.19, SD = 3.07), $t(671) = 3.35$, $p < .001$, $d = 0.26$. The present sample's mean for UI (M = 41.09, SD = 6.12) was not significantly different than the comparison sample's UI mean (M = 41.95, SD = 5.74). $t(671) = 1.87$, $p = .062$, $d = 0.14$. This sample's mean for IN (M = 38.11, SD = 7.74), was significantly lower than the comparison sample's mean (M = 42.35, SD = 6.82), $t(671) = 7.48$, $p < .001$, $d = 0.58$. Finally, the current sample's mean for TR (M =

25.11, *SD* = 4.91) was also significantly lower than the comparison sample's TR mean (*M* = 27,31, *SD* = 4.38), $t(671) = 6.09$, $p < .001$, $d = 0.47$.

Mindfulness

Dispositional mindfulness was assessed using the Mindful Attention Awareness Scale (MAAS; Brown and Ryan, 2003). This 15-question scale generates an overall trait mindfulness score based on questions that assess the tendency to receptively attend to the present moment (e.g., "I do jobs or tasks automatically, without being aware of what I'm doing."). The agreement to each item statement was answered on a six-point scale from 1 (*almost always*) to 6 (*almost never*). The final mindfulness score was derived by taking the mean of the total score of all items. Therefore, final scores ranged from one to six, with higher scores denoting higher levels of dispositional mindfulness. See Table 2 for the descriptives of the sample scores and the scale's reliability coefficient.

In their psychometric evaluation of the scale, Brown and Ryan (2003) found an internal consistency *Cronbach alpha* of .82 and a test-retest reliability correlation coefficient of .81. Furthermore, the MAAS showed adequate convergent validity as it was found to correlate with expected variables such as emotional intelligence and the openness to experience personality trait. The instrument also showed concurrent validity as scores were significantly correlated to the Mindfulness/Mindlessness Scale (Bodner & Langer, 2001). The MAAS displayed divergent validity because it was not found to correlate with measures that tapped self-examination and self-reflection. Finally, the MAAS is relevant for the current study because it has been utilized in prior studies investigating meditation (e.g., Ainsworth et al., 2013; Crowley et al., 2022).

Means and reliability coefficients of the present study data were compared to other research on university students that utilized the MAAS (e.g., Arí et al., 2020; He et al., 2018; Miller et al., 2017; Palmer & Rodger, 2009; Zubair et al., 2018). Based on these comparisons, the present study's Cronbach alpha were comparable to those found in previous research (e.g., Arí et al., 2020; He et al., 2018; Zubair et al., 2018). Furthermore, the present sample's mean score on the MAAS ($M = 3.20$, $SD = 0.83$) was significantly lower than the mean found in another Canadian university sample from Miller and colleagues (2017; $M = 4.00$, $SD = 0.73$), $t(412) = 6.54$, $p < .001$, $d = 1.02$.

Happiness

The Subjective Happiness Scale (SHS) evaluated the extent to which individuals perceive themselves as overall happy or unhappy people (Lyubomirsky & Lepper, 1999). The instrument is very brief, containing only four questions that are answered on a seven-point scale (e.g., "Compared to most of my peers, I consider myself:" 1 = *not a very happy person* to 7 = *a very happy person*). One of the items in the SHS is reverse coded. Final scores were determined by averaging the scores on the four items, so, the final scores ranged from one to seven with higher scores denoting higher subjective happiness. See Table 2 for the descriptives of the sample's scores and the reliability coefficient of the SHS scale.

A principal component analysis conducted by Lyubomirsky and Lepper (1999) suggested that the four items loaded onto a single factor. For internal consistency, they calculated *Cronbach alpha* coefficients across samples of varying ages, occupations, languages, and cultures which ranged from .79 to 94 ($M = .86$). Test-retest reliability correlations were strong and significant, ranging from .90 at a month, to .55 at a year

apart. The SHS showed concurrent validity with other happiness measures and expectedly related to constructs such as self-esteem, optimism, and extraversion. Since the authors theoretically suggested that this measure of happiness should not be dependent on external circumstances, they assessed divergent validity by evaluating whether SHS scores correlated with variables such as college grade point average and stressful life events. The authors found no significant correlations between these transient events and SHS scores.

The present study's mean score and *Cronbach alpha* reliability was compared to previous research measuring university student happiness with the SHS (Callaway, 2009; Levin & Rawana, 2022). This study's reliability coefficient was similar to those denoted in these previous studies. As appears to be a pattern in the current study's data, the present mean SHS score (M = 4.40, SD = 1.33) was significantly lower than the mean scores found in previous research by Callaway (2009; M = 4.86, SD = 1.19), $t(562) = 4.08$, $p < .001$, $d = 0.36$, and Levin and Rawana (2022; M = 4.60, SD = 1.25), $t(973) = 2.36$, $p = .019$, $d = 0.15$.

Empathy

Empathy was measured using the Interpersonal Reactivity Index (IRI) which is a 21-item instrument that collapses empathy into three subscales: *perspective taking* (PT; e.g., "Before criticizing somebody, I try to imagine how I would feel if I were in their place."), *empathic concern* (EC; e.g., "When I see someone being taken advantage of, I feel kind of protective towards them."), and *personal distress* (PD; e.g., "In emergency situations, I feel apprehensive and ill-at ease."). The IRI has a fourth, *fantasy* subscale, however, like the investigation by Fuochi and Voci (2020), this subscale was excluded

because it is unclear whether empathy toward fictional characters accurately taps real-life empathy (Baron-Cohen & Wheelwright, 2004; Nomura & Akai, 2012). Each subscale contained seven items, and each item was scored on a five-point scale from 0 (*does not describe me well*) to 4 (*describes me very well*).

For each subscale, the scores were computed by summing the number scores associated with the responses. For example, a selection of *does not describe me well* on an item would produce a score of zero and an answer of *describes me very well* for another item would translate to a score of four. Some questions were reverse coded (e.g., "When I see someone get hurt, I tend to remain calm.", was a reverse coded item for the PD subscale). With a total of seven questions per subscale, subscale scores ranged from 0 to 28. See Table 2 for the descriptives of the sample scores and the reliability coefficients of the IRI subscales.

Davis (1983) found *Cronbach alpha* coefficients ranging from .70 to .78, which was later replicated by Baldner and McGinley (2014) who found an *alpha* of .75 for PT, an *alpha* of .80 for EC, and an *alpha* of .76 for PD. Within an interval of 60 to 75 days, the test-retest reliability correlations ranged from .61 to .79 for males and .62 to .81 for females. The IRI expectedly correlated with other instruments that tap empathy, suggesting concurrent validity. This scale has also been used in other meditation, mindfulness, and spirituality investigations (e.g., Ardenghi et al., 2021; Fuochi & Voci, 2020; Giordano et al., 2014).

Additional studies utilizing university student samples were examined to compare the current study's *alpha* reliabilities and mean scores for the IRI subscales to those found in the literature. The reliability coefficients for the subscales were similar to those

outlined in previous studies (Ardenghi et al., 2021; Giordano et al., 2014). The present study's means for the empathy subscales were compared to an American undergraduate sample (Steward & Lawrence, 2021). The present sample's mean for EC (M = 20.92, SD = 4.87) was significantly lower than the comparison sample's EC mean (M = 26.04, SD = 4.76), $t(438) = 8.41$, $p < .001$, $d = 1.06$. The current sample's mean for PT (M = 19.37, SD = 5.11) was also significantly lower than the comparison sample's mean (M = 27.16, SD = 4.48), $t(438) = 12.40$, $p < .001$, $d = 1.62$. Finally, the current sample's mean for PD (M = 12.41, SD = 4.93) was, again, significantly lower than the comparison sample's PD mean (M = 16.94, SD = 5.39), $t(438) = 7.20$, $p < .001$, $d = 0.88$.

Trait Anxiety

For trait anxiety, Spielberger and colleagues' (1983) State-Trait Anxiety Inventory (STAI) was used. The trait aspect of this instrument evaluates stable aspects of anxiety or, in other words, anxiety proneness, by assessing general feelings of calmness, confidence, and security (e.g., "I worry too much over something that really doesn't matter."). The trait subscale has 20 questions, answered on a four-point scale from 1 (*almost never*) to 4 (*almost always*).

Trait anxiety scores were computed by summing all the scores associated with each participant's responses to the 20 items. Reporting *almost never* to an item would give rise to a score of one while reporting *almost always* on an item would generate a score of four. Similar to the IRI, some questions were reverse coded (e.g., "I am 'calm, cool, and collected'"*)*. Total scores ranged from 20 to 80 with higher scores indicating higher trait anxiety. See Table 2 for the current study's descriptives and reliability coefficient for the STAI trait scale.

Cronbach alpha reliability of the trait subscale of the STAI was high, ranging from .86 to .95 in Spielberger and colleagues' (1983) original evaluation. Test-retest reliability ranged from .65 to .75, over a 2-month interval. Concurrent validity was also displayed as the STAI correlated with other anxiety scales. Furthermore, the STAI has also shown convergent validity by correlating with measures of depression (Julian, 2011).

Reviewing some of the studies that utilized the trait subscale of the STAI with a university sample allowed for a comparison between the current study's *Cronbach alpha* value and sample mean score and the norms found in the literature. The *alpha* reliability was similar to the values found in earlier studies (Barnes et al., 2002; Faulconer & Griffith, 2022). Concerning means, the current study's trait anxiety mean score (M = 49.77, SD = 11.29) was significantly higher than the mean reported in a previous study by Janzen (2005; M = 38.43, SD = 8.97), $t(449) = 8.77$, $p < .001$, $d = 1.11$ but not significantly different than the mean reported in more recent research by Faulconer and Griffith (2022; M = 49.15, SD = 14.01), $t(387) = 0.27$, $p = .791$, $d = 0.05$.

Data Management and Data Screening

Meditator/Non-Meditator Grouping

Answering RQ1, *do regular meditators show increased levels of happiness, empathy, and decreased levels of anxiety when compared with non-meditators when mindfulness and spirituality are controlled?,* required the differentiation of participants into meditator and non-meditator groups. Participants were considered meditators if they responded *yes* to whether they had ever engaged in formal meditation and if they responded that they meditated *at least once or twice a month* or more frequently. Participants who responded *no* to the initial meditation question or selected 1 – *less than*

once a month for the meditation frequency question were placed in the non-meditator group for subsequent analyses. Based on this grouping criteria, the sample comprised 117 meditators and 246 non-meditators. Other research has used more stringent cut-offs for differentiating meditators from non-meditators (e.g., Baer et al., 2008; Bergomi et al., 2015; Josefsson et al., 2011; Singh et al., 2014). However, since this was a university sample of relatively young individuals, it was unlikely that there would be many participants who had developed a regular, committed, and frequent practice. Indeed, a meditation study of Australian university students found that only 13.5% of students meditated more often than one to two times per week (Proeve, 2020). The once-a-month meditation frequency grouping cut-off was selected based on research by Frewen and colleagues (2011) who recruited Canadian university students. The once-a-month cut-off has also been utilized by other researchers in the literature (e.g., Green & Black, 2017).

Data Exclusions

Once all the participant data was collected, it was carefully inspected to identify potential data issues such as missing responses and repetitive response patterns. After the initial inspection, the data was evaluated on three exclusionary criteria to remove problematic cases and ensure high data quality for subsequent hypothesis testing. For the most part, the data collected for the present study was high quality with few missing responses.

The first exclusion criterion considered the number of missing responses provided by participants. Any participant who neglected to respond to more than 10% of the entire questionnaire was excluded from the data set. Across the entire dataset, four participants were excluded on the basis of this exclusion criterion, which reduced the sample from

392 to 388 participants. Data exclusions were also made for each of the questionnaire scales. Any participant with 10% or more item responses missing for a given scale was excluded only for that scale. In these cases, a given participant's data for all other scales were retained. For the specific scales, one participant's data was excluded from the SAS scale.

The next exclusion criterion concerned two attention check questions placed within the questionnaire. These questions explicitly asked participants to select a certain response to ensure they were paying attention. One of the attention check questions was embedded within the SAS ("If you are paying attention to the questionnaire, please select 6 – *Strongly Agree*") and the other attention check was embedded within the IRI ("If you are paying attention to the questionnaire, please select 4 – *Describes Me Very Well*"). Participants who answered either of the attention checks incorrectly were excluded from the sample. Implementing this exclusion criterion reduced the sample from 388 to 363 participants.

The final exclusion criterion was developed based on a final check question at the end of the questionnaire. Participants were posed a question that asked if they read the questionnaire carefully and answered the questions to the best of their ability: "Given the attention you gave to this questionnaire, and how carefully and thoughtfully you answered the questions, please answer the following question: Did you read the questionnaire questions carefully and answer them to the best of your ability?". The response options were as follows, a) *yes, I did,* b) *No, I did not read the questions carefully or answer honestly,* c) *Yes, I did, but I would rather you did not use my data in your final analyses.* Participants were informed that their response to this question would

not impact their participation credit, nor would the researcher be able to associate their response to their personal identity. The data of the participants who responded with b) or c) for this final question were planned to be excluded from the final dataset. Impressively, all participants in the sample responded with an a) precluding exclusion of any data at this step.

Therefore, for the present study, 29 participants (7.4%) were excluded from the final sample, giving rise to a final sample size of 363 (see Figure 10 for an illustration of the exclusion process). The low exclusion rate can likely be explained by the in-person method of data collection utilized. Research has suggested that responding to a questionnaire under supervision of a research confederate decreases the number of missed items (Gregory & Pike, 2012; Webster, 1997).

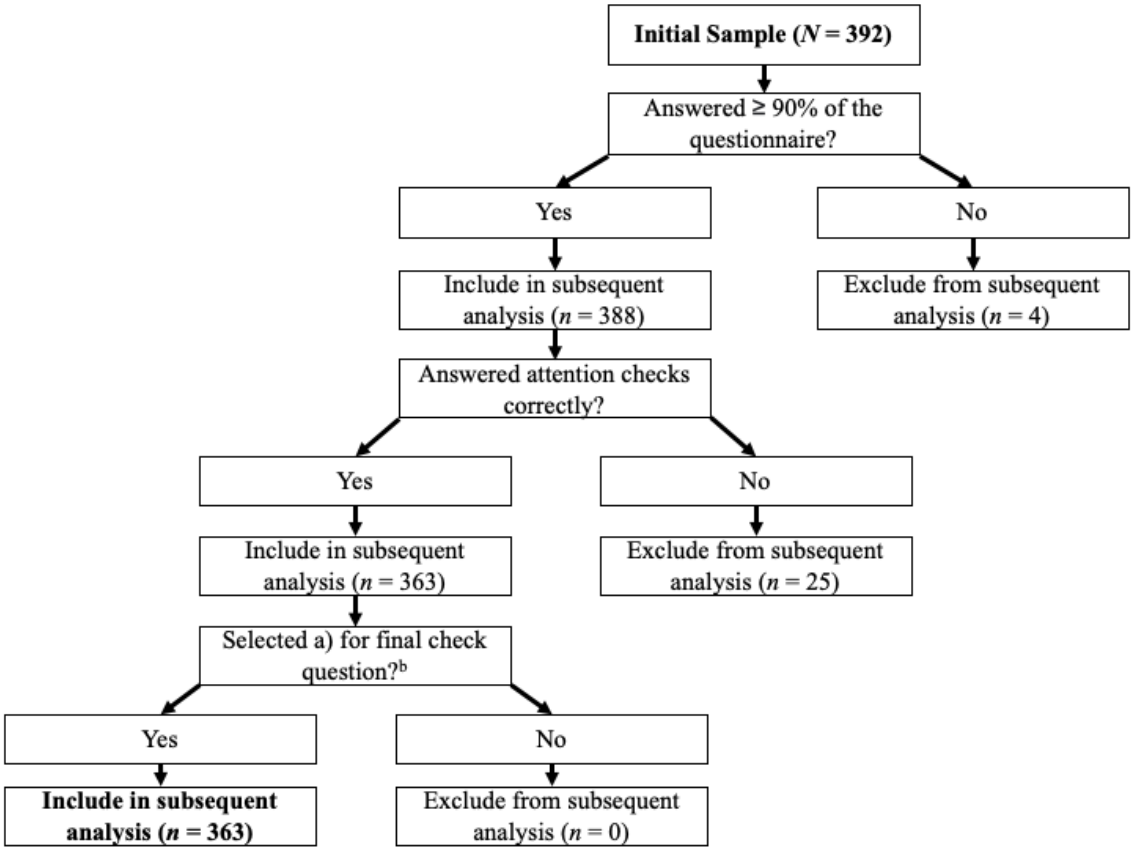
Sex Differences

To determine whether any sex differences in the happiness, empathy, and anxiety outcome variables were expected, the literature was consulted. Then, a MANOVA test was performed to determine sex differences across the outcome variables in the current study. Following this, post hoc tests of between-subjects effects evaluated significant differences across sex for each outcome variable of interest.

For subjective happiness, Lyubomirsky and Lepper (1999) found no sex differences in SHS scores in U.S. college student samples. This suggested gender invariance has been supported by a variety of studies that examined subjective happiness in different countries including Canada (Levin & Rawana, 2022), Turkey (Vural Batik et al., 2017), Malaysia (Swami, 2008), China (Chien et al., 2020), and Lebanon (Moghnie & Kazarian, 2012). Research has suggested that there is a difference in empathy across sex

Figure 10

Illustration of Exclusionary Criteria.



[b]The final check question asked participants if they read the questionnaire carefully and answered the questions to the best of their ability. If they responded a) *yes I did,* data was retained.

such that females display higher empathy than males (Ardenghi et al., 2021; Derntl et al., 2010; Giordano et al., 2014; Harton & Lyons, 2003; Hojat et al., 2020; Rueckert et al., 2011). This sex difference is more likely to occur for affective empathy than cognitive empathy (Derntl et al., 2010; Giordano et al., 2014; Rueckert et al., 2011). Similar to empathy, the literature indicates that females generally display higher levels of trait

anxiety than males (Christiansen, 2015; McLean & Anderson, 2009; Spielberger et al., 1983).

Before the MANOVA model was performed, homogeneity of variance across groups was evaluated using Box's M test for the multivariate model and Levene's Test for each DV. The Box's M value of 13.50 was non-significant $F(15, 42071.13) = 0.87$, $p = .597$. Levene's Test was non-significant for all DVs expect happiness: happiness, $F(1, 361) = 10.46$, $p = .001$; EC, $F(1, 361) = 0.08$, $p = .779$; PT, $F(1, 361) = 0.22$, $p = .638$; PD, $F(1, 361) = 0.64$, $p = .423$; and anxiety, $F(1, 361) = 0.05$, $p = .821$. Therefore, the univariate sex differences analysis for the happiness DV should be taken with caution. The MANOVA found a significant difference in the DVs across sexes, *Wilks'* $\lambda = .895$, $F(5, 357) = 8.41$, $p < .001$, $\eta_p^2 = .105$.

The Bonferroni-corrected univariate analyses found that the current sample displayed a similar pattern of results as the literature. In the present sample, subjective happiness did not differ between males ($M = 4.24$, $SD = 1.60$) and females ($M = 4.43$, $SD = 1.28$), $F(1, 361) = 1.03$, $p = .311$, $\eta_p^2 = .003$, which supported previous research findings (Chien et al., 2020; Levin & Rawana, 2022; Lyubomirsky & Lepper, 1999; Moghnie & Kazarian, 2012; Swami, 2008; Vural Batik et al., 2017). For empathy, males had significantly lower EC scores ($M = 18.44$, $SD = 4.74$) than females ($M = 21.40$, $SD = 4.76$), $F(1, 361) = 19.20$, $p < .001$, $\eta_p^2 = .051$. Similarly, males had significantly lower PD scores ($M = 10.37$, $SD = 4.58$) than females ($M = 12.81$, $SD = 4.90$), $F(1,361) = 12.44$, $p < .001$, $\eta_p^2 = .033$. However, there was no significant difference on the PT subscale between males ($M = 18.90$, $SD = 4.95$) and females ($M = 19.47$, $SD = 5.14$), $F(1, 361) = 0.61$, $p = .434$, $\eta_p^2 = .002$. Since the EC and PD subscales evaluate affective

empathy and the PT subscale evaluates cognitive empathy, this pattern of results is comparable to the literature suggesting that affective empathy gender differences are more likely to be observed (e.g., Derntl et al., 2010; Giordano et al., 2014; Rueckert et al., 2011). Finally, females were found to have higher trait anxiety scores (M = 50.32, SD = 11.18) than males (M = 46.97, SD = 11.49), $F(1, 361) = 4.40$, $p = .037$, $\eta_p^2 = .012$, similar to the pattern found in previous research (Christiansen, 2015; McLean & Anderson, 2009; Spielberger et al., 1983).

Data Analysis Procedure

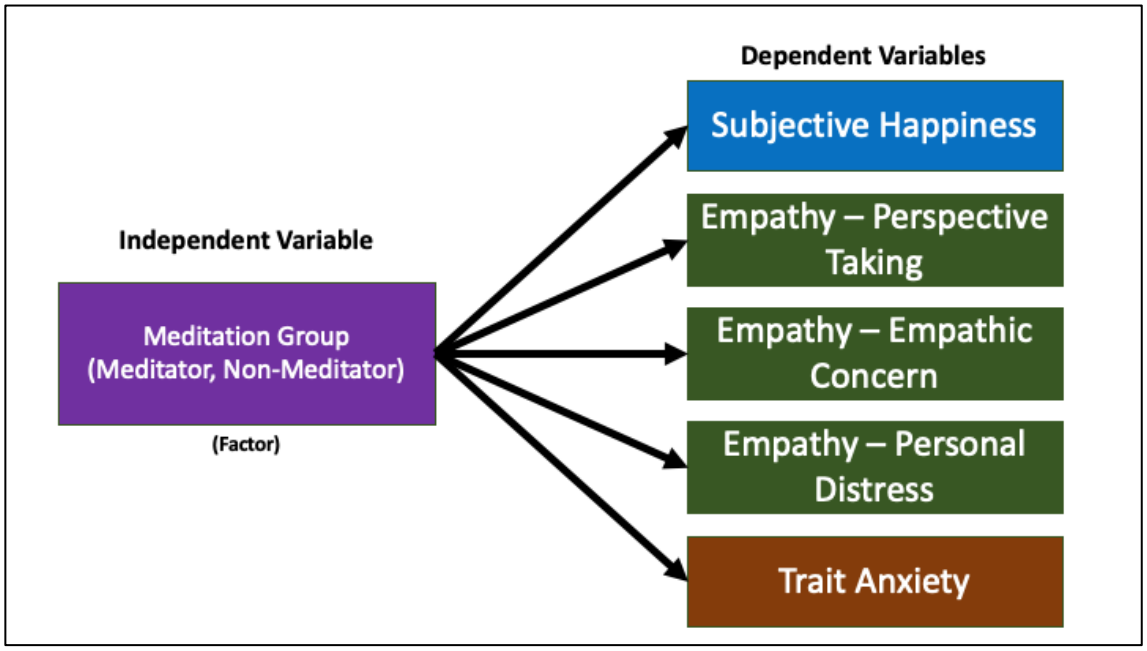
Research Question 1

Recall this investigation's first research question, *do regular meditators show increased levels of happiness, empathy, and decreased levels of anxiety when compared with non-meditators when mindfulness and spirituality are controlled?* To address this question, participants were placed in a meditator or non-meditator group based on whether they meditated a least once a month or not. A one-way MANOVA was then conducted with meditation group as the independent variable and happiness, empathy (broken into the three subscales), and anxiety as dependent variables to determine any underlying dependent variable differences before controlling for the covariates (see Figure 11 for a visualization of this model). Following this, a MANCOVA model was performed with the inclusion of the mindfulness and total spirituality covariates (see Figure 12 for a visualization of this model). The dependent variables and covariates were standardized prior to entering these models. If meditation group still had an effect after controlling for mindfulness, it would suggest that there are additional factors outside of mindfulness that also might drive meditation's beneficial effects. Spirituality was

controlled so that the variance in happiness, empathy, and anxiety was specific to meditation, not meditation and spirituality. As per H1, it was expected that there would be no significant differences in levels of happiness, empathy, and anxiety between meditators and non-meditators when mindfulness and spirituality were statistically controlled.

Figure 11

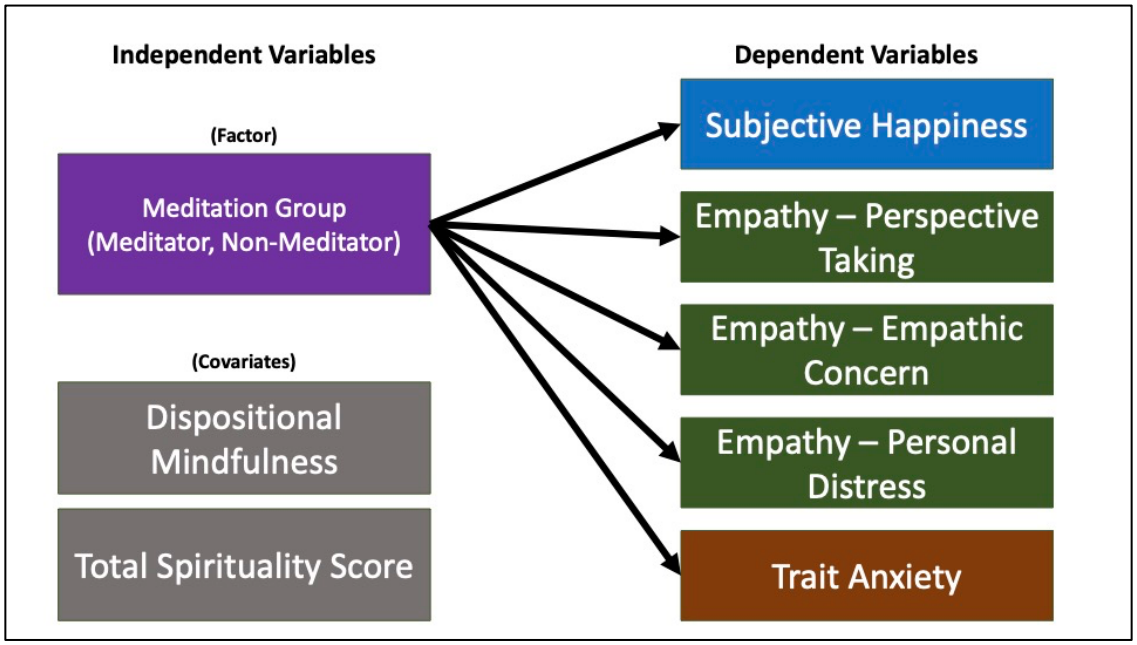
Proposed MANOVA Model



Note: A MANOVA analysis was tested with meditation group as the independent variable; and subjective happiness, the empathy subscales, and trait anxiety as dependent variables.

Figure 12

Proposed MANCOVA Model



Note. A MANCOVA analysis was conducted with meditation group as the independent variable; dispositional mindfulness and spirituality as covariates; and subjective happiness, the empathy subscales, and trait anxiety as dependent variables.

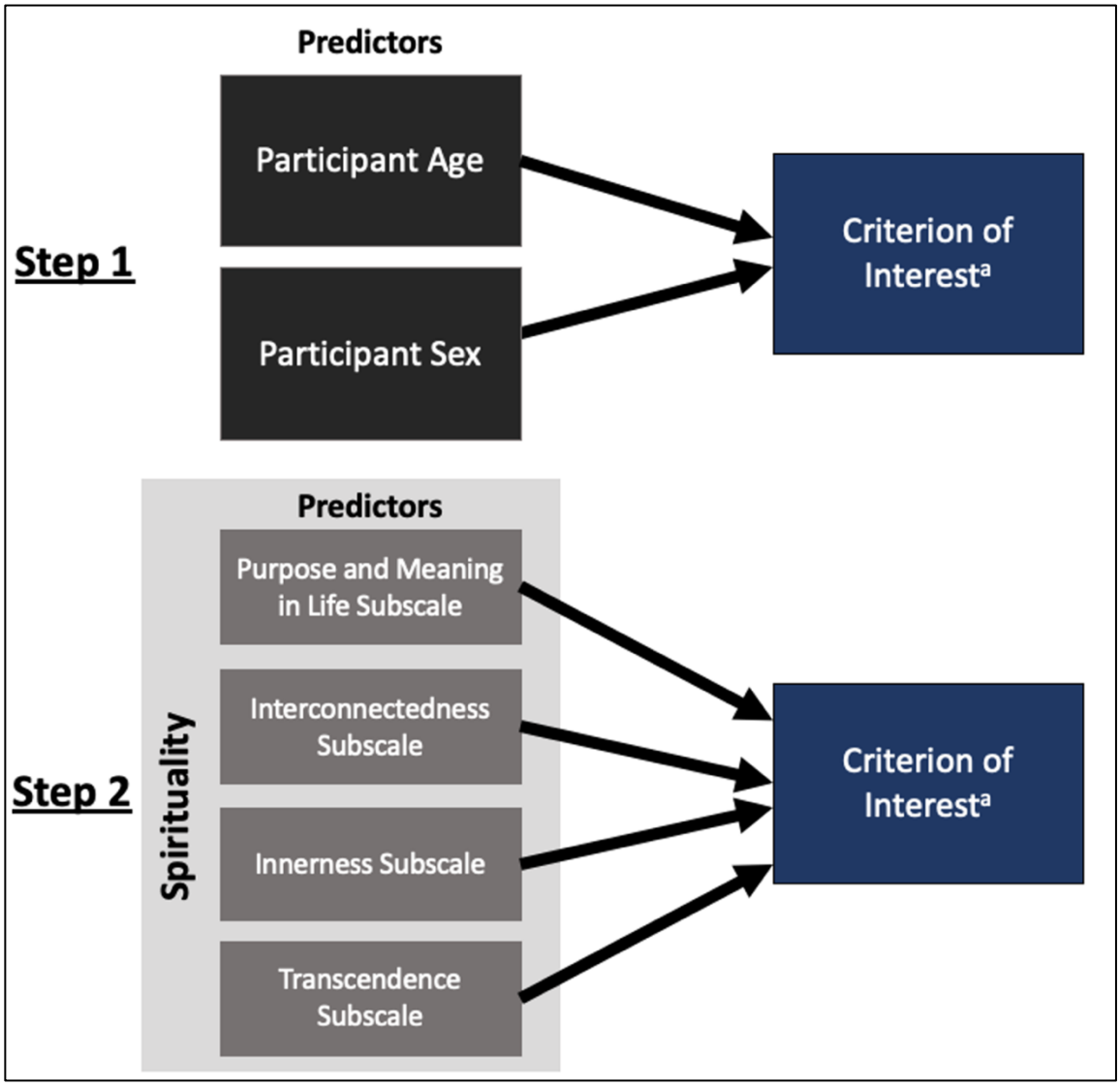
An *a priori* power analysis sample size estimation using G*power (Faul et al., 2007) indicated a required sample size of at least 276 to achieve an η_p^2 effect size value of .05 for a MANCOVA model at an acceptable 80% power level and an α type-one error rate of .05. This estimate suggests that the present sample of 363 participants was sufficient to achieve adequate power for analysis. The effect size utilized for this estimate was based on a MANCOVA model using meditator and non-meditator groups conducted by Campos and colleagues (2016).

Research Question 2

RQ2 concerned which dimensions of spirituality best predicted the same happiness, empathy, and anxiety outcomes. For RQ2, several multiple regression models were tested. Each regression included the spirituality subscale scores for PM, UI, IN, and TR as predictors with one of happiness, an empathy subscale, or anxiety as the criterion. A decision was made to include age as a covariate in the multiple regressions because some of the criteria variables (empathy – EC, PT, and PD) correlated with age such that older individuals displayed higher EC, PT, and lower PD than younger participants (see Appendix G for the correlations between age and the present study's variables of interest). The relationship between age and empathy has been supported by previous research (e.g., Davis & Franzoi, 1991; Hawk et al., 2013). Biological sex was also included as a covariate in the multiple regressions since there were sex differences in the EC and PD empathy subscales and trait anxiety (see *Sex Differences* section on p. 57). Therefore, each regression was hierarchical in nature with age and sex added in step one and the spirituality predictors inserted in step two. Including age and sex in all of the regressions guaranteed consistency in the separate models so that the predictive importance of the spirituality subscale scores could be compared across criteria variables. Since five separate regressions were run, for each regression, the *alpha* significance rate was manually set to .01 to adjust for multiple tests. See Figure 13 for a visual depiction of these regression analyses.

Figure 13

Proposed Hierarchical Regressions



Note. All of the proposed regressions were hierarchical in nature with participant age and sex added in step one and the four spirituality dimensions added in step two. Five separate regressions were conducted, one for each criterion variable: subjective happiness, the empathy subscales (i.e., EC, PT, or PD), and trait anxiety.

[a]The criterion was one of subjective happiness, an empathy subscale (EC, PT, or PD), or trait anxiety.

The hypotheses for this research question maintained that the PM and TR dimensions would be the strongest predictors of happiness, the UI dimension and TR dimensions would be the strongest predictors of empathy, and the IN and TR dimensions would be the strongest predictors of anxiety. To test these specific hypotheses, the semi-partial correlations for the significant predictors in each regression model were consulted. Squared semi-partial correlations denote the percentage of variance in the criterion *uniquely* explained by each predictor. Therefore, it could be determined which predictors were stronger than others based on the relative amounts of variance explained.

Results

Meditation and Psychological Health

MANOVA and MANCOVA Assumptions

Recall the first research question of the present investigation: *Do regular meditators show increased levels of happiness, empathy, and decreased levels of anxiety when compared with non-meditators when mindfulness and spirituality are controlled?* To address this question, MANOVA and MANCOVA model analyses were utilized. First, the statistical assumptions of these analyses were evaluated.

To ensure robustness, a MANOVA requires independent observations, categorical independent variables (IVs) and continuous dependent variables (DVs), absence of univariate and multivariate outliers, univariate and multivariate normality, homogeneity of variance-covariance matrices, linear relationships between the variables of interest, and an absence of multicollinearity in the DVs. Moreover, a MANCOVA requires an additional two assumptions, namely, that covariates (CVs) must be measured reliably and there must be homogeneity of regression slopes across IV groups. All these assumptions

were tested using procedures outlined by Tabachnick & Fidell (2013) and found to be upheld. Therefore, the model analyses were reasonably performed.

Examination of the Differences in Psychological Health Outcomes Between Meditators and Non-Meditators

For the meditation research question, it was expected that significant differences between meditators and non-meditators would be found before controlling for mindfulness and spirituality in light of previous meditation research (e.g., Campos et al., 2016; Singh et al., 2014; Somaraju et al., 2021). Following this, however, the main hypothesis was that meditators would not display significantly different levels of happiness, empathy, and anxiety than their non-meditating counterparts when controlling for mindfulness and spirituality. To test this hypothesis, DV and CV variables were standardized. Then, a MANOVA model was tested to determine whether differences in happiness, empathy, and anxiety occurred before controlling for mindfulness and spirituality. A MANCOVA model could then be used to account for the mindfulness and spirituality CVs. Both model analyses were conducted using IBM SPSS Statistics (Version 28).

The MANOVA analysis was conducted with meditation group as the IV (meditator, non-meditator) and subjective happiness; the three subscales of empathy: EC, PT, and PD; and trait anxiety as the DVs. Before running the analysis, homogeneity of variance across groups was deemed to be upheld; a Box's M value of 17.60 was non-significant $F(15, 220879.68) = 1.15$, $p = .302$. Furthermore, Levene's Test was non-significant for all DVs: happiness, $F(1, 361) = 0.02$, $p = .883$; EC, $F(1, 361) = 0.30$, $p = .585$; PT, $F(1, 361) = 0.86$, $p = .354$; PD, $F(1, 361) = 0.12$, $p = .731$; and anxiety, $F(1,$

361) = 0.38, p = .540. There was found to be no significant difference between meditators and non-meditators on the linear combination of DVs, *Wilks' λ* = .976, $F(5, 357) = 1.76$, p = .121, η_p^2 = .024 (See Table 3 for the MANOVA table). The η_p^2 value indicated a small effect size; the grouping variable accounted for 2.4% of variance in the linear combination of DVs. Since there was no multivariate effect of meditation group, univariate differences for each DV were not statistically inspected.

Table 3

Means, Standard Deviations, and One-Way Multivariate Analysis of Variance for Happiness, Empathy, and Anxiety, Across Meditators and Non-Meditators

	Value	$F(5, 357)$	η_p^2			
Wilks' λ	.98	1.76	.02			
Measure	Meditators		Non-Meditators		$F(1, 361)$	η_p^2
	M	*SD*	*M*	*SD*		
Subjective Happiness	4.46	1.35	4.37	1.33	0.33	< .01
Empathy						
EC	21.26	5.17	20.76	4.73	0.85	< .01
PT	20.40	5.22	18.89	4.99	7.10**	.02
PD	11.87	4.72	12.67	5.01	2.07	.01
Trait Anxiety	48.87	10.89	50.20	11.47	1.10	< .01

Note. n = 363. EC = Empathic Concern, PT = Perspective Taking, PD = Personal Distress

*** p < .001, ** p < .01, * p < .05.

Generally, with a non-significant MANOVA model, a follow-up MANCOVA with the addition of CVs would not be explored. However, in the present case, the MANCOVA was conducted because the *a priori* hypothesis involved the mindfulness and spirituality CVs. Thus, a MANCOVA analysis with meditation group (meditator, non-meditator) as the IV; subjective happiness, EC, PT, PD, and trait anxiety as the DVs; and mindfulness and spirituality as the CVs was performed. Similar to the MANOVA, homogeneity of variance was upheld; Box's M test value of 18.29 was non-significant, $F(15, 221247.74) = 1.20$, $p = .264$. Levene's Test was also non-significant for all of the DVs: happiness, $F(1, 360) = 0.72$, $p = .396$; EC, $F(1, 360) = 0.01$, $p = .929$; PT, $F(1, 360) = 0.28$, $p = .598$; PD, $F(1, 360) = 0.28$, $p = .598$; and anxiety, $F(1, 360) = 0.44$, $p = .506$. No significant difference was found between meditators and non-meditators on the linear combination of DVs when mindfulness and spirituality were statistically controlled, *Wilks'* $\lambda = .973$, $F(5, 354) = 1.93$, $p = .089$, $\eta_p^2 = .027$ (See Table 4 for the MANCOVA table). Here, the meditation grouping variable accounted for 2.7% of variance in the linear combination of DVs. With a non-significant MANCOVA, the univariate differences were not examined. These results should be taken with caution; given that there was no significant MANOVA effect to begin with, controlling for meditation and spirituality does not provide additional insight into the meditation-psychological health connection.

Table 4

One-Way Multivariate Analysis of Covariance for Happiness, Empathy, and Anxiety, Across Meditators and Non-Meditators

	Value	*F*(5, 354)	η_p^2			
Wilks' λ	.97	1.93	.03			
Measure	Meditators		Non-Meditators		*F*(1, 358)	η_p^2
	EM M[a]	*SE*	*EM M*[a]	*SE*		
Subjective Happiness	4.24	0.09	4.46	0.06	3.61	.01
Empathy						
EC	20.73	0.42	20.98	0.29	0.24	< .01
PT	20.06	0.46	19.03	0.31	3.37	.01
PD	12.00	0.44	12.64	0.30	1.44	< .01
Trait Anxiety	50.40	0.77	49.59	0.53	0.76	< .01

Note. n = 363. EC = Empathic Concern, PT = Perspective Taking, PD = Personal Distress

*** p < .001, ** p < .01, * p < .05.

[a]Estimated marginal mean after controlling for the mindfulness and spirituality covariates.

Tabachnick & Fidell (2013) suggest that unequal group sizes in MANOVAs can reduce the power of the analysis. Although outside the confines of the current investigation, there is question as to whether significant differences between meditators

and non-meditators were not found because the analysis was underpowered due to unequal meditator and non-meditator groups. This question requires a post-hoc analysis with meditation groups that have similar numbers of participants.

Post Hoc Analysis: Examination of the Differences in Psychological Health Outcomes Between Regular Meditators, Infrequent Meditators, and Non-Meditators

For the post-hoc MANOVA analysis, participants were split into three meditation groups. Regular meditators were participants who responded *yes* to whether they had ever engaged in formal meditation and if they responded that they meditated *at least once or twice a month* or more frequently. Infrequent meditators where those who responded *yes* to the initial meditation question but selected 1 – *less than once a month* for the meditation frequency question. Finally, non-meditators were the participants who responded *no* to the initial meditation question. This grouping criteria created three groups with similar numbers of participants; the regular meditator group had 117 participants, the infrequent meditator group had 119 participants, and the non-meditator group had 127 participants.

A MANOVA model was tested to determine whether differences in happiness, empathy, and anxiety occurred across the three meditation groups. The model included meditation group as the IV (regular meditator, infrequent meditator, non-meditator) and subjective happiness; the three subscales of empathy: EC, PT, and PD; and trait anxiety as the DVs. Homogeneity of variance was upheld as the model generated a non-significant Box's M value of 30.84, $F(30, 406874.72) = 1.01$, $p = .454$. Additionally, Levene's Test was non-significant for all of the DVs: happiness, $F(2, 360) = 0.90$, $p = .914$; EC, $F(2, 360) = 0.51$, $p = .600$; PT, $F(2, 360) = 1.84$, $p = .160$; PD, $F(2, 360) =$

0.88, $p = .916$; and anxiety, $F(2, 360) = 0.59$, $p = .558$. There was found to be no significant difference on the linear combination of DVs across the meditation groups, *Wilks' λ* = .968, $F(10, 712) = 1.18$, $p = .304$, $\eta_p^2 = .016$ (See Table 5 for the MANOVA table). Meditation group accounted for 1.6% of variance in the linear combination of DVs. With a non-significant MANOVA, the univariate differences in DVs across groups were not examined. Furthermore, a follow-up MANCOVA with mindfulness and spirituality CVs was not investigated.

Table 5

Means, Standard Deviations, and One-Way Multivariate Analysis of Variance for Happiness, Empathy, and Anxiety Across Meditation Groups

	Value	*F*(10, 712)	η_p^2					
Wilks' λ	.97	1.18	.02					
Measure	Regular Meditators		Infrequent Meditators		Non-Meditators		*F*(2, 360)	η_p^2
	M	*SD*	*M*	*SD*	*M*	*SD*		
Subjective Happiness	4.46	1.35	4.44	1.35	4.31	1.31	0.48	< .01
Empathy								
EC	21.26	5.17	20.87	5.00	20.66	4.51	0.48	< .01
PT	20.40	5.22	18.87	5.27	18.91	4.73	3.54*	.02
PD	11.87	4.72	12.62	4.99	12.71	5.05	1.04	.01
Trait Anxiety	48.87	10.89	49.11	11.74	51.23	11.15	1.64	.01

Note. $n = 363$. EC = Empathic Concern, PT = Perspective Taking, PD = Personal Distress

*** $p < .001$, ** $p < .01$, * $p < .05$.

Spirituality and Psychological Health

Multiple Regression Assumptions

To answer the second research question of the present investigation: *Which dimensions of spirituality predict happiness, empathy, and anxiety outcomes?,* several multiple regression analyses were conducted. Before the analyses were run, the statistical assumptions and cautions of multiple regressions were evaluated.

A multiple regression requires appropriate theoretical specification, reliable variable measures (i.e., low measurement error; see Table 2 for variable reliabilities), and a number of error assumptions to be validated (e.g., homoscedasticity, normality in error scores, independence of errors). There are also several properties of the data that constitute cautions for regression analyses if they are not supported (e.g., independent observations, absence of outliers, and absence of multicollinearity in predictor variables). All of the assumptions and cautions were evaluated using the methods outlined by Tabachnick and Fidell (2013) and found to be maintained. Thus, the regressions were performed.

Determining the Predictive Relationships Between the Dimensions of Spirituality and Psychological Health

Before the regressions were conducted, bivariate Pearson correlations were assessed across the predictors (i.e., spirituality subscales: PM, UI, IN, and TR) and the criteria variables (i.e., subjective happiness, EC, PT, PD, and trait anxiety) to determine whether underlying relationships existed between the variables before adding them into the regression models. Many of the spirituality dimensions were significantly correlated with the outcomes of interest (see Table 6), but regressions were necessary to evaluate

Table 6

Correlations Between the Dimensions of Spirituality and the Psychological Health Outcomes of Interest

Variable	1	2	3	4	5	6	7	8	9
1. SAS-PM	–								
2. SAS-UI	.57**	–							
3. SAS-IN	.69**	.58**	–						
4. SAS-TR	.57**	.57**	.80**	–					
5. SHS	.62**	.45**	.56**	.42**	–				
6. IRI-EC	.32**	.48**	.26**	.24**	.20**	–			
7. IRI-PT	.14*	.37**	.19**	.20**	.09	.58**	–		
8. IRI-PD	-.09	-.11*	-.14*	-.11*	-.19**	.06	-.15*	–	
9. STAI-T	-.54**	-.38**	-.53**	-.40**	-.76**	-.05	-.08	.40**	–

Note. $N = 363$. SAS = Spirituality Assessment Scale, PM = Purpose and Meaning in Life, UI = Unified Interconnectedness, IN = Innerness, TR = Transcendence, SHS = Subjective Happiness Scale, IRI = Interpersonal Reactivity Index, EC = Empathic Concern, PT = Perspective Taking, PD = Personal Distress, STAI-T = State-Trait Anxiety Inventory Trait Subscale.

** $p < .001$, * $p < .05$

how the dimensions predicted the outcomes when simultaneously added to a single model. There were separate hypotheses for each criterion variable. It was hypothesized that the PM and TR dimensions of spirituality would most strongly predict happiness, the UI and TR dimensions of spirituality would most strongly predict empathy, and the IN and TR dimensions of spirituality would most strongly predict anxiety. For all of the regression analyses, the *alpha* significance rate was set to .01 to correct for multiple tests. Each regression was hierarchical with age and sex added in step one and the four spirituality predictors added in step two. As mentioned previously, age and sex correlated with some of the psychological health outcomes (see *Sex Differences* section on p. 57 and Appendix G for age correlations). Therefore, it was necessary to covary out age and sex in the regressions with the correlated outcomes. However, it was decided to include a step-one with age and sex in all regressions to guarantee consistency across models so that the predictive importance of the spirituality subscale scores could be compared across outcome variables. All regression analyses were conducted using IBM SPSS Statistics (Version 28).

Happiness Regression. The first hypothesis for the spirituality research question stated that the PM and TR dimensions of spirituality would most strongly predict happiness. To test this hypothesis, a hierarchical multiple regression was performed with subjective happiness as the criterion; age and sex added in step one as predictors; and PM, UI, IN, and TR as predictors added in step two.

When age and sex were added in step one, the regression model was not significant, $F(2, 357) = .69$, $p = .504$, $R^2 = .004$. After controlling for age and sex, a significant overall regression model was found $F(6, 353) = 44.53$, $p < .001$, $\Delta R^2 = .427$.

The ΔR^2 parameter suggested that 42.7% of the variability in subjective happiness was explained by the combination of spirituality predictors. The PM and IN predictors of spirituality were significant at an *alpha* of .01 (see Table 7 for a depiction of the regression model and regression coefficients associated with each predictor). These predictors were positive, indicating that higher scores on PM and IN predicted higher subjective happiness. To evaluate the hypothesis that PM and TR were the strongest predictors of happiness, the amount of variance uniquely accounted for by each predictor was determined through squared semi-partial correlations. The PM predictor uniquely accounted for 8.6% of variance in happiness and the IN predictor uniquely accounted for 2.6% of variance in happiness. The remaining non-significant predictors uniquely accounted for 0.6% or less of the variance in happiness. Thus PM, but not TR, was the strongest predictor of happiness.

Empathy Regressions. The second hypothesis for the spirituality research question was that UI and TR dimensions of spirituality would most strongly predict empathy. Separate regressions for each of the dimensions of empathy – EC, PT, and PD – were required.

Empathy – Empathic Concern. A hierarchical regression was conducted with EC as the criterion; age and sex added in step one as predictors; and PM, UI, IN, and TR as predictors added in step two. When age and sex were added in step one, a significant regression model was found $F(2, 357) = 15.31$, $p < .001$, $R^2 = .079$. The effect size indicated that 7.9% of the variability in EC was explained by age and sex. After controlling for these variables, the overall regression model with the four spirituality predictors was also significant, $F(6, 353) = 23.27$, $p < .001$, $\Delta R^2 = .204$. The ΔR^2 value

Table 7

Predicting Subjective Happiness with the Dimensions of Spirituality.

Predictors	Criterion: Happiness					
	F	R^2	ΔR^2	*B*	β	$r_{semi\text{-}partial}$
Step 1	0.69	.004				
Y_i[a]				4.387		
Age				.011	.036	.036
Sex[b]				-.185	-.052	-.052
Step 2	66.20**	.431	.427			
Y_i[a]				-.660		
PM				.162**	.420**	.293
UI				.023	.106	.081
IN				.053**	.307**	.162
TR				-.031	-.115	-.066

Note. n = 360. PM = Purpose and Meaning in Life, UI = Unified Interconnectedness, IN = Innerness, TR = Transcendence.

** $p < .001$, * $p < .01$

[a]Regression intercept.

[b]Female = 0, Male = 1.

indicated that 20.4% of the variability in EC was explained by the spirituality predictors. The UI subscale was the only significant predictor of EC in this model (See Table 8 for a depiction of the regression model and regression coefficients associated with each predictor). The UI predictor was positive, implying that higher UI scores predicted increased EC. According to the squared semi-partial correlations, the UI predictor uniquely accounted for 11.2% of variance in EC. Each of the other predictors uniquely accounted for 0.6% or less of the variance in EC. In relation to the hypothesis, UI was indeed the strongest predictor of the EC aspect of empathy, but TR was not.

Table 8

Predicting Empathic Concern with the Dimensions of Spirituality.

Predictors	Criterion: Empathic Concern					
	F	R^2	ΔR^2	*B*	β	$r_{semi\text{-}partial}$
Step 1	15.31**	.079				
Y_i[a]				20.945		
Age				.176**	.165**	.165
Sex[b]				-2.072**	-.234**	-.234
Step 2	25.17**	.283	.204			
Y_i[a]				6.201		
PM				.158	.112	.078
UI				.348**	.439**	.334
IN				-.043	-.069	-.036
TR				-.024	-.024	-.014

Note. n = 360. PM = Purpose and Meaning in Life, UI = Unified Interconnectedness, IN = Innerness, TR = Transcendence.

** $p < .001$, * $p < .01$

[a]Regression intercept.

[b]Female = 0, Male = 1.

Empathy – Perspective Taking. Next, another hierarchical regression was performed with PT score as the criterion; age and sex inserted in step one as predictors; and PM, UI, IN, and TR as predictors included in step two. In step one, the regression model with age and sex was not significant at the corrected *alpha* of $p < .01$, $F(2, 357) = 3.86$, $p = .022$, $R^2 = .021$. In step two, including the four spirituality predictors produced a significant overall regression model, $F(6, 353) = 10.90$, $p < .001$, $\Delta R^2 = .135$, where 13.5% of the variability in PT was explained by the spirituality predictors. In this

regression model, only the UI predictor had a significant regression coefficient (See Table 9). This coefficient was positive, suggesting that increased UI predicted increased PT. Using the squared semi-partial correlations, UI uniquely accounted for 10.0% of variability in PT. Each of the other predictors uniquely accounted 0.7% or less of the total PT variability. Thus, in line with the empathy regression hypothesis, UI was the strongest predictor of PT. However, TR was not a significant predictor, which was at odds with the hypothesis.

Table 9

Predicting Perspective Taking with the Dimensions of Spirituality.

Predictors	Criterion: Perspective Taking					
	F	R^2	ΔR^2	B	β	$r_{semi\text{-}partial}$
Step 1	3.86	.021				
Y_i[a]				16.95		
Age				.156*	.140*	.140
Sex[b]				-.647	-.047	-.047
Step 2	14.13**	.156	.135			
Y_i[a]				5.905		
PM				-.179	-.121	-.084
UI				.347**	.415**	.316
IN				.004	.006	.003
TR				.016	.015	.009

Note. n = 360. PM = Purpose and Meaning in Life, UI = Unified Interconnectedness, IN = Innerness, TR = Transcendence.

** $p < .001$, * $p < .01$

[a]Regression intercept.

[b]Female = 0, Male = 1

Empathy – Personal Distress. The next regression was run with PD as the criterion; age and sex added in step one as predictors; and PM, UI, IN, and TR, as predictors added in step two. In step one, the model with the age and sex predictors gave rise to a significant regression model, $F(2, 357) = 10.90$, $p < .001$, $R^2 = .058$, where 5.8% of the variability in PD was explained by age and sex. When these variables were controlled, inserting the four spirituality predictors produced a significant overall regression model. $F(6, 353) = 5.24$, $p < .001$, $\Delta R^2 = .024$. According to the ΔR^2 parameter, 2.4% of the variance in PD was explained by the spirituality predictors. However, the addition of the four spirituality predictors did not produce a significant *F-change* statistic, *F-change*$(4, 353) = 2.32$, $p = .056$. This finding suggests that the spirituality predictors did not explain significantly more variance in PD than age and sex did. In the model, none of the spirituality predictors were significant at the *alpha* type-one error rate of .01 (see Table 10 for a depiction of the regression model and regression coefficients associated with each predictor). However, the IN predictor was negative and trended toward significance with a p value of .046. According to the squared-semi partial correlations, IN uniquely accounted for 1.1% of the variance in PD, while the other predictors uniquely explained 0.4% or less of the variance. Taken together, the hypothesis that UI and TR would be the strongest predictors of empathy was not upheld for the PD aspect of empathy.

Table 10

Predicting Personal Distress with the Dimensions of Spirituality.

Predictors	Criterion: Personal Distress					
	F	R^2	ΔR^2	*B*	β	$r_{semi\text{-}partial}$
Step 1	10.90**	.058				
Y_i[a]				18.530		
Age				-.164*	-.152*	-.152
Sex[b]				-2.380**	-.179**	-.179
Step 2	2.32	.082	.024			
Y_i[a]				22.368		
PM				.065	.046	.032
UI				-.071	-.089	-.067
IN				-.125	-.197	-.104
TR				.107	.107	.062

Note. n = 360. PM = Purpose and Meaning in Life, UI = Unified Interconnectedness, IN = Innerness, TR = Transcendence.

** $p < .001$, * $p < .01$

[a]Regression intercept.

[b]Female = 0, Male = 1.

Trait Anxiety Regression. For the trait anxiety regression, the hypothesis stated that the IN and TR dimensions would be the strongest predictors. To address this hypothesis, a hierarchical multiple regression was conducted with trait anxiety score as the criterion; age and sex added in step one; and the spirituality subscales of PM, UI, IN, and TR, as the predictors added in step two.

The model with age and sex was not significant at the corrected *alpha* of $p < .01$, $F(2, 357) = 3.60$, $p = .028$, $R^2 = .020$. After controlling for age and sex, the addition of the four spirituality predictors gave rise to a significant overall regression model, $F(6,$

353) = 34.33, p <.001, ΔR^2 = .349. Here, 34.9% of the variance in trait anxiety was explained by the spirituality predictors. The PM and IN predictors had significant regression coefficients in this model. These dimensions predicted anxiety in the negative direction such that higher PM and IN predicted lower trait anxiety. See Table 11 for a depiction of the regression model and regression coefficients associated with each predictor. According to the squared semi-partial correlations, PM uniquely accounted for 5.4% of the variance in trait anxiety and IN uniquely accounted for 4.0% of the variance. The remaining two predictors uniquely explained 0.6% or less of the variance in trait anxiety. Therefore, in reference to the anxiety hypothesis, IN was the second strongest predictor of trait anxiety, but TR was not one of the strongest.

Table 11

Predicting Trait Anxiety with the Dimensions of Spirituality.

Predictors	Criterion: Trait anxiety					
	F	R^2	ΔR^2	B	β	$r_{semi\text{-}partial}$
Step 1	3.60	.014				
Y_i[a]				57.854		
Age				-.200	-.081	-.081
Sex[b]				-3.369	-.111	-.111
Step 2	48.73**	.368	.349			
Y_i[a]				94.685		
PM				-1.080**	-.333**	-.232
UI				-.116	-.063	-.048
IN				-.545**	-.376**	-.199
TR				.313	.137	.079

Note. n = 360. PM = Purpose and Meaning in Life, UI = Unified Interconnectedness, IN = Innerness, TR = Transcendence.

** p < .001, * p < .01

[a]Regression intercept.

[b]Female = 0, Male = 1.

Discussion

For centuries, individuals have suggested that the metaphysical traditions of meditation and spirituality could enhance health and well-being. In recent times, these practices have been investigated systematically in an attempt to provide scientific support for these asserted benefits. In accordance with this ambition, the overarching objective of the present study was to examine the connections between meditation, spirituality, and psychological health. Previous research in the area of meditation and spirituality has found that these traditions are associated with increased happiness, increased empathy, and decreased anxiety (Chaves et al., 2015; Crowley et al., 2020; Huber & MacDonald, 2012; Luberto et al., 2018; Sedlmeier et al., 2012; Wade et al., 2018). This investigation aimed to provide some clarity on some of the underlying mechanisms as to how the constructs might connect to these beneficial outcomes.

Meditation and Psychological Health

The objective of the first research question of the present study – *Do regular meditators show increased levels of happiness, empathy, and decreased levels of anxiety when compared with non-meditators when mindfulness and spirituality are controlled?* – was to evaluate whether the connection between meditation and psychological health was influenced by mindfulness and spirituality levels. A MANOVA was initially utilized to determine whether any differences in the psychological health outcomes existed between meditators and non-meditators before controlling for mindfulness and spirituality. Then, a follow-up MANCOVA model was employed to account for the mindfulness and spirituality CVs. Before controlling for mindfulness and spirituality, it was expected there would be significant psychological health differences between meditators and non-

meditators. However, the main hypothesis was that once mindfulness and spirituality were controlled, this previously significant multivariate difference would become non-significant (see *The Current Investigation* section on p. 38 for hypothesis rationale).

The MANOVA did not find any underlying differences between meditators and non-meditators in the psychological health outcomes. The MANCOVA analysis similarly found no significant differences between meditators and non-meditators in the outcomes when mindfulness and spirituality were controlled. A post-hoc MANOVA analysis was then run with three groups (i.e., meditators, infrequent meditators, and non-meditators) in an attempt to mitigate power concerns with unequal group sizes in the original MANOVA. The three-group MANOVA similarly did not find any psychological health outcome differences between meditations groups. This pattern of findings raises key questions about how meditator groups should be differentiated in research.

No Difference in Psychological Health Between Meditators and Non-Meditators

The finding that meditators and non-meditators did not differ in the psychological health outcomes before accounting for mindfulness and spirituality was unexpected given previous cross-sectional research suggesting that these groups should differ in their levels of happiness (Babu et al., 2020; Campos et al., 2016), empathy (Somaraju et al., 2021; Wang, 2006), and anxiety (Beauchamp-Turner & Levinson, 1992; Singh et al., 2014). A variety of experimental and review studies have connected the act of meditation to these outcomes as well (e.g., Crowley et al., 2020; Kreplin et al., 2018; Luberto et al., 2018; Sedlmeier et al., 2012; Shapiro et al., 2016). Since meditator and non-meditator differences have been consistently discovered in the literature, it is unlikely that the underlying premise that meditation relates to beneficial outcomes is false. Therefore, the

present results did not appear to provide an accurate representation of meditation effects and suggest that a theoretical explanation for the inconsistent results is improbable.

Perhaps then, the meditation effect was not replicated because of the methodological decisions made in this study. Participants were grouped as meditators if they meditated at least once a month or more. However, previous cross-sectional research enacted more stringent criteria to split meditator and non-meditator groups (e.g., Baer et al., 2008; Bergomi et al., 2015; Singh et al., 2014), and these studies found significant differences between meditators and non-meditators on psychological health outcomes. This observation might suggest that identifying meditators based on a monthly meditating frequency might not produce validly differentiated meditator and non-meditator groups.

The three-group post-hoc MANOVA split the non-meditator group into two separate groups, non-meditators and infrequent meditators, while the meditator group remained the same. Since there was still no significant difference between these groups, it might indicate that the issue was the creation of a valid meditator group and not an issue with the non-meditator group that included both non-meditators and infrequent meditators. Therefore, it indeed appears as though only meditating at least once a month is not a strong enough differentiating factor to identify true meditators.

No Difference in Psychological Health Outcomes Between Meditators and Non-Meditators When Controlling for Mindfulness and Spirituality

Once mindfulness and spirituality – the theoretically-proposed influential variables – were controlled, meditator and non-meditator psychological health outcome differences remained nonsignificant. Although this finding supports the present investigation's meditation hypothesis, it is not as informative as hoped, given no

underlying differences between meditators and non-meditators before controlling for these variables. Without an initial effect of grouping, controlling for variables within the non-significant model effect is illogical. Yet, the MANCOVA model was still run because it was part of the *a priori* hypothesis and data analysis plan.

If the expected underlying differences between meditators and non-meditators were replicated, it could have been determined whether accounting for mindfulness and spirituality would drop the meditation grouping effect to non-significance, thereby evaluating the importance of mindfulness and spirituality in the effect. Then, follow-up MANCOVA models with only mindfulness as a CV and only spirituality as a CV could have been run to establish whether mindfulness, spirituality, or both CVs were influential.

Taken together, although the meditation findings were unexpected, the current results still provide important insights with respect to understanding the connections between meditation and psychological health. The findings highlight the importance of creating valid meditator groups. With more stringent criteria to identify regular meditators, the expected group differences may have been replicated. This idea will be returned to in subsequent sections.

Spirituality and Psychological Health

The second main research question of the current investigation – *Which dimensions of spirituality predict the happiness, empathy, and anxiety outcomes?* – aimed to determine whether the dimensional demarcation of spirituality might provide more nuance in the understanding of the connection between spirituality and psychological health. Several hierarchical regressions were conducted, each with one of the

psychological health outcome criteria of interest. Each regression included age and sex covariates added in step one, and the four spirituality dimension predictors (i.e., PM, UI, IN, TR) added in step two. These analyses were used to determine which spiritual dimensions were significant predictors of the outcomes. Then, the squared semi-partial correlations were consulted to establish which predictors were the strongest for each criterion. There were different hypotheses for each psychological health outcome. It was expected that (1) the PM and TR dimensions of spirituality would be the strongest predictors of happiness, (2) the UI and TR dimensions would be the strongest predictors of empathy, and (3) the IN and TR dimensions would be the strongest predictors of anxiety. These expectations were based on previous research and theoretical discourse (e.g., Galea et al., 2007; McMahon & Biggs, 2012; Miniotti, 2022; Piedmont 2004; Frankl, 1972; Kruse & Schmitt, 2019; Ryff, 2014; May, 2017; Hjemdal et al., 2011; Masten et al., 2006; see *The Dimensions of Spirituality and Psychological Health* section on p. 37 for hypothesis rationales).

The hierarchical regression with subjective happiness found that the first hypothesis was partially supported. The PM and IN dimensions of spirituality were significant positive predictors of happiness. Upon observing the squared semi-partial correlations, PM was indeed the strongest predictor of happiness, but TR was not significant nor one of the strongest predictors.

The second hypothesis regarding empathy was partially supported for the EC and PT facets of the construct but not for the PD facet. For EC and PT, the UI dimension of spirituality was the only significant positive predictor of the criteria while TR was neither a significant predictor nor one of the strongest. Regarding PD, none of the spirituality

dimensions were significant predictors at the corrected *alpha* significance level of .01. However, the IN predictor trended toward significance in the negative direction and was the strongest spirituality predictor of PD.

The third hypothesis concerning spirituality and trait anxiety was not supported by the final regression analysis. Similar to subjective happiness, both the PM and IN dimensions were significant predictors of trait anxiety. However, in this case, the dimensions predicted anxiety in the expected negative direction. Based on the semi-partial correlations, PM was a stronger predictor than IN. Thus, neither IN nor TR were the strongest predictors of trait anxiety, contrary to the hypothesis.

Purpose and Meaning and Psychological Health

The PM dimension of spirituality was found to be the strongest predictor of both subjective happiness and decreased trait anxiety. Regarding the predictive connection to happiness, happiness is discussed within existential theorists' deliberation about life's purpose (Frankl, 1966, 1972; Ellison, 1983). For instance, Ellison (1983) suggested that people's well-being and happiness increase when they focus on aspects of their lives that develop a sense of meaning and purpose. Similarly, Viktor Frankl (1966, 1972) noted that discovering happiness required rising above purely hedonistic pursuits and finding one's purpose in life. Purpose and meaning are also implicated in the conceptualization of the psychological construct of happiness (Ryff, 2014; Hervás & Vázquez, 2013). Aside from hedonistic factors (e.g., positive affect and life satisfaction), happiness also included eudaimonic well-being which involved self-fulfillment, purpose in life, and personal growth. Thus, it stands to reason that the PM aspect of spirituality would predict happiness as one aspect of happiness is a eudaimonic-oriented purpose in life. The

connection between purpose in life and happiness has also been supported by previous research (e.g., Cavazos Vela et al., 2015; Crego et al., 2021).

Concerning trait anxiety, Frankl (1972) discussed purpose in the context of neuroses, inclusive of anxiety. He argued that neuroses occurred in those who were caught in an "existential vacuum", where individuals lacked an idea of what they should do (i.e., a purpose in life). Based on this theoretical claim, a spiritual purpose in life, like any other, could fill this anxiety-inducing void of the existential vacuum. Research using a spiritual well-being scale, which assessed a purpose in life, reinforced this idea as scores on the scale were found to be negatively related to trait anxiety (Steiner et al., 2017).

Unified Interconnectedness and Psychological Health

Unified interconnectedness was found to be the strongest predictor of the EC and PT dimensions of empathy. These findings were somewhat similar to a study by Giordano et al., (2014) that found that the UI dimension was a significant predictor of PT. However, they also found that PM, but not UI, was a significant predictor of EC. Giordano and colleagues' (2014) analyses also included a religious commitment predictor in the model with the spirituality predictors, potentially influencing the underlying *beta* weights for spirituality. The current investigation addressed this issue by including only the spirituality predictors in a second step after controlling for age and sex. Hence, it could be argued that the findings reported here might be less confounded.

A connection between UI and affective (EC) and cognitive (PT) empathy makes intuitive sense based on the knowledge that this dimension of spirituality involves a connectedness to others. If one feels a connectedness, they would likely be able to take

the perspective of others, as well as experience emotional congruence with others (Edinger-Schons, 2020). Moreover, some scholars suggest that spiritually-specific feelings of connectedness are associated with empathy (e.g., Edinger-Schons, 2020; de Souza, 2014).

The finding that UI did not significantly predict the PD aspect of empathy was unanticipated but informative. Davis (1983) proposed PD as a representation of affective empathy, similar to EC. So, one would expect the dimension to show a similar pattern of results as EC. However, the idea that PD is a more self-focused aspect of empathy might explain this unexpected result. Davis (1983) defined PD as self-oriented feelings of unease and distress in tense interpersonal situations. Since these distressing feelings are self-oriented, it is less likely that feelings of other-oriented connectedness would relate to them. Rather, perhaps an inner strength could buffer against these self-focused feelings. Indeed, the IN dimension of spirituality trended toward significance in predicting PD in the present study. Therefore, PD might not be a clear proxy measure of affective empathy, due to its self-orientation. The conceptual nuance of self- versus other-oriented empathy in Davis' (1983) conceptualization might explain why other researchers have elected to use EC to measure affective empathy without the inclusion of PD (e.g., Jolliffe & Farrington; 2004; Urbonaviciute & Hepper, 2020; Vachon et al., 2014; van Langen et al., 2014).

Innerness and Psychological Health

The finding that IN significantly predicted happiness may be explained by the conceptualization of IN which according to Howden (1992), involved both a strong sense of self-concept, as well as an inner strength. A strong sense of self has been consistently

shown to relate to well-being and happiness (Na et al., 2018; Xiang et al., 2022). On the other hand, the inner strength aspect appears to resemble a form of spiritual resilience. Resilience can be defined as the ability to conquer adversity and hence experience adaptive outcomes in the face of tragedy (Vella & Pai, 2019). Meta-analytic findings support the assertion that resilience is connected to the hedonistic aspects of happiness (e.g., life satisfaction and positive affect; Lee et al., 2013). Hence, between the strong self-concept and resilience aspects of innerness, the predictive connection between IN and happiness was reasonable.

The IN dimension also significantly predicted decreased trait anxiety. The spiritual resilience of IN might facilitate this connection. Presumably, if someone has the inner strength or resilience to recover from hard times, it could evoke less future-focused feelings of anxiety and apprehension. Indeed, Previous research has shown that resilience is related to lower anxiety (Hjemdal et al., 2011; Lee et al., 2013). The strong sense of self implicated in the conceptualization of IN also adds to the explanation of the IN and anxiety connection; extant research has found that self-concept clarity – the extent to which one's understanding of the self is clearly and confidently defined – was related to decreased anxiety (Butzer & Kuiper, 2006; Campbell et al., 1996; Kusec et al., 2016).

Transcendence and Psychological Health

The lack of a significant predictive connection between TR and happiness was unexpected but importantly revealed a potential concern with the construct's operationalization. Howden (1992) defined TR as an experience or ability to rise above the psychological or physical condition; it is a focus away from the self to a focus on an other-oriented self, or ultimate 'oneness'. Not only does previous research suggest that

the concept of transcendence is related to happiness (Galea et al., 2007; Piedmont, 2004; Reed, 2013), but existential theorists such as Victor Frankl and Abraham Maslow would also argue that transcendence and happiness are intertwined. Frankl (1966, 1972) claimed that self-transcendence was the final goal of one's life and that true happiness could be attained through this process. Furthermore, in Maslow's later writings, he added self-transcendence as an additional level in his classic hierarchy of needs (Koltko-Rivera, 2006; Maslow, 1969). To Maslow, after achieving physiological, safety, belonging, esteem, and self-actualization needs, the ultimate goal was to transcend the self and focus on the other-oriented self. At this final level of human development, peak experiences and happiness would be achieved. With this information in mind, one explanation for the unpredictable findings could be that TR is not related to self-oriented subjective happiness because is at odds with the other-oriented 'oneness' implicated in transcendence. However, this would not explain why previous research has found connections between transcendence and happiness (Piedmont, 2004; Galea et al., 2007; Reed, 2013). Perhaps then, the way that TR was operationalized in Howden's (1992) SAS is inconsistent with the conceptualization of transcendence found in other research.

As was the case for happiness, TR was expected to be a significant and strong predictor of empathy given previous literature (Miniotti, 2022; Piedmont, 2004). The concept of transcendence appears to be directly harmonious with empathy. Maslow argued that a fully developed human had a higher motivation to transcend the independent self to live and work for others (Koltko-Rivera, 2006; Maslow, 1969). This transition to an other-focused existence appears to be directly compatible with empathy, and yet, a connection was not found for TR in the present study. It is unlikely that

transcendence is not related to empathy, as other research using different measures of the construct found this connection (e.g., Ardenghi et al., 2023; Miniotti, 2022). However, Giordano and colleagues (2014) who utilized the same SAS measure, similarly found no connection between TR and empathy. This finding supports the assertion that the operationalization of transcendence embraced by the SAS might not parallel the theoretical deliberation on the construct found in the literature.

The lack of a connection between TR and the anxiety outcome was also inconsistent with previous research suggesting such a connection (e.g., McMahon & Biggs, 2012; Piedmont, 2004). The theoretical deliberation of Piedmont (1999), a researcher who developed a spiritual transcendence scale, similarly implies a transcendence-anxiety relationship. He maintained that transcendence buffers against anxiety as perceptions of threat to the personal self might not be as salient for those who have 'risen above' this understanding and view themselves as part of a universal self (Kesebir, 2014). In line with this idea, researchers have found associations between existential or death anxiety and transcendence (Abdollahi et al., 2021; Piotrowski et al., 2020). The existential anxiety area of research suggests that the transcendental decreased focus on the individual ego in favour of a universal orientation decreases the preoccupation with mortality of the personal self.

In all, the regression findings suggest that a multidimensional view of spirituality is useful since different dimensions predicted different outcomes. Further, the results discovered here provide information about which aspects of spirituality might engender which types of benefits. For instance, the PM dimension of spirituality was the strongest predictor of both increased happiness and decreased anxiety. Therefore, this dimension

might be a useful focus for interventions that target spirituality to increase well-being in health spheres. On the other hand, those spiritual individuals interested in increasing their empathy might elect to embrace the UI aspect of their belief or practice. Taken together, the pattern of results further clarifies how multidimensional spirituality connects to psychological health.

Limitations

There are several limitations of the current investigation that must be acknowledged. Firstly, regarding the meditation research question, the statistical power of the MANOVA analysis was likely too low to discover an effect of meditation group. The *a priori* sample size estimate of 276 participants for the MANOVA-type model was based on a η_p^2 effect size of .050 (Campos et al., 2016; see p. 62 for the *a priori* sample size estimate). However, the current η_p^2 effect size for the MANOVA model was only .024 which suggests that, even with this study's 363 participants, the analysis was underpowered. This power issue was further compounded by the unequal sample sizes between the meditator and non-meditator groups (Tabachnick & Fidell, 2013). The unequal sample size concern was mitigated in the post-hoc three-group MANOVA model, but the effect size of meditation group was still low.

A methodological concern that might explain the low MANOVA effect size is the way meditators were identified. In the present study, participants were allocated to the meditator group if they meditated at a frequency of at least once a month or more. However, this cut-off was relatively liberal in comparison to other research with non-university samples (e.g., Baer et al., 2008; Bergomi et al., 2015; Josefsson et al., 2011; Singh et al., 2014). For instance, in Bergomi and colleagues' (2015) study, meditators

were those who engaged in a meditation session at least once per week. Whereas, in Singh and colleagues' (2014) research, meditators were those who engaged in a regular practice (i.e., 30 minutes at least five days a week) with at least one year of prior experience. In these investigations, significant differences in psychological health outcomes were discovered between meditator and non-meditator groups. Conceivably then, with stricter cut-offs between groups, expected significant MANOVA analyses with higher effect sizes could have been found. Thus, it is unlikely that no differences exist between meditators and non-meditators but, rather, the current findings might suggest that the criteria used in the present study did not create a clear meditator group. It must be noted that less than 2% of the present sample meditated every day and only around 7% of participants meditated two to four times per week or once per week, respectively. The low proportion of frequent meditators in the present sample implies that stricter cut-offs to identify meditators would produce a meditator group with an insufficient sample size for a MANOVA analysis. This observation highlights an obstacle in conducting cross-sectional meditation research with a young, university-centric sample.

Another limitation concerns the measure selected to evaluate participant spirituality. Across all spirituality regressions, TR was never a significant predictor. However, it is unlikely that transcendence truly does not predict psychological health as various studies suggest a positive relationship (e.g., Ardenghi et al., 2023; Galea et al., 2007; McMahon & Biggs, 2012; Miniotti, 2022; Piedmont, 2004). A more plausible explanation is that the construct measured by the TR subscale of the SAS did not validly correspond to how transcendence is viewed by other theorists (e.g., Frankl, 1966, 1972; Maslow, 1969; Piedmont, 1999; Reed, 2013). This justification is strengthened by the

fact that a study that utilized the SAS to predict empathy did not find a predictive relationship between TR and empathy (Giordano et al., 2014) whereas research that utilized different measures of transcendence found connections with psychological health variables (e.g., Galea et al., 2007; McMahon & Biggs, 2012), including empathy (Ardenghi et al., 2023; Miniotti, 2022). Indeed, there is a question regarding the validity of the SAS measure because there is a lack of research evaluating convergent validity (de Jager Meezenbroek et al., 2012; MacDonald et al., 1995). Without information on convergent validity, there is some uncertainty as to whether the SAS is truly a valid measure of spirituality. Despite this limitation, the SAS was chosen to measure spirituality in this study because of its multidimensional conceptualization with a strong theoretical underpinning.

It was a limitation that depression was not measured in the present study. Some meta-analytic research has indicated that the effect sizes for meditation's impact on depression are lower than those for happiness, empathy, and anxiety (Sedlmeier et al., 2012, 2018). Therefore, these outcomes were selected instead of depression. Still, anxiety is often comorbid with depression and research suggests that scores on the STAI-T converge with depression scores (Julian, 2011; Knowles & Olatunji, 2020). Thus, depression might influence the measurement of anxiety and since depression was not measured, this potential influence could not be controlled.

An additional limitation arose within the data collection process on Qualtrics (2022). An oversight precluded the PI from measuring the duration it took for each participant to complete the questionnaire. Due to this issue, an exclusion criterion based on questionnaire completion duration was not applied. Duration exclusions are often used

in research as a way to remove participants who might not have answered questions conscientiously (Greszki et al., 2015; Malhotra, 2008). Without this criterion in the present study, some participants who should have been excluded from the final sample might have been retained. However, the methodological decision for participants to complete the questionnaire in-person in the presence of the PI likely protected against the lack of response conscientiousness (Gregory & Pike, 2012; Webster, 1997). Moreover, given that attention check questions were included in the questionnaire, the hope is that individuals who completed the questionnaire quickly, without attention, would have failed the checks, and thus been excluded. With these factors in mind, it is unlikely that neglecting to exclude participants based on questionnaire duration influenced the underlying pattern of results.

A final limitation considers the characteristics of the study sample. One of the major critiques of research conducted in psychology is that the majority of participants are from Western, educated, industrialized, rich, and democratic (WEIRD) university samples (Henrich et al., 2010). Although Trent University encourages and celebrates diversity, the majority of the present sample identified as White/Caucasian (69.4%) and, like many other Canadian universities, Trent has a largely WEIRD population. Over time, Canada has shifted toward a more multicultural milieu. So, it is unclear whether the present findings can be applied to Canadian populations whose majority are not categorized as WEIRD. In a similar vein, the vast majority of participants identified as female (78.5%). Thus, it is uncertain whether the current findings could be validly applied to samples with a greater proportion of males since there were sex differences found across some of the present study's DV (see *Sex Differences* section on p. 57).

Contributions to the Literature

Although the present study did not produce the expected results for the meditation aspect of the investigation, some important knowledge was nonetheless gained. The limitation associated with the meditator grouping factor highlights the importance of developing standardization in the field of meditation research. Numerous studies have found significant differences in a variety of health outcomes across meditator and non-meditator groups (e.g., Babu et al., 2020; Beauchamp-Turner & Levinson, 1992; Bergomi et al., 2015; Campos et al., 2016; Singh et al., 2014; Somaraju et al., 2021; Vinchurkar et al., 2014). However, many of these studies employed dissimilar criteria to differentiate between meditators and non-meditators. Some researchers relied on meditation frequency to identify meditators (e.g., Beauchamp-Turner & Levinson, 1992; Campos et al., 2016), some researchers focused on the amounts of meditation experience (e.g., Vinchurkar et al., 2014), other researchers used both frequency and experience to differentiate meditators from non-meditators (e.g., Singh et al., 2014), and still others identified meditators as those who adhered to other criteria such as regularly attending meditation classes (e.g., Babu et al., 2020) or simply self-identifying as meditators (e.g., Somaraju et al., 2021). The lack of standardization raises a concern with comparing findings across studies; it cannot be confirmed that each study has divulged information about the same underlying population because each sample was created differently. Put another way, there is no way to tell whether a population of meditators that meditate once a week or more (e.g., Bergomi et al., 2015) is the same as a population of meditators that meditate five days a week and have a least one year of experience (e.g., Singh et al., 2014). Yet, as far as the literature is concerned, these are both meditator groups and are considered to

exemplify the same population. Standardization in how meditators are categorized would ensure that the same population is being investigated across studies.

In terms of the spirituality research question, the findings give credence to examining spirituality from a multidimensional perspective. Scholars in the field of spirituality have debated whether the construct should be measured unidimensionally or multidimensionally. Though, many academics have advocated for a multidimensional view of spirituality (Gomez & Fisher, 2003; Howden, 1992; O'Connell et al., 2006; Piedmont, 1999). The nuance bestowed by the multidimensional view was important because the separate dimensions predicted different outcomes. Investigating spirituality at the global level could not have captured this nuance.

In the field of nursing and healthcare, the spirituality findings are important for both intervention researchers and practitioners. Researchers have recognized that spirituality is a key aspect of the holistic care of individuals (Ellis & Narayanasamy, 2009; Pike, 2011; Rogers & Wattis, 2015). Consequently, there is a great deal of research investigating the efficacy of attending to the spiritual aspect of a patient to bring about well-being outcomes (Ross, 2006; Tan et al., 2022; Timmins & Caldeira, 2017). These academics would benefit from knowing that different aspects of a patient's spirituality might predict different health-related benefits. This type of information is also important for spiritual-care intervention practitioners. There have been purpose and meaning-centred interventions identified in nursing (Ghorbani et al., 2021), which, based on the current findings might increase happiness and alleviate anxiety. However, these spiritual care interventions may not address all patient health outcomes. Perhaps an intervention could be developed to focus on the interconnectedness aspect of spirituality. An

interconnectedness-based intervention would likely address empathy, rather than happiness or anxiety. Since happiness, empathy, and anxiety were investigated here, conclusions can only be drawn about these outcomes. Yet, the four dimensions of spirituality might also predict other outcomes that were not studied. Future research on additional psychological health outcomes could further inform spiritual care intervention development.

Future Directions

For the meditation aspect of this investigation, it would be useful to replicate the analysis with the use of more stringent criteria to identify meditators. Again, it seems likely that a psychological health difference between meditators and non-meditators exists, but the methodological limitations hindered this study from finding these differences. Given that the present sample contained a small number of regular meditators, future research might require recruitment of meditating individuals from meditation groups or online meditation forums. If researchers are interested in university-aged samples specifically, recruitment from universities with an explicit focus on mindfulness or meditation could be an option. For instance, Vinchurkar and colleagues (2014) recruited meditators from a university in India that specializes in yoga and meditation research programs.

Since it is important to validly differentiate meditators and non-meditators in cross-sectional investigations, future research should attempt to standardize how these groups are generated. Researchers could examine a variety of meditation variables (e.g., average duration of meditation, frequency of meditation, years of meditative experience, and commitment to meditation practice) to determine which variables produce the most

valid meditator and non-meditator groups. Conceivably, a composite meditation 'score' could be developed that incorporated multiple meditative variables. Meditators and non-meditators could then be differentiated by whether they hit a threshold meditation score based on this composite. Additionally, a future study could utilize an experimental methodology to address a similar research question where non-meditators are randomly assigned to a meditation or non-meditation group. The meditation group would receive a meditation intervention and the non-meditation group would act as a control. This type of study could address the meditator differentiation limitation, provide potential causal support for meditation effects, and further examine the importance of mindfulness and spirituality in meditation effects.

Now that it is known that different aspects of spirituality predict different psychological health outcomes, similar predictive investigations using the dimensional account of spirituality could be conducted on different health outcomes like stress, depressive symptoms, or mindfulness. Similarly, researchers with different multidimensional conceptualizations of spirituality could examine how other dimensions might predict psychological health. This future work would add to a more comprehensive understanding of the connections between the spirituality construct and adaptive health and functioning. Further, there is a clear need for research on the convergent validity of the SAS spirituality scale, especially for the TR subscale of the measure. Reviews of spirituality measures have been conducted; however, these did not address the convergent and divergent validity of the scales outside of what had already been reported in the literature (e.g., de Jager Meezenbroek et al., 2012; MacDonald, Friedman, et al., 1999; MacDonald, Kuentzel, et al., 1999; Monod et al., 2011). Perhaps a comprehensive

analysis of spirituality measures could be performed to examine the convergent and divergent validity of the existing measures. Finally, future healthcare research should aim to develop new spiritual care interventions based on additional aspects of spirituality (e.g., UI or IN).

For thousands of years, the traditions of meditation and spirituality have been proclaimed to provide health and existential benefits to practitioners. Now in an era of psychological and scientific inquiry, these concepts have been investigated to examine the validity of these long-asserted claims. The present study further demystified the connections between meditation, spirituality, and happiness, empathy, and anxiety. The research brings us a step closer to understanding how meditation and spirituality might provide an ethereal path to psychological health.

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Appendix A

SONA Study Description

The purpose of this research project is to investigate the connections between meditation, spirituality and the psychological health outcomes of happiness, empathy, and anxiety. There is a wide range of responses when it comes to meditation and spirituality – therefore, this study is open to all participants. You do not need to have experience with meditation nor be a spiritual person to participate as we desire to capture a wide range of experience. As a participant in this study, you will complete a comprehensive questionnaire that includes scales measuring meditation, spirituality, mindfulness, happiness, empathy, anxiety, and religious orientation. If you would like more information, please contact nathanjohnson@trentu.ca.

Appendix B

Informed Consent Form

The Ethereal Path to Psychological Health: An Exploration of the Connections Between Meditation, Spirituality, and Well-Being.

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PURPOSE: The present study is being completed as part of the thesis requirement for Nathan Johnson's master's degree. This study explores the connections between meditation, spirituality and the psychological health outcomes of happiness, empathy, and anxiety. For meditation, this study attempts to assess the importance of mindfulness in the practice. In terms of spirituality, this study aims to determine which aspects of spirituality predict psychological health.

DESCRIPTION OF THE STUDY: As a participant, you will be asked to complete a questionnaire consisting of a variety of psychological measures. At the beginning of the questionnaire, you will receive a demographic form to complete (i.e., age, gender identification, ethnicity, etc.). Next, you will be asked to complete several measures that assess your meditation practice (if applicable), mindfulness, spirituality, happiness, empathy, anxiety, and religious orientation. Most questions in the present study will be answered on Likert-type scales. Although the questionnaire is hosted online, you will be asked to complete the questionnaire on one of the lab computers. It is estimated that the questionnaire will take approximately one hour to complete.

BENEFITS: Aside from earning course credit for partaking in this study, there are other educational benefits that can be gained from participation. You are an active member of the research process and will experience the study procedure from recruitment to debriefing. This experience is especially beneficial for participants who may anticipate a career in research. You are encouraged to ask the research team member questions about the research process. You will also receive a brief summary of the research process which can help show what happens "behind the scenes" in psychological research.

FORESEEABLE RISKS: Although there are no known harms associated with participating in this study, there is a small possibility that one may experience an emotional reaction when completing the questionnaire. For example, one scale assesses trait anxiety, or the tendency to experience anxiety in everyday life. Answering questions

about this topic may be distressing to someone who struggles with anxiety. However, the amount of distress experienced by completing the study's questionnaire should be minimal. Remember that you also have the right to take a break, not answer a question, or withdraw from the study without consequence.

CONFIDENTIALITY: Your questionnaire data are not linked to your name or any personal information. The data will not be revealed to anyone by the research team unless they are required to do so by law (i.e., subpoena). No identifiable information will ever appear in any reports, presentations, or publications that use the study data. Other research team members may be involved in the research process; however, these individuals have been trained in ethics and have signed a research confidentiality statement.

PARTICIPATION: Participation in this study is completely voluntary and you have the right to withdraw from the study at any time without penalty or consequence. You may also skip any questions that you find uncomfortable. If you choose to withdraw from the study before your questionnaire responses are submitted, your data will be immediately deleted. Please note that if your questionnaire responses have been submitted, there will be no ability to identify which data is yours for deletion.

INFORMATION STORAGE: Electronic questionnaire data will be hosted on the servers of the survey hosting company Qualtrics. Qualtrics servers are both anonymous and secured/encrypted (i.e., via Transport Layer Security and an Intrusion Detection System). Qualtrics will not make this data available to any party unless required by a valid court order, search warrant, or subpoena. Data will be stored on Trent's encrypted cloud storage system (OneDrive). During data analysis, researchers will store study data on a password protected computer in a secure lab room. All electronic files will be encrypted, and researchers will destroy the data five years after the last publication or presentation of the findings.

CONFLICT OF INTEREST: The researchers have no commercial interest in completing this study. Any raw data collected through this study and any subsequent publications, presentations, and reports are the property of and are managed by the researchers exclusively.

STATEMENT OF CONSENT: The research study and procedures have been explained to me and any questions have been answered to my satisfaction. The potential harms have been explained to me and I also understand the benefits of taking part in this study. I know that I may ask now, or in the future, any questions that I have about the study or the research procedures. I understand that this project has received approval from the Trent University Research Ethics Board (REB file number: 28096). After reading this letter of consent, I willingly agree to participate in the study and having the data collected/stored as outlined in this document. I have additionally been emailed a copy of this informed consent and confidentiality statement for my records.

If you have any questions about the study, you may contact Nathan Johnson or Dr. Geoff Navara using the contact information listed at the beginning of this document. If you have any questions about the ethics of the study, you may contact the compliance officer at the Trent University Research Office at (705) 748-1011 ext. 7896.

Appendix C

Demographic Questionnaire

We rely on participants to read the following questionnaire questions carefully and answer to the best of their ability. Put another way, the results of this study are only as good as the responses we receive from participants. We understand that it is sometimes difficult to give questionnaires complete attention throughout and to answer questions carefully and honestly. You can help us maximize the quality of our data and our results by responding honestly to the following questionnaire questions. Thank you.

Questions:

1. What is your age in years? _____

2. What sex were you assigned at birth?
   - ○ Female
   - ○ Male
   - ○ Other (please specify): _____

3. What gender do you identify as?
   - ○ Female (identifying as female; female assigned at birth)
   - ○ Male (identifying as male; male assigned at birth)
   - ○ Transgender Female (identifying as female; other gender assigned at birth)
   - ○ Transgender Male (identifying as male; other gender assigned at birth)
   - ○ Non-binary (not identifying exclusively as a male or female)
   - ○ Genderfluid (identifying with a fluid or unfixed gender identity)
   - ○ Two-spirit (identifying as having a male and female spirit)

- ○ Gender identity not listed (please specify): _____

4. What ethnicity do you identify as?

- ○ Asian or Pacific Islander
- ○ Black or African American
- ○ Hispanic or Latino
- ○ Native American or Alaskan Native
- ○ White or Caucasian
- ○ Multiracial or Biracial
- ○ Ethnicity not listed (please specify): _____

5. Is English your first language?

- ○ Yes
- ○ No (please specify your first language): _____

6. In terms of religious and spiritual affiliation, which of the below categories do you most closely identify with?

- ○ Agnostic (The belief that nothing can be known concerning the existence or nature of God or Gods)
- ○ Atheist (The disbelief in the existence of God or Gods)
- ○ Religious (The belief in the sacred, especially God or Gods, which often involves a belief system, rituals, and dogma) * *If this selection is chosen, participants will see question 7 and 8. If not, they will skip question 7 and 8 and move directly to question 9.* *

- ○ Spiritual (The belief in the sacred that does not necessarily involve a belief system, rituals, or dogma)
- ○ Other (please specify) _____

7. Please specify your religious affiliation.
   - ○ Christian
   - ○ Catholic
   - ○ Buddhist
   - ○ Hindu
   - ○ Islamic
   - ○ Jewish
   - ○ Sikh
   - ○ Religion not listed (please specify): _____

8. How important is religion to you?

1 ------- 2 ------- 3 ------- 4 ------- 5 ------- 6 ------- 7 ------- 8 ------- 9

Minimally Important	Neutral	Extremely Important

9. What program are you enrolled in? _____

Appendix D

Study Questionnaire

Meditation Practice

Instructions:

Please indicate your response by marking the appropriate selection for the following questions.

Questions:

1. Have you ever engaged in a formal meditation practice? Formal practice is when you set aside time to engage in meditation. For example, scheduling 15 minutes to sit a focus on your breath is formal meditation practice. However, taking a moment to notice your breath during the day would be informal practice.

○ No

○ Yes * *If this selection is chosen, participants will see question 2-5. If not, they will skip these questions and move onto the next measure.* *

2. In your view, how committed are you to your meditation practice?

1 ------- 2 ------- 3 ------- 4 ------- 5 ------- 6 ------- 7 ------- 8 ------- 9		
Minimally Committed	Moderately Committed	Extremely Committed

3. Approximately how often do you engage in a meditation practice?

○ Less than once a month

○ Once or twice a month

○ Once a week

○ Two to four times a week

○ Every day

4. On average, how long do your meditation sessions last?

○ 5 to 10 minutes

○ 10 to 20 minutes

○ 20 to 40 minutes

○ 1 hour

○ Greater than 1 hour

5. On average, what type of meditation does your practice most closely align with?

○ Focused attention (Involves a one-pointed attentional focus [concentration] on a sound, image, or sensation)

○ Open monitoring (Involves the conscious awareness of thoughts, sensations, emotions, and stimulations, without judgement or identification [i.e., mindfulness].)

○ Other (please specify) _____

Spirituality (The Spirituality Assessment Scale; Howden, 1992)

Note: The two-letter abbreviation in brackets () after each question denotes the subscale that the question measures. The four subscales are *purpose and meaning in life* (PM), *unified interconnectedness* (UI), *innerness* (IN), and *transcendence* (TR).

Instructions:

Please indicate your response by choosing the appropriate selection indicating how you respond to the statement.

There is no "right" or "wrong" answer. Please respond to what you think or how you feel at this point in time.

Answer scale:

1	2	3	4	5	6
Strongly Agree	Agree	Agree More Than Disagree	Disagree More Than Agree	Disagree	Strongly Disagree

Questions:

1. I have a general sense of belonging. (UI)

2. I am able to forgive people who have done me wrong. (UI)

3. I have the ability to rise above or go beyond a physical or psychological condition.

(TR)

4. I am concerned about destruction of the environment. (UI)

5. I have experienced moments of peace in a devastating event (TR)

6. I feel a kinship to other people. (UI)

7. I feel a connection to all of life. (UI)

8. I rely on an inner strength in hard times. (IN)

9. I enjoy being of service to others. (UI)

10. I can go to a spiritual dimension within myself for guidance. (IN)

11. I have the ability to rise above or go beyond a body change or body loss. (TR)

12. I have a sense of harmony or inner peace. (IN)

13. I have the ability for self-healing. (TR)

14. I have an inner strength. (IN)

15. The boundaries of my universe extend beyond usual ideas of what space and time are thought to be. (TR)

16. I feel good about myself. (IN)

17. If you are paying attention to this questionnaire, please select 1 – Strongly Agree.

18. I have a sense of balance in my life. (IN)

19. There is fulfillment in my life. (MP)

20. I feel a responsibility to preserve the planet. (UI)

21. The meaning I have found for my life provides a sense of peace. (MP)

22. Even when I feel discouraged, I trust that life is good. (TR)

23. My life has meaning and purpose. (MP)

24. My innerness or an inner resource helps me deal with uncertainty in life. (IN)

25. I have discovered my own strength in times of struggle. (IN)

26. Reconciling relationships is important to me. (UI)

27. I feel a part of the community in which I live. (UI)

28. My inner strength is related to a belief in a Higher Power or Supreme Being. (IN)

29. I have goals and aims for my life. (MP)

Dispositional Mindfulness (Mindful Attention Awareness Scale; Brown & Ryan, 2003)

Instructions:

Below is a collection of statements about your everyday experience. Using the 1-6 scale below, please indicate how frequently or infrequently you currently have each experience. Please answer according to what really reflects your experience rather than what you think your experience should be. Please treat each item separately from every other item.

Answer scale:

1	2	3	4	5	6
Almost Always.	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never

Questions:

1. I could be experiencing some emotion and not be conscious of it until some time later.

2. I break or spill things because of carelessness, not paying attention, or thinking of something else.

3. I find it difficult to stay focused on what's happening in the present.

4. I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.

5. I tend not to notice feelings of physical tension or discomfort until they really grab my attention.

6. I forget a person's name almost as soon as I've been told it for the first time.

7. It seems I am "running on automatic," without much awareness of what I'm doing.

8. I rush through activities without being really attentive to them.

9. I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there.

10. I do jobs or tasks automatically, without being aware of what I'm doing.

11. I find myself listening to someone with one ear, doing something else at the same time.

12. I drive places on 'automatic pilot' and then wonder why I went there.

13. I find myself preoccupied with the future or the past.

14. I find myself doing things without paying attention.

15. I snack without being aware that I'm eating.

Happiness (Subjective Happiness Scale; Lyubomirsky & Lepper, 1999)

Note: **R** denotes a reverse-scored item.

Instructions:

For each of the following statements and/or questions, please select the point on the scale that you feel is most appropriate in describing you.

Questions:

1. In general I consider myself:

1 ---------- 2 ---------- 3 ---------- 4 ---------- 5 ----------6 ---------- 7
Not a very Happy person — A very happy person

2. Compared to most of my peers, I consider myself:

1 ---------- 2 ---------- 3 ---------- 4 ---------- 5 ----------6 ---------- 7
Less Happy — More Happy

3. Some people are generally very happy. They enjoy life regardless of what is going on, getting the most out of everything. To what extent does this characterization describe you?

1 ---------- 2 ---------- 3 ---------- 4 ---------- 5 ----------6 ---------- 7
Not At All — A Great Deal

4. Some people are generally not very happy. Although they are not depressed, they never seem as happy as they might be. To what extent does this characterization describe you? **R**

1 ---------- 2 ---------- 3 ---------- 4 ---------- 5 ----------6 ---------- 7
Not At All — A Great Deal

Empathy (Interpersonal Reactivity Index; Davis, 1983)

Note: **R** denotes a reverse-scored item.

Note: The two-letter abbreviation in brackets () after each question denotes the subscale that the question measures. The three subscales are *perspective taking* (PT), *empathic concern* (EC), and *personal distress* (PD).

Instructions:

The following statements inquire about your thoughts and feelings in a variety of situations. For each item, indicate how well it describes you by selecting the appropriate number on the scale 0, 1, 2, 3, or 4. Read each item carefully before responding. Answer as honestly as you can.

Answer scale:

0 ---------- 1 ---------- 2 ---------- 3 ---------- 4
Does Not Describe Me Well — Describes Me Very Well

Questions:

1. I often have tender, concerned feelings for people less fortunate than me. (EC)

2. I sometimes find it difficult to see things from the "other guy's" point of view. (PT) **R**

3. Sometimes I don't feel very sorry for other people when they are having problems. (EC) **R**

4. If you are paying attention to this questionnaire, please select 4 – Describes Me Very Well.

5. In emergency situations, I feel apprehensive and ill-at-ease. (PD)

6. I try to look at everybody's side of a disagreement before I make a decision. (PT)

7. When I see someone being taken advantage of, I feel kind of protective towards them. (EC)

8. I sometimes feel helpless when I am in the middle of a very emotional situation. (PD)

9. I sometimes try to understand my friends better by imagining how things look from their perspective. (PT)

10. When I see someone get hurt, I tend to remain calm. (PD) **R**

11. Other people's misfortunes do not usually disturb me a great deal. (EC) **R**

12. If I'm sure I'm right about something, I don't waste much time listening to other people's arguments. (PT) **R**

13. Being in a tense emotional situation scares me. (PD)

14. When I see someone being treated unfairly, I sometimes don't feel very much pity for them. (EC) **R**

15. I am usually pretty effective in dealing with emergencies. (PD) **R**

16. I am often quite touched by things that I see happen. (EC)

17. I believe that there are two sides to every question and try to look at them both. (PT)

18. I would describe myself as a pretty soft-hearted person. (EC)

19. I tend to lose control during emergencies. (PD)

20. When I'm upset at someone, I usually try to "put myself in his shoes" for a while. (PT)

21. When I see someone who badly needs help in an emergency, I go to pieces. (PD)

22. Before criticizing somebody, I try to imagine how I would feel if I were in their place. (PT)

Trait Anxiety (State-Trait Anxiety Inventory; Spielberger, 1983)

Note: **R** denotes a reverse-scored item

Instructions:

Several statements which people have used to describe themselves are given below. Read each statement and then select the appropriate number to the right of the statement to indicate how you *generally* feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

Answer scale:

1 ---------- 2 ---------- 3 ---------- 4
Almost Never Sometimes Often Almost Always

Questions:

1. I feel pleasant **R**

2. I feel nervous and restless

3. I feel satisfied with myself **R**

4. I wish I could be as happy as others seem to be

5. I feel like a failure

6. I feel rested **R**

7. I am “calm, cool, and collected” **R**

8. I feel that difficulties are piling up so that I cannot overcome them

9. I worry too much over something that really doesn’t matter

10. I am happy **R**

11. I have distributing thoughts

12. I lack self-confidence

13. I feel secure **R**

14. I make decisions easily **R**

15. I feel inadequate

16. I am content **R**

17. Some unimportant thought runs through my mind and bothers me

18. I take disappointments so keenly that I can't put them out of my mind

19. I am a steady person **R**

20. I get in a state of tension or turmoil as I think over my recent concerns and interests

Religious Orientation (Religious Life Inventory; Batson, Schoenrade, and Ventis, 1993)

Note: **R** denotes a reverse-scored item.

Note: The one-letter abbreviation in brackets () after each question denotes the subscale that the question measures. The three subscales are *Extrinsic* (E), *Intrinsic* (I), *Quest* (Q), and *Immanence* (M).

Instructions:

Below are several items concerning a variety of behaviours and attitudes related to one's religious life. Please write the number indicating your degree of agreement or disagreement from 1 (*strongly disagree*) to 9 (*strongly agree*) for each item. If an item does not apply to you or you disagree with its premise, mark it as a "1" (*strongly disagree*) rather than leaving it blank.

Answer scale:

1 ------- 2 ------- 3 ------- 4 ------- 5 ------- 6 ------- 7 ------- 8 ------- 9
STRONGLY DISAGREE — NEUTRAL — STRONGLY AGREE

Questions:

1. Although I believe in my religion, many other things are more important in my life. (E)

2. It is important to me to spend time in private thought and prayer. (I)

3. As I grow and change, I expect my religion to grow and change. (Q)

4. It doesn't matter so much what I believe so long as I am a good person. (E)

5. For me, being religious means learning to accept life as it is. (M)

6. Unless it is simply not possible, I attend religious services. (I)

7. My personal religion is more a matter of direct experience than of faith. (M)

8. I am constantly questioning my religious beliefs. (Q)

9. There is no sin, only ignorance of God. (M)

10. I pray mainly to gain relief and protection. (E)

11. It might be said that I value my religious doubts and uncertainties. (Q)

12. Learning to appreciate one's dark or 'sinful' side us essential to spiritual growth. (M)

13. I attend religious services mostly to spend time with my friends. (E)

14. What my religious tradition labels falsehood is often misunderstood truth. (M)

15. I was not very interested in religion until I began to ask questions about the meaning and purpose of my life. (Q)

16. Being in touch with the present moment is for me the heart of religion. (M)

17. I try hard to live all my life according to my religious beliefs. (I)

18. What religion offers me most is comfort in times of trouble and sorrow. (E)

19. I often find it necessary to suspend my own religious beliefs in order to perceive clearly the needs of others. (M)

20. For me, doubting is an important part of what it means to be religious. (Q)

21. Evil must be embraced before it can be changed. (M)

22. I pray mainly because I have been taught to pray. (E)

23. I view each moment as sacred, to be experienced fully. (M)

24. Prayers I say when I am alone are as important to me as those I say in religious service. (I)

25. I do not expect my religious convictions to change in the next few years. (Q) **R**

26. Although I am religious, I don't let it affect my daily life. (E)

27. I find religious doubts upsetting. (Q) **R**

28. Faith can be an obstacle to true religious understanding. (M)

29. I attend religious services mainly because I enjoy seeing people I know there. (E)

30. All religions have some value. (M)

31. I often had a strong sense of God's presence. (I)

32. I have been driven to ask religious questions out of a growing awareness of the tensions in my word and in my relation to my world. (Q)

33. I enjoy reading about my religion. (I)

34. My life experiences have led me to rethink my religious convictions. (Q)

35. My religion is important because it answers many questions about the meaning of life. (I)

36. To truly know God, one must trust one's own experience. (M)

37. Sometimes I have to ignore my religious beliefs because of what people might think of me. (E)

38. There are many religious issues on which my views are still changing. (Q)

39. I attend religious services because it helps me make friends. (E)

40. All of God's knowledge can be found in one religion. (M) **R**

41. My whole approach to life is based on my religion. (I)

42. God wasn't very important to me until I began to ask questions about the meaning and purpose of my life. (Q)

43. I would rather join a religious study group than a religious social group. (I)

44. In matters of faith, I would rather try to understand and reconcile opposing viewpoints than "take sides." (M)

45. Prayer is for peace and happiness. (E)

46. Questions are far more central to my religious experience than are answers. (Q)

47. Religion helps me to keep my life balanced and steady in exactly the same ways as my citizenship, friendships, and other memberships do. (E)

48. For me, prayer feels more natural than silent meditation. (M) **R**

Final Question

Given the attention you gave to this questionnaire, and how carefully and thoughtfully you answered the questions, please answer the following question: Did you read the questionnaire questions carefully and answer them to the best of your ability?

Note that your response to this question will not impact your participation credit. Also, we will not be able to associate responses with participant personal identities.

- ○ Yes, I did.
- ○ No, I did not read the questions carefully or answer honestly.
- ○ Yes, I did but I would rather you did not use my data in your final analyses.

Appendix E

Debriefing Form

The Ethereal Path to Psychological Health: An Exploration of the Connections Between Meditation, Spirituality, and Well-Being.

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Thank you for your participation in this study. Your involvement has aided in the understanding of the connections between meditation, spirituality, and psychological health. Without you, this study could not be completed. You have contributed to the advancement of knowledge in the fields of psychology, meditation, and spirituality.

This study is being conducted by Nathan Johnson in the Department of Psychology at Trent University. The study has been approved by Trent's Research Ethics Board. If you have further questions or concerns regarding the present investigation, please contact either Nathan Johnson or Dr. Geoff Navara using the contact information above. Additionally, if you have questions or concerns regarding the ethics of this study, please contact the Compliance Officer at the Trent University Research Office at 705-748-1011 ext. 7896.

Some health care resources have been included below. If your involvement in this study has evoked any psychological distress, you may contact one of the supports listed below. You may also contact Nathan Johnson using the email presented above if you are having difficulties contacting one of the resources listed below.

Trent Counselling Services
705-748-1386
Blackburn Hall Suite 113

Trent Student Health Services
705-748-1481
Blackburn Hall Suite 111

I. M. Well
1-877-234-5327 (24/7)

4 County Crisis
705-745-6484

Therapy Assistance Online (TAO)
https://www.taoconnect.org/

Good2Talk
1-866-925-5454

Further reading:

Campos, D., Cebolla, A., Quero, S., Bretón-López, J., Botella, C., Soler, J., García-Campayo, J., Demarzo, M., & Baños, R. M. (2016). Meditation and happiness:

Mindfulness and self-compassion may mediate the meditation–happiness relationship. *Personality and Individual Differences*, *93*, 80–85. https://doi.org/10.1016/j.paid.2015.08.040

Moberg, D. (2010). Spirituality Research: Measuring the Immeasurable? *Perspectives on Science and Christian Faith*, *62*.

Appendix F

Summary of the Research Process

The research process typically begins with the selection of a topic of interest. Upon finding a topic, we often conduct a *literature review* to learn about what research has already been conducted in this area. The goal of research is to expand our knowledge on a topic, so, we often wish to pursue specific areas of a topic that lack clarity or have not been researched before.

From our review of the literature, we develop one or more research questions. As mentioned previously, these questions represent particular parts of the topic that we believe should be researched more thoroughly. Upon the proposal of these questions, we begin designing the method in which the research questions will be investigated.

The type of research that we decide to conduct will depend on the needs of the research question(s). When deciding what method to use moving forward, our ultimate question is this: What research method would best answer our research question? Take, for example, the following research question: *Does escitalopram reduce depression symptomatology to a greater extent than fluoxetine?* There are many ways that we could approach this question, but not all of them would be appropriate to our needs. We could use a more traditionally qualitative design (e.g., a case study) to provide an in-depth analysis of a patient's experience with both medications. The advantages of this method are that we are provided with *rich* data that may also incorporate the patient's perspective and experiences. However, this method does not allow us to generalize and make a conclusive statement about the efficacy of escitalopram.

If we are hoping to make a broader statement about the medication, a more quantitative approach may be more appropriate. An experiment may be the most effective way to answer our question; it will allow us to examine the efficacy of an escitalopram-medicated group as compared to both a fluoxetine-medicated group and a control group. Participants will have their depression symptomatology measured both before and after they begin taking the medication to determine if the medication has reduced the number of symptoms that they experience. By using *random assignment* and *exclusionary criteria*, we hope to eliminate any natural variability and instead arrive at a conclusion which solely involves a direct comparison of the medications.

After we have decided on our method, we must submit an *ethics protocol* to the institutional *Research Ethics Board* (REB). The ethics protocol is a document that outlines the specific details of our research plan. Some questions that we should be prepared to answer are:

- What is the purpose of our research?
- How do we plan to answer our research question(s)?
- How will we measure our variables of interest?
- How will we analyze the data that we collect?
- What are the benefits/dangers of participating in our research?

The ethics protocol is a vital part of the research process. The REB is responsible for balancing the need for socially and academically beneficial research with the protection of participants. No study may begin without the approval of the institutional REB.

If our research design is approved by the REB, we may begin the *data collection* process. This begins with the recruitment of participants. In some cases, participants are recruited from the institution that the researcher belongs to. That being said, some studies require that participants
are recruited externally. In the case of the sample research question, we would likely want to recruit our participants from a nearby hospital or mental health institution.

After the participants have been recruited, we can begin to collect data from them. Qualitative studies generally make use of either *interviews* or *focus groups* to generate rich data about the topic. In a quantitative study, the participants typically complete physiological, behavioural, or written measures. For our example study, this might involve the completion of a *pre-intervention* measure of depression symptomatology (e.g., a questionnaire such as the Beck Depression Inventory). Following this, we would have the participants begin to take the medication assigned to their group. After a set amount of time, participants would complete the same questionnaire to determine the number of symptoms that they experience *post-intervention*.

Now that we have our data, what do we do with it? This step is known as *data entry*. In a qualitative study, this might involve the transcription (i.e., audio to text) of interviews or focus groups. Conversely, data entry in a quantitative study typically involves transferring the information from our measures into a spreadsheet hosted by a program such as SPSS, R, or Excel. In our example, we will need to input each participant's answers on the pre- and post-intervention depression questionnaires into a collective spreadsheet.

Following data entry, we begin our next step: *data analysis*. This is an exciting time in the research process, as it entails us "making sense" of the data that we have collected. If we had used a qualitative method such as thematic analysis, we might begin by coding our "data" (e.g., the transcribed interviews/focus groups) and searching for themes that appear in the text. In contrast, most quantitative methods involve the use of various statistical procedures to search for the answers to our research question(s). It is important to note that, while several different types of analysis will be employed to "explore" the data set, we will have selected one or more specific statistical technique(s) to answer our research question(s). In our example, we would use a one-way ANOVA to determine if escitalopram is more effective at reducing depression symptoms than fluoxetine.

The final step in the research process will involve a written report of some kind. If you are an honours/graduate student, this might come in the form of a thesis or a dissertation. As a

researcher or academic, you are more likely to deliver a journal article or a community report as your final product. This final step represents the culmination of your efforts as a researcher and is vital to the distribution of knowledge. In accordance with the scientific method, these reports should be (a) transparent, (b) informative, and (c) situated within prior research.

Although this summary has simplified the research process, it does capture many of its main elements. While challenging at times, scientific research is deeply rewarding and helps shape the world around us. If you have any questions regarding the research process, please feel free to contact nathanjohnson@trentu.ca.

Appendix G

Correlations Between Age and The Present Study's Dependent Variables and Covariates

Variable	MAAS[a]	SAS TOT[a]	SHS[b]	IRI-EC[b]	IRI-PT[b]	IRI-PD[b]	STAI-T[b]
Age in Years	.14**	.15**	.03	.15**	.14**	-.16**	-.08

Note. $N = 363$. MAAS = Mindful Attention Awareness Scale, SAS TOT = Spirituality Assessment Scale total score, SHS = Subjective Happiness Scale, IRI = Interpersonal Reactivity Index, EC = Empathic Concern, PT = Perspective Taking, PD = Personal Distress, STAI-T = State-Trait Anxiety Inventory trait scale.

*** $p < .001$, ** $p < .01$, * $p < .05$

[a]Covariate

[b]Dependent Variable