Prayer and Well-being: Do Mindfulness, Optimism, Spirituality, and Social Support Mediate a Relationship between Prayer and Well-being in a Canadian-Muslim Population?

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Abstract

Research tells us that there is an effect of prayer on well-being. However, little is known about the mechanisms that underlie this relationship. In addition, much of the available data concerning prayer and well-being is based on Christians living in the United States, and our knowledge of how prayer and well-being are functionally interconnected in other faith groups, including Muslims, is sparse. The primary aim of this study was to understand how prayer impacts well-being in individuals of the Muslim faith. Specifically, four potential mediators of the relationship between prayer and well-being were examined; optimism, spirituality, mindfulness, and social support. These mediators were selected based on previous empirical work demonstrating the role these factors have in both religious practices and mental health. Optimism, spirituality, and social support are important mechanisms in the relationship between prayer and well-being in Christian samples, while mindfulness underlies the beneficial effects of contemplative practices on well-being in studies focused on Buddhist practices. In this study it is proposed that as a contemplative practice of the Abrahamic faith, Muslim prayer (*salah*) relates to well-being through the mediatory roles of optimism, spirituality, social support, and mindfulness. Participants (N=155) were recruited from local mosques, Muslim Student Associations of the University of Ottawa and Carleton University, local halal restaurants, and MuslimLink (an Ottawa-based Muslim newsletter). SurveyMonkey was used to gather information on participants' prayer habits, and level of trait mindfulness, spirituality, optimism, social support, and subjective well-being. The data were analysed using a parallel multiple mediator model via the Monte Carlo confidence interval to test for the indirect effect of the mediator variables. Optimism and spirituality were both found to be mediators of the relationship between frequency of prayer and subjective well-being. While mindfulness correlated with both frequency of prayer and well-being, it did not mediate the relationship between the two. Social support correlated with frequency of prayer and not well-being and was not a mediator between the two variables. Psychological interventions that incorporate faith-based practices have been found to have greater effectiveness for religious patients. Understanding prayer and how it relates to well-being is important to implementing intervention and prevention strategies that are culturally informed thus better serving the Muslim population needs.

Key Words: Prayer, Muslim, Mediation, Mindfulness, Well-being, Optimism, Spirituality

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Dedication

To my mother, Hanan, and father, Ismail, without whom, after Allah, this would not have been possible.

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General Introduction

Religion and well-being

The last two decades have shown an impressive increase in empirical research on the relationship between mental health and religion and spirituality (Olvr, 2013). In fact, interest in this subject among researchers has increased 10 times in only two decades. Only 101 articles were found between 1980 and 1982 using the terms "spirituality" and "religion" in PsycInfo, while the same search uncovered 1,107 articles between 2000 and 2002 (Koenig, 2004). Today, this number has jumped to 9,349. Thus, research is rapidly accumulating on the relationship between religion and spirituality and mental health outcomes. Overall, research suggests that there is a salutary effect of religious and spiritual practices on physical, psychological health, and subjective well-being (Koenig, King, & Carson, 2012).

Throughout recorded history, religious beliefs and practices have been associated with healing. Before modern medicine, physical illnesses and diseases were treated with various spiritual and religious practices including prayers, rituals, meditations, and pilgrimages (Koenig et al., 2012). Today, the scientific literature is increasingly making connections between spiritual practices and health outcomes, including heart disease, immune functioning, and cancer. Religious and spiritual practices, for example, are associated with better immune and endocrine functioning across diverse medical diagnoses including HIV-positive youth (Bosworth, 2006), women with metastatic breast cancer (Schreiber & Brockopp, 2012) and older adults with diverse illnesses (Koenig, McCullough, & Larson, 2001). Similarly, religious activity has been linked with lower systolic or diastolic blood pressure (Koenig et al., 1998). In a sample of 14,475 Americans, lower prevalence of diastolic hypertension was found in those who attend religious services at least once a week than those who did not attend; this effect remained significant even after controlling for sociodemographic and other health variables (Gillam & Ingram, 2006). A similar pattern is found in stroke (Colantonio, Kasl, & Ostfeld, 1992), heart disease (Goldbourt & Yaari, 1993), and cancer patients (Jim et al., 2015). Cognitive impairment was also studied in association with religiosity. In a review of the literature, Koenig et al. (2012) reported that 10 out of 21 studies found a significant inverse relationship between dementia and religious involvement though no significant relationship in the remaining 11 studies. Furthermore, mortality seems to be affected by religious practices. In a systematic review of 52 studies examining mortality and religion, 75% reported longer survival for those who attended religious

services regularly (Koenig, et el., 2001). For example, a 9-year prospective study of a national sample of more than 20,000 U.S. adults found that those who did not attend a religious service were 1.87 times more likely to have died during the follow-up period than those who attended religious services at least weekly, with a 7-year life expectancy difference between non-attenders and those who attend religious services at least once a week (Hummer et al., 1999).

Research on Islamic religiosity specifically and health outcomes is sparse. However, in a literature review, Koenig and Shohaib (2014) identified a few studies concerning this demographic. A study examining the relationship between religiosity and heart disease in Muslims found lower rates of acute coronary syndrome in those who were more religious as measured by frequency of religious behaviours and activities (e.g, service attendance, frequency of prayer, and frequency of fasting; Burazeri et al., 2008). Similar studies also found an inverse relationship between religiosity and blood pressure levels, with those identified as more religious having significantly lower blood pressure. Interestingly, in a study examining the relationship between religiosity and self-reported health (SRH) in Muslims, religiosity, measured by frequency of religious attendance and importance of religious devotion, was positively related to better SRH among immigrant adolescents in Bosnia–Herzegovina (Sujoldzic et al., 2006). Overall, the data suggests that there is a potential relationship between religion and health in religious populations, regardless of the religion studied.

Although the pathways through which religious beliefs and practices improve health outcomes is unclear, a few mechanisms have been proposed. Some researchers suggest that religion may positively affect health through the prohibition of unhealthy behaviours such as consumption of alcohol, cigarettes, and illicit drugs (Koenig & Cohen, 2002). In one review of the literature, 124 of 138 studies reported significantly lower substance use among the more religious (Koenig et al., 2001). It is also suggested that religious and spiritual activity reduces stress and improves psychological health, which in turn, results in better immune functioning and overall physical health (Koenig et al., 1997). Thus, the pathway between physical health and spiritual practices may be mediated through the relationship between religious and spiritual practices and psychological health.

In this regard, there is increasing evidence that religious beliefs and practices are associated with positive psychological outcomes. Studies examining depression have found

relationships between religiousness and fewer depressive symptoms, lower prevalence of depression, and faster recovery from depression (Lucette, et el., 2016). Relationships between religiousness and mental heath outcomes has also been observed longitudinally in a 30-year study of 754 participants (Zou et al., 2014). Religious service attendance correlated with reduced depressive symptom scores, with a 0.518-unit average reduction in depression scores each year for participants who attended religious services compared to non-attenders (Zou et al., 2014). In addition, the more frequent the religious attendance, the stronger effect it had on reducing depressive symptoms. In a two-year prospective study, Payman and colleagues (2010) found that higher intrinsic religiosity was the only baseline characteristic that predicted lower depression scores (other characteristics studied included chronic physical illness, social support, and physical health). These findings have also been observed in experimental studies. In a randomized trial comparing a spiritual versus secular meditation intervention, Wachholtz and Pargament (2008) found that the spiritual meditation group experienced a significantly greater decline in negative affect and greater pain tolerance compared to the secular meditation group. In a systematic review of high-quality studies, Koenig et al. (2012) found that 65 percent of 124 studies reported an inverse relationship between religion and depression. Overall, the data seems to suggest that religiosity is associated with lower levels of depression.

A similar relationship has been reported for anxiety. In a review of sixty-seven studies, 57 percent reported an inverse relationship between anxiety and religion (Koenig et al., 2012). Regardless of the varied methods of measuring religiosity and diversity of ethnicities and religions studied, religiosity seems to correlate with lower levels of anxiety. Frequency of religious attendance for example, was found to be negatively associated with anxiety in different populations, including Christians of diverse ethnicities in the US (Ellison, Burdette, & Hill 2009; Krause & Ellsion, 2003), Muslims in Afghanistan (Cardozo et al., 2004), and women of various faiths in the Netherlands following a termination of pregnancy (Korenrom et al., 2009). While a small number of studies have found religion to increase or have no effect on anxiety, most studies suggest the contrary. In a cross-sectional study using a random sample of 37,000 Canadians, increased frequency of worship attendance was associated with lower risk for panic disorder and social phobia (Baetz et al., 2006). Additionally, religious attendance was the only coping strategy that significantly predicted lower PTSD scores following accidental injury or diagnosis of chronic illness in pediatric patients (Zehnder et al., 2006).

Interestingly, these findings have also been observed in experimental trials; in the previously mentioned RCT regarding spiritual versus secular meditation, participants in the spiritual meditation group had lower levels of anxiety one-month post- intervention than those in the secular meditation group (Wachholtz & Pargament, 2008). Additionally, in an RCT that compared a conventional and a religious trauma writing intervention in students with PTSD, the conventional intervention was effective in reducing symptoms in lower trauma severity only, whereas the religious intervention reduced symptoms regardless of trauma severity (Chen, 2005). Thus, despite the wide variety of methods used and demographics examined, the findings are similar: increasing religiosity seems to decrease anxiety symptoms. There is also compelling evidence that religious involvement is correlated with lower levels of suicide rates (Bonelli & Koenig, 2013; Dervic et al., 2004), alcohol and substance abuse (Chi et al., 2009), and delinquency and crime (Regnerus & Elder, 2003).

In an extensive systematic review of the literature, Koenig and Shohaib (2014) identified 20 studies regarding depression and religiosity in a Muslim population. Similar to findings in Christian populations, 75% of the studies reported that religious involvement was related to less depression. This pattern is also true when examining religiosity and anxiety. One such study found religiosity to be inversely correlated with scores on the Depression, Anxiety, and Stress Scale (DASS) in a sample of Muslim nursing students (Nuraskikin et al., 2012). Also, Tavabi and Iran-Pour (2011) found strong religious beliefs to be associated with significantly lower scores on the General Health Questionnaire-28 in a sample of Muslim medical students. On the whole, research findings suggest a positive impact of religiosity on mental health, regardless of the religious denominations studied (Koenig et al., 2012; Koenig & Shohaib, 2014)

Studies show that religion may not only decrease risk for poor mental health, but that it may also fosters aspects of positive mental health, such as sense of purpose and meaning (Fave, Brdar, Vella-Brodrick &, Wissing, 2013), marital satisfaction (Olson et al., 2014), coping resourcefulness (Ano & Vasconcelles, 2004), social support (Hovey, et al., 2014), and self-esteem (Hayman et al., 2007). In a meta-analysis of 114 studies, 80% reported a statistically significant positive association between religious variables and well-being, hope, and optimism (Koenig, 2004). Using life-satisfaction scales, studies show a correlation between various forms of religious expression and life satisfaction. Krause and Ellison (2003) for example, found that

frequency of prayer and religious attendance were significantly and positively correlated with life satisfaction. In addition, life satisfaction increased as the extent to which faith gave meaning and purpose to life increased (Krause, 2003). This pattern was also observed in an African American (Krause, 2004) and Hispanic (Benjamins, 2006) sample. Religiosity also seems to have a longitudinal effect on well-being. Higher religious attendance at age forty-seven was found to significantly predict subjective well-being at age seventy, even after controlling for other predictors of well-being (Koenig & Vaiant, 2009). In one of the few mediation studies examining religiosity and well-being, intrinsic religiosity was found to mediate the relationship between spousal loss and well-being in 1,367 elderly Muslims from Malaysia (Momtaz et al., 2010). Furthermore, among older adults with greater religiosity, the negative relationship between social isolation and well-being was much weaker than in those with low religiosity. Religiosity also moderated the negative impact of chronic medical illness on well-being, suggesting a buffering effect (Momtaz et al., 2010). Thus, the literature suggests a positive impact of religiosity on positive psychology; an impact also observable in Muslim populations (Momtaz et al., 2010).

Negative effects of religion/spirituality on well-being

While the majority of research suggests that religious practices, including prayer, are linked with positive psychological health (Koenig et al., 2012), some studies report the contrary. For example, Whittington and Scher (2010) found that three forms of prayer (adoration, thanksgiving, reception) had consistently positive effects on well-being, whereas confession, supplication, and obligatory forms of prayer had negative or null effect on well-being. The authors suggested that the prayer types with positive effects are less ego-focused and more focused on God, whereas the negative types are ego-focused. Similarly, there is some evidence to suggest that different forms of prayer coping are associated with greater distress. This includes redefining a stressor as a punishment from God for the individual's sins or as an act of the Devil, expressing confusion and dissatisfaction with God's relationship to the individual in the stressful situation, and pleading to God for a miracle (Pargament, 1997; Pargament et al., 1998). These data suggest that different prayer types have different effects on psychological well-being and these differences appear to be driven by the meanings that praying individuals give to their relationships with God.

In addition, Vaillant et al. (2008) found that increased religious involvement was correlated with more stress and depression. However, as this study was correlational in nature, it is unknown if religious involvement was causally linked to depression or whether depression resulted in greater religious involvement as a coping strategy. Another limitation of this study is that the sample consisted of Caucasian male Harvard University graduates, a population that is generally not religious (Koenig et al., 2012). Thus, findings may not generalize to other religious individuals. Studies show that among the less religious, it takes much more distress for them to turn to prayer for coping than among the more religious (Braam et al., 2007). In other words, those who are not generally religious may be severely depressed before they turn to religious coping.

Due to the abstract nature of spirituality and complexity of religious prayer, these concepts are difficult to measure and result in variable research findings. Winjingaards des Meij and colleagues (2005) for example, measured religious practices through a single item based on religious affiliation. They found that those with a religious affiliation were significantly more likely to have depressive symptoms than those without an affiliation. However, religious affiliation does not truly measure level of religiosity as some participants may have an affiliation but not regularly practice their religion. In contrast, Maselko and Buka (2008) found less depressive symptoms in those who did not attend religious services compared to those who did. However, these authors measured religious attendance as a categorical variable (i.e., "attendance" or "no attendance") rather than as a continuous variable (i.e. frequency of attendance), which may have obscured the complexity of the relationship between religious involvement and depression. Therefore, in order to better understand how religion and prayer impact psychological well-being, it is preferable to use measures of religious beliefs and practices that are continuous and allow for a range of responses.

Contemplative practices and well-being

There is no single way to engage in contemplative practices. The Latin *contemplari* means to observe, consider, or gaze attentively. Contemplative practices can be understood as faith-based methods intended to develop concentration, deepen understating and insight, cultivate awareness and compassion (Haynes, 2004), and develop stronger relations to the divine (Contemplative Mind in Society, 2011)

As noted previously, most of the research in this field studies religiosity and/or spirituality as a holistic concept rather than specific contemplative practices within religious traditions. In addition, what is extensively studied are techniques that have been extracted from their religious contexts, such as secularized mindfulness-based interventions, transcendental meditation, and yoga (Gutierrez, Fox, & Wood, 2015; Wachholtz & Austin, 2013). Thus, religious and meditative practices became the study of secularized methods as opposed to practices based on religious beliefs. Though this has increased access to such practices to a larger non-sectarian population, there is some evidence that the benefits of secularized contemplative practices may be less robust than practices embedded in a religious or spiritual context (Benson, 1996; Wachholtz & Pargament 2005; O'Connor et al., 2015). Benson (1996) for example found that when meditation is associated with one's religious or spiritual convictions, it further enhances relaxation, leading to greater physiological and physical health benefits. Similarly, Wachholtz and Pargament (2005) compared the effects of spiritual and secular meditation on several psychological, spiritual, and physiological outcomes and noted a superior effect when the meditation method was explicitly spiritual. Furthermore, preliminary correlational data support the hypothesis that when a meditation method is practiced in combination with a sincere spiritual belief, practitioners tend to reap stronger benefits. (O'Connor et al., 2015).

Prayer and well-being

Though most of the literature on contemplative practices focuses on Eastern forms practices, Western religions also have many forms of contemplative practices including meditation, prayers, and sermons. This study focuses on prayer as a common form of contemplative practice. Despite prayer being widely practiced across religious traditions, research on the effects of prayer on psychological well-being is sparse. Research shows that prayer is correlated with decreased anxiety (Fox et al, 2016), depression (Lawler-Row & Elliot, 2016), and stress (Fox et al., 2016). Prayer is commonly used as a coping strategy for patients with various illnesses including cancer (Carvalho et al., 2014; Gansler et al., 2008) and those undergoing open heart surgery (Ai et al., 2008). In a quasi-experimental study of patients undergoing chemotherapy, a significant decrease in anxiety levels, respiratory rate, and blood pressure was reported in patients who prayed versus those who did not (Carvalho et al., 2014). The use of prayer as a coping strategy is not limited to medically ill patients. Prayer has also

been found to predict better adjustment and mental health following exposure to trauma, including terrorist attacks (Ai et al, 2006), natural disasters (Braun-Lewensohn, 2014), and interpersonal violence (Hill et al., 1995). Following the September 11 terrorist attack in the US, National Public Radio reported that, nationwide, people from varied social strata immediately turned to prayer for coping (Peterson & Seligman, 2003). Similarly, studies with psychiatric populations indicate that prayer is often used as a coping behavior (Bonelli & Koenig, 2013; Koenig, 2012) and is associated with shorter hospital stays and recovery (Koenig, 2012).

Prayer is also linked with positive mental health. Prayer contributes to psychological well-being, subjective well-being, and decreased levels of depression, even after controlling for the contribution of age, gender, lifestyle, and social support (Lawler-Row & Elliot, 2016). In addition, frequent prayer is associated with better mental health in church members (Meisenhelder & Chandler, 2000), as well as lower levels of depression and anxiety and better self-esteem in university students (Maltby et al., 1999).

Prayer is an important aspect of Islamic belief and practice. In fact, the five daily obligatory prayers (dawn prayer, noon prayer, afternoon prayer, sunset prayer, and evening prayer) constitute one of the Five Pillars of Islam, holding a place of such importance that the Prophet Muhammad stated that the observance of daily prayers separates the faithful from nonbelievers (Sahih Muslim Vol. 1, Book 1, Hadith 147). Due to their purported importance, the psychological benefits of prayer have been emphasized in Islamic tradition. The Quran states that through the "remembrance of Allah [God], do humans find rest" (Quram, 13:28). Furthermore, prayer is believed to protect against negative emotions: "Those who believe and do deeds of righteousness, and establish regular prayers and regular charity — they will have their reward with their Lord. On them shall be no fear, nor shall they grieve." (Quran, 2:277). Scholars of the Islamic tradition have also noted the psychological importance of prayer. Al-Dahabi, a fourteenth century scholar whose books remain a religious reference for many Muslims today stated,

> "Prayers often produce happiness and contentment in the mind; they suppress anxiety and extinguish the fire of anger. They increase love for truth and humility before people; they soften the heart, create love and forgiveness and dislike of the vice of vengeance. Often sound judgment occurs to the mind…One also remembers forgotten things …One can

discover the ways to solve matters worldly and spiritual. And one can effectively examine oneself" (p. 140).

Muslim prayer has also been reported to have psychological benefits in the scientific literature. In a study examining well-being and religiosity, Ismail and Desmukh (2012) found that religiosity and life satisfaction were strongly related and frequency of prayer especially so. Similarly, a study by Ijaz, Khalily, and Ahmed (2017) found that mental health, as measured by the RAND Mental Health Inventory, was positively associated with frequency of prayer. Their findings indicated that mental health was better in those who prayed regularly as compared to those who did not pray regularly. However, frequency of prayer was measured with a self-report measure with two items: "I offer prayer" and "I do not offer prayer", making this variable insensitive to varying degrees of prayer frequency. In addition, the study is limited to identifying a relationship between prayer and mental health without explaining the mechanism of this relationship. In sum, studies regarding the relationship between prayer and well-being in a Muslim population is sparse and in need of further examination.

Mechanisms of prayer and well-being

Though research shows a correlation between prayer and well-being, little is known about the mechanisms that mediate this relationship. Levine (2008) theorized that prayer promotes well-being by enhancing self-esteem, relieving distress, and increasing spirituality. Other mechanisms that have been proposed include reduced stress reactivity, catharsis, hope, forgiveness, love, contentment, empowerment, and other positive emotions (Levine, 1996). Empirical research on this subject is sparse, however, four mediators may explain the relationship between prayer and well-being: spirituality, optimism, mindfulness, and social support.

1. *Spirituality*

One can make the argument that it is spirituality inherent in religious practices that mediates the relationship between religious practices and well-being. The literature is unanimous in the distinction between religion and spirituality. Although definitions of these terms may vary, religion here refers to an organized system of beliefs, rituals, practices, and community, oriented toward the sacred; spirituality will refer to more personal experiences of or search for ultimate reality or the transcendent that is not necessarily institutionally connected (Josephson & Dell, 2004). However, religion and spirituality do overlap and it is this overlap that may explain the

positive effects of religious practices on well-being. Loneliness for example, was found to be negatively correlated with spiritual well-being in both healthy and chronically ill individuals (Miller, 1985). However, when the same study was replicated using a measure of religiosity rather than spirituality, religion did not correlate with loneliness (O'Connor, 1994). Similarly, life satisfaction was found to be positively correlated with spiritual aspects of religion but not the behaviours (Lun & Bond, 2013), while existential measures of religiosity and spirituality such as comfort derived from prayer and sense of inner peace with self were predictors of well-being (Fry, 2000).

When comparing a spiritually-based meditative technique to secular relaxation methods, Wachholtz and Paragament (2005) found that those assigned to the spiritual practice reported more pain endurance, reduced anxiety, improved mood, and feelings of well-being than those in the secular relaxation technique. Although not all studies agree (Haley, Koenig, & Bruchett, 2001; Rippentrop et al., 2005) and a causal relationship has not been established, a large literature indicates that spiritual beliefs and practices are associated with better mental health, well-being, and life satisfaction (Bonelli & Koenig, 2013; Koenig, 2012; Wachholtz & Paragament, 2005). Spiritual factors have also been linked with lower suicide ideation and lower suicide rates (Mueller, Plevak, & Rummans, 2001). Several prospective studies indicate that spiritual based activities predict better mental health across time in highly stressed or medically ill populations and in non-stressed individuals living in community settings regardless of ethnic and age groups (Lawler-Row & Elliot, 2016). Thus, the research shows that spiritual practices relate to well-being. As a type of spiritual practice, one could hypothesize that prayer influences well-being through the effects of spirituality.

2. Mindfulness

Another potential mediator explaining the effect of prayer on well-being is mindfulness. The capacity for mindful awareness, which is a fundamental aspect of all spiritual traditions (Walsh, 1999), is associated with psychological health and greater life satisfaction (Keng et al., 2011). Mindfulness mediates the effects of Buddhist meditation practices on well-being (Wachholtz & Pargament, 2008; Wachholtz, Pearce, & Koenig, 2007; Carmody & Baer, 2008; Frederick & White, 2015) and has been identified as one of the most strongly established factors contributing to positive mental health (Baer et al., 2008; Brown & Ryan, 2003). Mindfulness allows individuals to relate to internal (e.g., thoughts, emotions, bodily sensations) and external

events with an attitude of acceptance, non-judgement and curiosity (Brown et al., 2007). In addition, it helps individuals reduce negative automatic thoughts and unhealthy behaviors and promotes self-regulation (Ryan & Deci, 2001). Studies have demonstrated a close association between trait mindfulness and well-being (Haver et al., 2015; Short, Mazmanian, Oinonen, & Mushquash, 2016; Wenzel et al., 2015). Studies have also shown that cultivating mindfulness through intensive mindfulness meditation training improves well-being (Aikens et al., 2014; Falkenstrom, 2010; Fredrickson et al., 2008). In fact, after an 8-week Mindfulness-Based Stress Reduction program, participants with stress-related problems, illness, anxiety, and chronic pain showed increases in mindfulness and well-being, and decreases in stress and other negative psychological symptoms (Carmody & Baer, 2008). Though extensive research has been conducted on mindfulness and eastern practice (specifically Buddhism), mindfulness has not been studied as a potential factor in Western religious practices such as prayer.

3. Optimism

Optimism has been studied as a potential mediator between prayer (specifically Christian-based) and well-being. Analysis of measures of anxiety, coping, spiritual support, and optimism of 453 students after the September 11 terrorist attacks revealed that spiritual support and positive attitudes mediated the effect of faith-based and secular factors on levels of distress (Ai et al., 2006). This finding suggests that positive attitudes might enhance perceived spiritual support, which in turn, may increase the likelihood of prayer coping. Thus, optimism partially explained the relationship between coping and prayer. Faith factors have also been associated with greater positive attitudes in a few clinical and nonclinical studies (Ai et al., 2002; Koenig et al., 2001; Sethi & Seligman, 1993). Prior to cardiac surgery, prayer coping contributed to positive attitudes (Ai et al., 2002; Ai et al., 2004) and was prospectively related to better postoperative mental health (Ai et al., 2002). Similarly, a community study found a relation between religious practices (including prayer) and optimism cross-sectionally (Idler & Kasl, 1997a). Optimism, manifested through religious practices, predicted better functioning longitudinally (Idler & Kasl, 1997b).

Nonetheless, how contemplative practices affect optimism remains poorly understood (Hill & Pargament, 2003). A century ago, the psychologist and philosopher William James, who pioneered the scientific study of religious experiences in Western culture (Pargament, 1997), illustrated the faith-related foundation of optimistic expectations. In his lecture

on *Religion of Healthy-Mindedness,* published in the seminal book "The Varieties of Religious Experience: A Study in Human Nature" (1901), James theorized that faith-based consciousness turned perceived undesirable situations to ideal ones. However, little empirical research has precisely elucidated the theoretical linkage between prayer and optimism. Krause's survey (2002) displayed the mediating effect of religious social support on the relationship between organizational religious activities and optimism; greater church attendance was linked with more church-based social support, which appeared to enhance a divine relationship that was, in turn, related to greater optimism and, then, to well-being. Unfortunately, research focuses exclusively on Christian forms of prayer and other religions' prayers have not yet been explored through an optimism lens.

4. Social Support

The importance of social support in health and well-being has been well documented (Bosworth et al., 2000). The weight of the evidence indicates that social support has strong positive effects on mental health (Cohen & Wills, 1985; Wethington & Kessler, 1986). An inverse relationship between levels of depression and social support has been shown in many studies (Dean, Kolody, & Wood, 1990; Hays et al., 1997; Bothell, Fischer, & Hayashida, 1999; Bosworth et al., 2000).

Religious practices such as prayer are often situated in a social and community context. Emile Durkheim (1915), one of the founders of sociology as a scientific discipline, argued that religion's emphasis on the supernatural combined with its unique ability to foster collective bonds presents distinctive social benefits for the worshipper and society. Moreover, Durkheim's work suggests that religious practices, when performed collectively, can produce a strong sense of togetherness among fellow worshippers. In the first anthropological inquiry into prayer, Marcel Mauss (2003) one of Durkheim's students and who himself was highly influential in the development of modern sociology and the ethnographic study of religion, argued that prayers are embedded in the social environment in which they are performed and are therefore social acts that are influenced by the beliefs of the culture and the context and demands of everyday life in that culture (p. 54). Subsequent psychological research has lent support to Durkheim's and Mauss' original theories with respect to religion and mental health. Group prayer for example, has been associated with physical and psychological well-being (Koenig, 2003; Poloma & Pendleton, 1991). Furthermore, in a study of religious-service participation across a variety of

religious groups, Lim and Putnam (2010) found that praying in congregation is better for life satisfaction compared to praying alone or engaging in other social activities. Furthermore, social interaction is often emphasised in religious practices. Though the daily prayers could be prayed individually, Muslims are strongly encouraged to pray with others. In addition, Friday prayers and Eid prayers are both types of prayers that are mandated to be in a congregation and cannot be prayed alone. Some extra prayers such as the daily Ramadan "Taraweeh" night prayers are also prayed in a congregation. Thus, authors suggest that the benefit of religious practices may be due to the mediating effects of social support found in religious communities. However, these findings may be gender specific for a Muslim sample, as Islamic practices differentiate between the religious obligations of men and women. For example, attendance at a place of religious worship may be less frequent for Muslim women compared to men as women are not required to pray with a congregation while men are (Adam, 1991). Furthermore, Muslim women are not permitted to enter a mosque, perform prayer, or fast during menstruation (Adam, 1991).

Koenig et al. (2012) have found that 82 percent of studies examining the relationship between religion and social support report significant positive associations. In fact, prospective studies found that religious involvement at baseline predicted increased social support over time (Strawbridge et al, 2001). In examining the mediating influence of social support derived from the religious setting, one study (Ellison, Musck, & Levin, 1997) found that social support fully mediated the relationship between church attendance and psychological distress. Also examining the mediating effect between religion-based social support and mental health, Hovey et al., (2014), found that religion-based emotional support was a significant predictor of decreased hopelessness, depression, and suicide behaviors. In fact, the relationship among religiosity and mental health was found to be fully mediated by social support (Hovey et al., 2014). Therefore, religious practices could increase social network and thereby increase social support available to the individuals (George, Ellison, & Larson, 2002; Koenig & Larson, 2001; Seybold & Hill, 2001). Because social support is known to increase well-being and protect against the negative effect stressors have on mental health (Moak & Agrawal, 2010), social support may serve an important role in explaining the connection between prayer and well-being in a Muslim sample.

Study Objectives

As previously stated, studies suggest that contemplative practices such as prayer are associated with better physical and mental health, better ability to cope with life stressors, and overall general well-being. However, empirical research on the specific mechanisms that mediate this relationship is scarce. In addition, the limited research on this topic has generally focused on Christian prayer, with few studies conducted on contemplative practices from other religious traditions. Accordingly, the purpose of this study was to examine the relationship between well-being and prayer and mediators of this relationship in a Muslim population. The study predicted that: i) higher levels of frequency and duration of prayer would predict higher levels of subjective well-being; ii) higher levels of frequency and duration of prayers would predict increased levels of mindfulness, spirituality, optimism, and social support; and iii) mindfulness, spirituality, optimism, and social support would individually mediate the relationship between frequency and duration of prayer and well-being.

Exploring connections between Muslim prayer, mindfulness, spirituality, optimism, social support, and well-being

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Abstract

Research tells us that there is a positive effect of prayer on well-being. However, little is known about the mechanisms that underlie this relationship. In addition, much of the available data concerning prayer and well-being is based on Christians living in the United States, and our knowledge of how prayer and well-being are functionally interconnected in other faith groups is sparse. The primary aim of this study was to understand how prayer impacts well-being in individuals of the Muslim faith. Specifically, four potential mediators of the relationship between prayer and well-being were examined: optimism, spirituality, mindfulness, and social support. Participants (N=155) were recruited online and completed measures of prayer habits and levels of trait mindfulness, spirituality, optimism, social support, and subjective well-being. The data were analysed using a parallel multiple mediator model to test for the indirect effect of the mediator variables on the relationship between prayer and well-being. Optimism and spirituality were both found to be mediators of frequency of prayer and subjective well-being. Mindfulness correlated with both frequency of prayer and well-being but did not mediate the relationship between the two. Social support correlated with frequency of prayer but not with well-being and was not a mediator in the relationship between prayer and well-being. Implications of findings for culturally informed mental health counselling are discussed.

Key Words: Prayer, Muslim, Mediation, Mindfulness, Well-being, Optimism, Spirituality

Introduction

Research is rapidly accumulating on the relationship between religion and health outcomes (Olvr, 2013), with findings suggesting a salutary effect of religious and spiritual practices on physical health, psychological health, and subjective well-being (Koenig, King, & Carson, 2012). Most of the research in this field study religiosity and/or spirituality as a concept rather than specific contemplative practices within religious traditions. In addition, what is extensively studied are practices that have been extracted from their religious contexts, such as secularized mindfulness meditation, transcendental meditation, and yoga (Gutierrez, Fox, & Wood, 2015; Wachholtz & Austin, 2013). Though this has increased access to such practices to a larger non-sectarian population, there is some evidence that the benefits of secularized contemplative practices may be less robust than practices embedded in a religious or spiritual context (Benson, 1996; Wachholtz & Pargament 2005; O'Connor et al., 2015). Correlational data support the hypothesis that when a meditation method is practiced in combination with a sincere spiritual belief, practitioners tend to reap stronger benefits (O'Connor et al., 2015). Contemplative practices can be understood as faith-based methods intended to develop concentration, deepen understanding and insight, cultivate awareness and compassion (Haynes, 2004), and develop stronger relations to the divine (Contemplative Mind in Society, 2011)

Though most of the research on contemplative practices focus on Eastern forms of contemplation, other religions also have many forms of contemplative practices including meditation, prayers, and sermons. This study focuses on prayer as a common form of contemplative practice. Despite prayer being widely practiced across religious traditions, research on the effects of prayer on psychological well-being is sparse. Available research shows

that prayer has a positive effect on mental health and is correlated with decreased anxiety (Fox et al., 2016), depression (Lawler-Row & Elliot, 2016), and stress (Fox et al., 2016).

Prayer is an important aspect of Islamic belief and practice. In fact, the five daily obligatory prayers (dawn prayer, noon prayer, afternoon prayer, sunset prayer, and evening prayer) constitute one of the Five Pillars of Islam, holding a place of such importance that the Prophet Muhammad stated that the observance of daily prayers separates the faithful from nonbelievers (Sahih Muslim Vol. 1, Book 1, Hadith 147). Due to their purported importance, the psychological benefits of prayer have been emphasized in Islamic tradition. The Quran states that through the "remembrance of Allah [God], do humans find rest" (Quram, 13:28). Furthermore, prayer is believed to protect against negative emotions: "Those who believe and do deeds of righteousness, and establish regular prayers and regular charity — they will have their reward with their Lord. On them shall be no fear, nor shall they grieve." (Quran, 2:277). Scholars of the Islamic tradition have also noted the psychological importance of prayer. Al-Dahabi, a fourteenth century scholar whose books remain a religious reference for many Muslims today stated,

> "Prayers often produce happiness and contentment in the mind; they suppress anxiety and extinguish the fire of anger. They increase love for truth and humility before people; they soften the heart, create love and forgiveness and dislike of the vice of vengeance. Often sound judgment occurs to the mind…One also remembers forgotten things …One can discover the ways to solve matters worldly and spiritual. And one can effectively examine oneself" (p. 140).

Muslim prayer has also been reported to have psychological benefits in the scientific literature. A study by Ijaz, Khalily, and Ahmed (2017) found that mental health, as measured

by the RAND Mental Health Inventory, was positively associated with frequency of prayer. However, frequency of prayer was measured with a self-report measure with two items: "I offer prayer" and "I do not offer prayer", making this variable insensitive to varying degrees of prayer frequency. In addition, the study is limited to identifying a relationship between prayer and mental health without explaining the mechanism of this relationship. In sum, studies regarding the relationship between prayer and well-being in a Muslim population is sparse and in need of further examination.

Mechanisms

Though research shows a correlation between prayer and well-being, little is known about the mechanisms that mediate this relationship. Levine (2008) theorized that prayer promotes well-being by enhancing self-esteem, relieving distress, and increasing spirituality. Other mechanisms that have been proposed include reduced stress reactivity, catharsis, hope, forgiveness, love, contentment, empowerment, and other positive emotions (Levine, 1996). Empirical research on this subject is limited, however, four mediators may explain the relationship between prayer and well-being: spirituality, optimism, mindfulness, and social support.

Spirituality

One can make the argument that it is spirituality inherent in religious practices that mediate the relationship between religious practices and well-being. The literature is unanimous in the distinction between religion and spirituality. Although definitions of these terms may vary, religion here refers to an organized system of beliefs, rituals, practices, and community, oriented toward the sacred; spirituality will refer to more personal experiences of or search for ultimate reality or the transcendent that is not necessarily institutionally connected (Josephson & Dell, 2004). However, religion and spirituality do overlap and it is this overlap that may explain the

positive effects of religious practices on well-being. Life satisfaction, for example, was found to be positively correlated with spiritual aspects of religion and not the behaviours (Lun & Bond, 2013), while existential measures of religiosity and spirituality such as comfort derived from prayer and sense of inner peace with self were predictors of well-being (Fry, 2000).

When comparing a spiritually-based meditative technique to secular relaxation methods, Wachholtz and Paragament (2005) found that those assigned to the spiritual practice reported greater pain endurance, reduced anxiety, and improved mood and feelings of well-being than those in the secular relaxation condition. Although not all studies agree (Haley, Koenig, & Bruchett, 2001; Rippentrop, et al., 2005) and a causal relationship has not been established, a large literature indicates that spiritual beliefs and practices are associated with better mental health, well-being, and life satisfaction (Bonelli & Koenig, 2013; Koenig, 2012; Wachholtz & Paragament, 2005). As a type of spiritual practice, one could hypothesize that prayer influences well-being via spirituality.

Mindfulness

Another potential mediator explaining the effect of prayer on well-being is mindfulness. The capacity for mindful awareness, which is a fundamental aspect of all spiritual traditions (Walsh, 1999), is associated with psychological health and greater life satisfaction (Keng et al., 2011). Mindfulness mediates the effects of Buddhist meditation practices on well-being (Wachholtz & Pargament, 2008; Wachholtz, Pearce, & Koenig, 2007; Carmody & Baer, 2008; Frederick & White, 2015) and has been identified as one of the most strongly established factors contributing to positive mental health (Baer et al., 2008; Brown & Ryan, 2003). Though extensive research has been conducted on mindfulness and eastern practice (specifically

Buddhism), mindfulness has not been studied as a potential factor in other religious practices such as prayer.

Optimism

Optimism has been studied as a potential mediator between prayer and well-being. Prayer has been shown to contribute to positive attitudes (Ai et al., 2002; Ai et al., 2004) and was prospectively related to better mental health (Ai, et al, 2002). Similarly, a community study found a relation between religious practices (including prayer) and optimism cross-sectionally (Idler & Kasl, 1997a), while optimism, manifested through religious practices predicted better functioning longitudinally (Idler & Kasl, 1997b). Research has focused exclusively on Christian forms of prayer and other religions' prayers have not yet been explored through an optimism lens.

Social Support

The importance of social support in mental health and well-being has been well documented (Bosworth et al., 2000). The weight of the evidence indicates that social support has strong positive and protective effects on mental health (Cohen & Wills, 1985; Wethington & Kessler, 1986). Religious practices including prayer are often situated in a social and community context. Though the daily prayers could be prayed individually, Muslims are strongly encouraged to pray with others. In addition, Friday prayers and Eid prayers are both types of prayers that are mandated to be in a congregation and cannot be prayed alone (Adam, 1991).

In a review of the literature, Koenig, King, and Carson (2012) have found that 82 percent of studies examining the relationship between religion and social support report significant positive associations. In fact, a prospective study found that religious involvement at baseline predicted increased social support over time (Strawbridge et al, 2001). In examining the mediating

influence of social support derived from the religious setting, one study (Hovey et al., 2014), found that religion-based emotional support was a significant predictor of decreased hopelessness, depression, and suicide behaviors. In fact, the relationship among religiosity and mental health was found to be fully mediated by social support (Hovey et al., 2014). Furthermore, group prayer has been associated with physical and psychological well-being (Koenig, 2003; Poloma & Pendleton, 1991) and in a study of religious-service participation across a variety of religious groups, Lim and Putnam (2010) found that praying in congregation has a more significant effect on life satisfaction compared to praying alone or engaging in other social activities. Therefore, religious practices could increase social network and thereby increase social supports available to the individual (George, Ellison, & Larson, 2002; Seybold & Hill, 2001). Thus, social support may play an important role in explaining the connection between prayer and well-being in a Muslim sample. However, any findings may be gender specific for a Muslim sample, as Islamic practices differentiate between the religious obligations of men and women. For example, attendance at a place of religious worship may be less frequent for Muslim women compared to men as women are not required to pray with a congregation while men are (Adam, 1991). Furthermore, Muslim women are not permitted to enter a mosque, perform prayer, or fast during menstruation (Adam, 1991).

Objectives of the Current Study

The purpose of this study was to examine the relationship between well-being and prayer in a Muslim population and examine the mediating role of spirituality, optimism, mindfulness and social supports in this relationship. The study predicted that: i) higher levels of frequency and duration of prayer would predict higher levels of subjective well-being; ii) higher levels of frequency and duration of prayers would predict increased levels of mindfulness, spirituality,

optimism, and social support; and iii) mindfulness, spirituality optimism, and social support would individually mediate the relationship between frequency and duration of prayer and well-being.

Methods

Participants and recruitment

A sample of 155 participants was recruited from various community organizations and businesses including the Muslim Student Association of both the University of Ottawa and Carleton University, local mosques, local halal restaurants, and other Muslim owned businesses, and MuslimLink, an Ottawa-based newspaper. Participants under the age of 18 years and those with limited English language proficiency were excluded. An announcement about the study as well as the link to the online study survey was sent via each of the organizations' weekly newsletter. Posters in mosques and restaurants, as well as various bulletin boards throughout the University of Ottawa and Carleton University, explained the purpose of the study, exclusion criteria, and link to the survey. Before beginning the survey, participants were asked to read the consent form, which detailed the purpose of the study and any benefits or risks associated with participating. Once informed consent was obtained, participants were able to complete the survey.

Survey Monkey was be used to gather data on participants' demographics (age, gender, and employment status), prayer habits, and level of trait mindfulness, spirituality, optimism and subjective well-being. Survey Monkey is an anonymous open-source online survey application that is hosted in a University of Ottawa server. Participants' data was stored on a password protected computer and all files were password protected. To ensure confidentiality, no identifiable information was collected and IP address tracking was deactivated.

Measures

Frequency of Prayer – This study defined prayer as the intentional practice of preforming set rituals and movements with the intention of connecting to God. There are five prayers (known as *salat*) that are obligatory (called *fardh*) in Islam, each characterized by a window of time: morning prayer, noon prayer, afternoon prayer, sunset prayer, and night prayer. Some Muslims also choose to preform additional prayers outside of the obligatory ones called *sunnah* or *nafila*. Both obligatory and voluntary prayers start with the intention to pray to God, standing in the direction of Mecca, and performing a set of prescribed body movements accompanied by reciting Quranic verses and words of supplication to God.

Frequency of prayer was measured through a two-item scale developed by the researcher. Previous studies have measured frequency of prayer through a one-item Likert-type scale. Ismail and Desmuch (2012) for example asked "how many prayers do you perform in a day?". Responses provided were 0 (none) to 5 (the maximum number of obligatory prayer). Similarly, Francis, Sahin and Al-Failakawi (2008) provided the following responses for their participants: obligatory prayer and extra prayers, obligatory prayers only, sometimes, Fridays only, and never. However, a limitation to this approach is that it does not account for variability in prayer frequency (Francis et al., 2008). Accordingly, the current study measured frequency of prayer with a two- item scale: "in the past week, how many times did you pray the obligatory prayers (*salat fardh*)?" and "in the past week, how many times did you pray a voluntary prayer (*salat sunnah*)?" allowing participants to type in their answer. This scale allowed for more variability in responses as well as making a distinction between obligatory and voluntary prayer. Making a distinction between the two types of prayer is important as past research suggests that the

relationship between prayer and well-being could depend on prayer type (Whittington & Scher, 2010).

Duration of Prayer Item **–** To further understand prayer, duration of prayer was also measured. Though Muslims are required to pray five times a day, the duration of each prayer is not specified in religious texts. However, understanding how long a person may dedicate to each prayer could be related to one's mindfulness, spirituality, and optimism during prayer. Because frequency of prayer is an obligation while duration is not, the latter could potentially be an indicator of well-being more so than the former. Duration off prayer was measured by one item: "On average how long do one of your prayers (salat) last? Please state your answer in minutes".

Satisfaction with Life Scale *(SWLS;* Diener, Emmons, Larson, & Griffin, 1986). The SWLS was used as a measure of well-being. It is a five-item self-report measure of subjective life satisfaction. Items are rated on a 7-point scale (1 =strongly disagree to 7=strongly agree). The SWLS has good psychometric properties, including test- retest reliability (r=.82) and internal consistency (Cronbach's alpha = .87) (Diener et al., 1986). In addition, the SWLS shows good convergence validity with other measures of subjective well-being (Pavot & Diener, 1993) and is negatively correlated with clinical measures of distress such as the Beck Depression Inventory (Blaise et al., 1989).

System of Belief Inventory -Support Subscale (SBI-SS; Holland et al., 1998). The SBI-SS is a 5-item scale that measures social support received by the religious community. Items are rated on a 4-point Likert scale with total scores ranging between 0 and 15. The support subscale of the SBI has strong psychometric properties including reliable test-retest results (r=.89) and high internal consistency (Cronbach's alpha of .90).

The Daily Spiritual Experience Scale (***DSES***; Underwood & Terisi, 2002). The DSES is a 16-item self-report measure that assesses ordinary experiences of connection with the transcendent in daily life. The first 15-items are rated on a 6-point Likert-type scale (1 = never to 6=many times a day) and item 16 ("In general how close do you feel to God") is rated on a 4-point scale ranging from 1 (not at all) to 4 (as close as possible). Frequency of daily spiritual experience is represented by the total score of all items. The DSES has been used in a variety of settings including counselling and addiction treatment centers and religious organizations. The DSES is shown to have strong psychometric properties including a strong internal consistency (Cronbach's alpha of .89) and test-retest reliability (r=.85 over a two-day period; Underwood, 2011).

Life Orientation Test-Revised (LOT-R; Scheier, Carver, & Bridges, 1994***).*** The LOT-R is a 10-item scale that assesses the extent to which individuals possess favorable expectations regarding life outcomes. The scale has three positively worded items reflecting optimism and three negatively worded items reflecting pessimism. Four items of the scale are filler items (items 2, 4, 6 and 8) that are not included in the calculation of the total score. Items are rated on a 5-point Likert-type scale (from 0 = strongly disagree to 4 = strongly agree). The LOT-R has been widely used in research on the behavioral, affective, and health consequences of optimism and pessimism and is a valid and reliable measure (Carver, Scheier & Segerstrom, 2010). The scale has satisfactory internal consistency (Cronbach's alpha of .76) and test-retest reliability (r=.79 over a 4-week interval). Evidence of construct validity has also been compiled with respect to a number of other personality variables including neuroticism (r= .90) and extroversion (r =.84; Scheier, et al., 1994).

The Mindful Attention Awareness Scale (*MAAS*; Brown & Ryan, 2003). The MASS is a 15-item scale that measures mindfulness as present-centered awareness in everyday experience (Brown & Ryan, 2003). The MAAS assesses mindfulness as a generic single construct and can be applicable to participants regardless of experience with meditation (Park, Reilly-Spong, & Gross, 2013). Items are negatively worded (e.g. "I find it difficult to stay focused on what's happening in the present") and are rated on a 6-point scale (1 = almost always; 6 = almost never). The mean of the scores reflect levels of dispositional mindfulness, with higher scores reflecting higher levels of mindfulness. The MAAS shows strong psychometric properties with evidence of high internal consistency and strong test retest reliability. MAAS scores were positively correlated with measures of openness, internal state awareness, and well-being, and negatively correlated with neuroticism, anxiety, stress, and rumination, indicating strong construct validity (Park et al., 2013).

Sample Size Determination

A sample of 150 participants was deemed sufficient to address our research questions. In a meta-analysis of mediation studies of mindfulness and well-being, Gu et al. (2015) found that sample sizes ranged from 27 to 205 participants. Furthermore, by using a continuously varying sample size approach to Monte Carlo power analysis Schoeman, Boulton, and Short (2017) found that approximately 150 individuals are required to ensure statistical power is at least 80% for detecting the hypothesized indirect effect. Therefore, the study's sample size of 155 participants falls within the recommended range for mediation analysis (Schoeman, et al. 2017).

Statistical Analyses

Data was first cleaned and checked for normality. Five variables (duration of prayer, SWLS, SBI-SS, DSES, and LOT-R) were significantly skewed. After log transformation, the

duration of prayer item was adequately corrected for normality and used for subsequent analyses. The SWLS, SBI-SS, LOT-R, and DSES variables were still skewed after transformation, thus the original data was used for analysis. However, despite skewness, other assumptions required for correlation analysis (absence of outliers, normality of variables, linearity, and homoscedasticity) and linear regression (linearity, homoscedasticity, no multicollinearity) were all examined and deemed satisfactory. These assumptions also met requirements for mediation analysis.

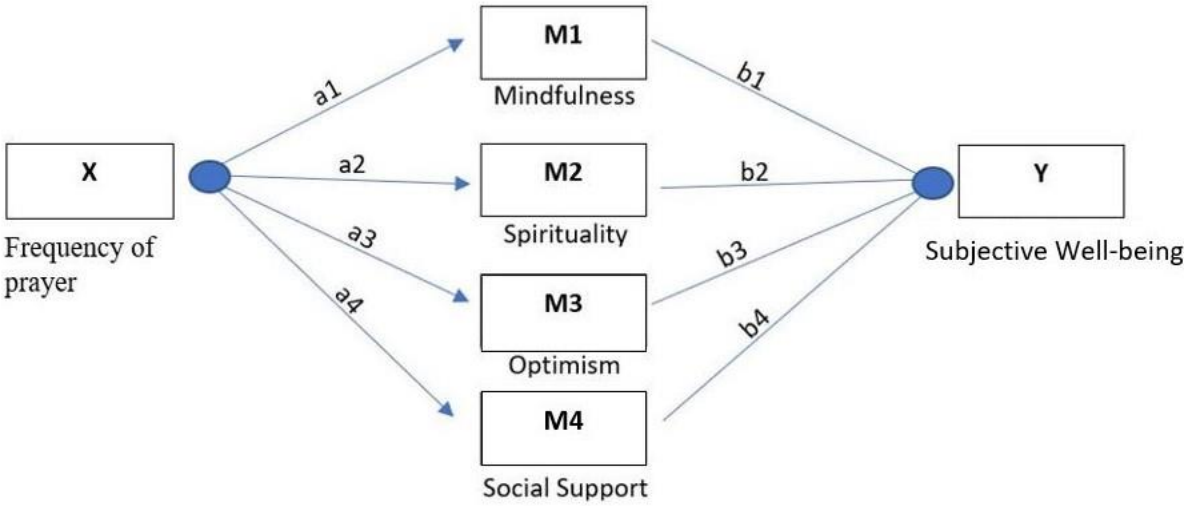
Descriptive statistics (mean, standard deviation, range) were calculated for demographic variables and the study measures. Pearson correlations were conducted to examine the association between frequency of prayer and the SWLS, MAAS, SBI-SS, LOT-R, and DSES. To evaluate whether any of the proposed mechanisms mediated the relation between frequency and duration of prayer and subjective well-being, a series of mediation analyses were conducted based on Hayes's parallel multiple mediator model (2013). Though it was hypothesized that mindfulness, spirituality, optimism, and social support would meditate the relationship between prayer and well-being, it could also be that increased levels of mindfulness, spirituality, social support, and/or optimism increase prayer frequency and therefore increase well-being. Thus, exploratory analysis of the mediation effects of prayer on the relationship between mindfulness, social support, optimism, and spirituality was also conducted.

In parallel mediation, two or more variables are proposed to mediate the relationship between X and Y. These mediators can correlate with one another, but cannot influence each other in causality (Hayes, 2013). With four mediators (M1, M2, M3, and M4), there are the a1b1, a2b2, a3b3, and a4b4 pathways, respectively (see Figure 1). This model is useful as it allows for a more complex assessment of the processes through which X affects Y without conducting various separate mediations and decreasing power. Haye's model is considered best practice in

mediation analysis as it has greater statistical power and the most accurate type I error rates compared to more traditional methods of mediation analysis (Gu et al, 2015). Hayes offers a macro (PROCESS) that calculates mediation analyses directly on SPSS. Specifically, the Monte Carlo confidence interval was used to test the indirect effect of the mediator variables. The Monte Carlo confidence interval demonstrates a balance of power and Type 1 error even when sample size is less than 200 (Tofighi & MacKinnon, 2016) and has been identified as best practice in mediation analyses (Schoemann et al., 2017).

Figure 1

Example of one of the proposed parallel multiple mediation analysis between frequency pf prayer and subjective well-being



Results

Participant characteristics

Of the 155 participants included in this study, 78.7% were female and 21.3% were male. Participants ranged in age from 18 to 65 years, with most participants falling in the 18-24 year-

old category (n=58) followed by 25-34 years (n=38), 35-44 years (n=36) and 45 years and above (n= 23). The participants consisted of students (n= 49), full-time (n= 47) and part-time (n= 23) workers, home-makers (n= 24) and those without employment (n=12).

Table 1 shows the mean scores for the study measures (MAAS, DSES, LOT-R, and SBI-SS,) and prayer frequency and duration. The mean frequency of obligatory prayer in the past week was 21.66 (SD = 14.50), with each prayer lasting on average 5.82 minutes (SD = 3.29). Mean frequency of non-obligatory prayer in the past week was 11.18 (SD = 17.51). Mean SWLS scores fell within the range of slightly satisfied to satisfied as described by Pavot and Diener (2013). Similarly, both DSES and MAAS scores in the current sample compared well to people in the general population (Ellison & Fan, 2008; Brown & Ryan, 2003). LOT-R scores were within the means of population studies (Glaesmer et al., 2012), while SBI-SS scores were comparable to that of religious samples (Holland et al., 1998).

Table 1

Descriptive statistics for study measures

Measure	Mean	SD	Range
Frequency of obligatory prayer Item	21.66	14.50	0-35
Frequency of non-obligatory prayer Item	11.18	17.52	0-98
Duration of prayer Item	5.82	3.29	0-21
MAAS	3.98	.86	1.47-5.93
LOT-R	15.60	4.12	0-24
DSES	74.89	12.29	44-94
SBI-SS	10.76	3.15	2-15
SWLS	26.00	8.46	5-35

MAAS = Mindfulness Attention Awareness Scale, LOT-R = Life Orientation Test Revised, DSES = Daily Spiritual Experiencing Scale, SBI-SS = System of Belief Inventory- Support Subscale, SWLS = Satisfaction with Life Scale.

Correlation analyses

Table 2 shows bivariate correlations between the measures of prayer, satisfaction with life, and the proposed mediating variables. Analysis revealed that both frequency of obligatory and non-obligatory prayer was positively and significantly associated with satisfaction with life,

mindfulness, spirituality, optimism, and social support. Duration of prayer was significantly and positively associated with social support and spirituality but not with any of the other study variables. Correlation analyses also indicated that levels of optimism, mindfulness, and spirituality were positively associated with satisfaction with life, whereas no association was found between social support and satisfaction with life. Both frequency of obligatory prayer and frequency of non-obligatory prayer were positively correlated while no associations were found between frequency of prayer and duration of prayer.

Table 2
Bivariate correlations between frequency and duration of prayer, satisfaction with life, and potential mediating variables

	MAAS	LOT-R	DSES	SBI-SS	SWLS	Frequency of obligatory prayer	Frequency of voluntary prayer
Frequency of obligatory prayer	.166*	.208**	.234**	.275**	.199*	-	.353**
Frequency of voluntary prayer	.172*	.125*	.276**	.243**	.198*	.353**	-
Duration of Prayer	.034	.091	.231**	.292**	.122	.109	.140
SWLS	.211**	.355**	.280**	.079	-	.199*	.198*

MAAS = Mindfulness Attention Awareness Scale, LOT-R = Life Orientation Test Revised, DSES = Daily Spiritual Experiencing Scale, SBI-SS = System of Belief Inventory- Support Subscale, SWLS = Satisfaction with Life Scale.

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

Mediation analyses.

The primary mediation of interest was whether mindfulness, optimism, spirituality, and social support mediated the relationship between frequency and duration of prayer and satisfaction with life. Parallel mediation analysis indicated that frequency of obligatory prayer was indirectly related to satisfaction with life through its relationship with optimism and spirituality (see Table 3 and Figure 2). A 95% bias-corrected confidence interval based on 1000 bootstrap samples (Preacher & Hayes, 2008) indicated that the indirect effect through LOT-R (*b* = .034, 95% CI = .005, .076) and DSES (*b* = .027, 95% CI = .006, .054) were both above zero. All the other investigated indirect pathways between frequency of obligatory prayer and satisfaction with life had the value of 0 included in the 95% confidence interval and were not considered significant mediating pathways (see Table 3).

Similar to findings with obligatory prayer, parallel mediation analysis indicated that frequency of voluntary prayer was indirectly related to satisfaction with life through its relationship with optimism and spirituality (see Table 4 and Figure 3). A 95% bias-corrected confidence interval based on 1000 bootstrap samples (Preacher & Hayes, 2008) indicated that the indirect effect through LOT-R (*b* = .016, 95% CI = .001, .038) and DSES (*b* = .027, 95% CI = .008, .053) were both above zero. All the other investigated indirect pathways between frequency of voluntary prayer and satisfaction with life had the value of 0 included in the 95% confidence interval and were not considered significant mediating pathways (see Table 4).

A third parallel mediation analysis (see Table 5) indicated that duration of prayer and satisfaction with life were indirectly related through its relationship with spirituality DSES (*b* = .117 95% CI = .025, .035). Other pathways investigated were not found to be significant.

Exploratory analyses of the mediation effects of frequency and duration of prayer on the relationship between mindfulness, social support, optimism, and spirituality were also conducted. However, none of the pathways investigated that included prayer as a mediator were found to be significant.

Table 3

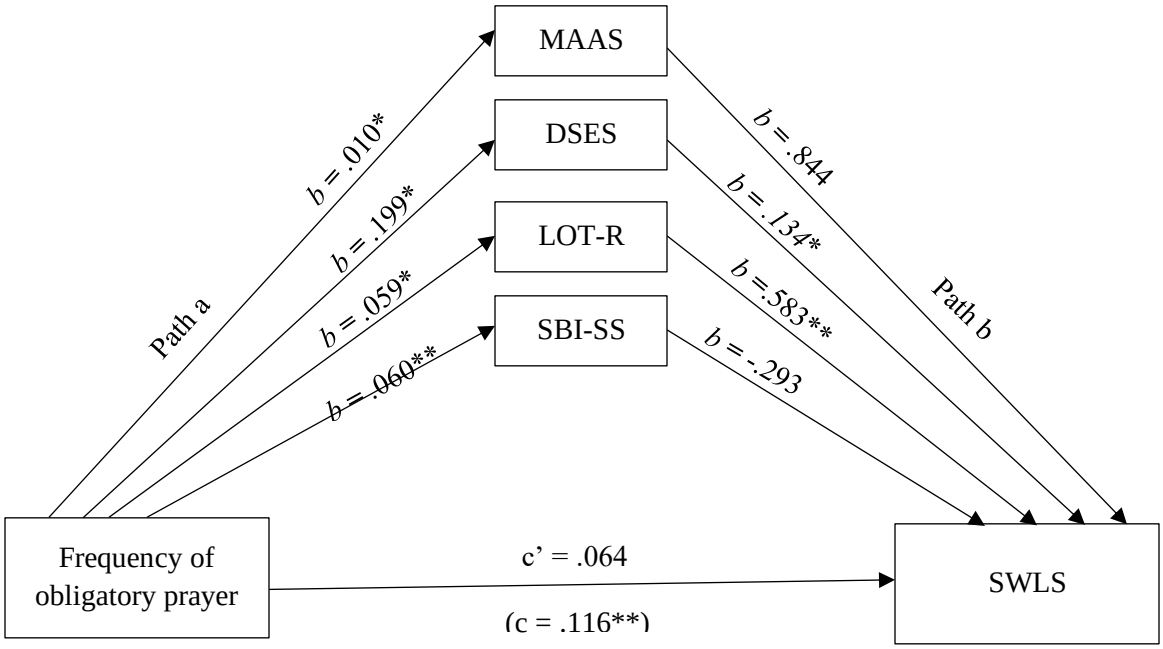
Frequency of obligatory prayer as predictor of satisfaction with life mediated by mindfulness, spirituality, optimism, and social support

	SWLS		
Variable	Point estimate	Boot LLCI	Boot ULCI
Total effect	.116**		
Direct effect	.064		
Indirect effects			
MAAS	.008	-.002	.025
LOT-R	.034	.005	.076
DSES	.027	.006	.054
SBI-SS	-.017	-.017	.019

MAAS = Mindfulness Attention Awareness Scale, LOT-R = Life Orientation Test Revised, DSES = Daily Spiritual Experiencing Scale, SBI-SS = System of Belief Inventory- Support Subscale, SWLS = Satisfaction with Life Scale.
Note: Indirect effects with confidence intervals that do not include zero are significant at the .05 level.
** $p < .001$

Figure 2

Mediation between frequency of obligatory prayer and satisfaction with life (SWLS) with mindfulness (MAAS), optimism (LOT), spirituality (DSES), and social support (SBI-SS) as parallel mediators



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

Table 4

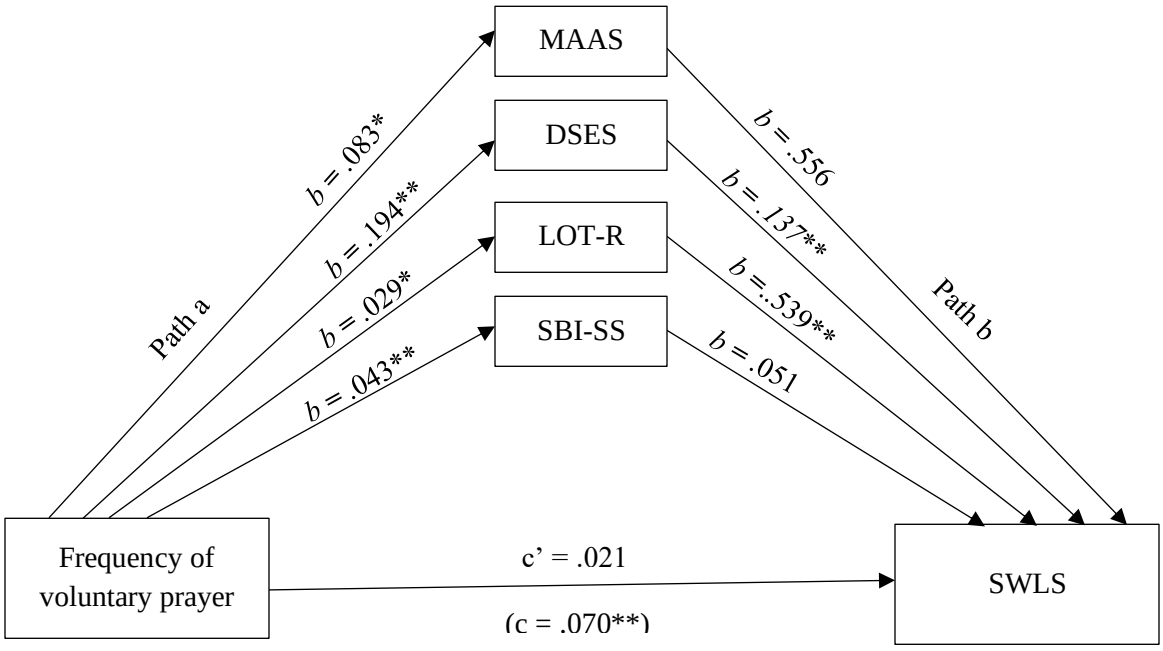
Frequency of voluntary prayer as predictor of satisfaction with life mediated by mindfulness, spirituality, optimism, and social support

	SWLS		
Variable	Point estimate	Boot LLCI	Boot ULCI
Total effect	.0703**		
Direct effect	.0211		
Indirect effects			
MAAS	.005	-.005	.016
LOT-R	.016	.001	.038
DSES	.027	.008	.053
SBI-SS	.002	-.011	.018

MAAS = Mindfulness Attention Awareness Scale, LOT-R = Life Orientation Test Revised, DSES = Daily Spiritual Experiencing Scale, SBI-SS = System of Belief Inventory- Support Subscale, SWLS = Satisfaction with Life Scale.
Note: Indirect effects with confidence intervals that do not include zero are significant at the .05 level.
** $p < .001$

Figure 3

Mediation between frequency of voluntary prayer and satisfaction with life (SWLS) with mindfulness (MAAS), optimism (LOT), spirituality (DSES), and social support (SBI-SS) as parallel mediators.



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

Table 5

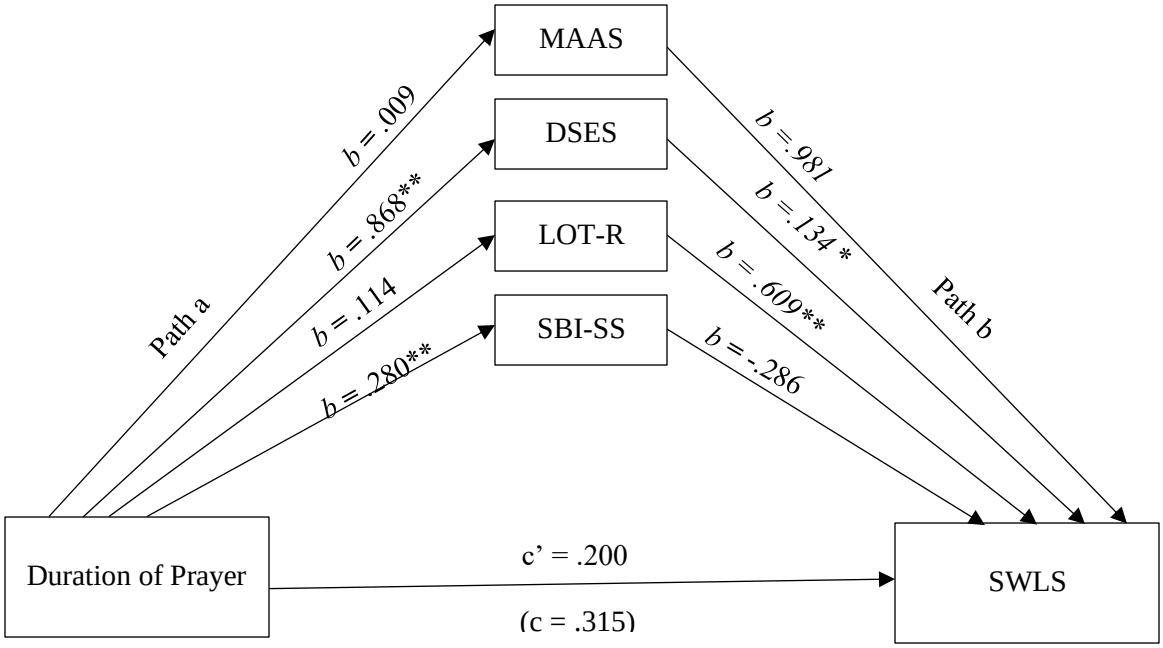
Duration of prayer as predictor of life satisfaction mediated by mindfulness, spirituality, optimism, and social support

	SWLS		
Variable	Point estimate	Boot LLCI	Boot ULCI
Total effect	.315		
Direct effect	.200		
Indirect effects			
MAAS	.009	-.046	.056
LOT-R	.069	-.037	.185
DSES	.117	.025	.035
SBI-SS	-.080	-.334	.016

MAAS = Mindfulness Attention Awareness Scale, LOT-R = Life Orientation Test Revised, DSES = Daily Spiritual Experiencing Scale, SBI-SS = System of Belief Inventory- Support Subscale, SWLS = Satisfaction with Life Scale.
Note: Indirect effects with confidence intervals that do not include zero are significant at the .05 level. ** $p < .001$

Figure 4

Mediation between duration of prayer and satisfaction with life (SWLS) with mindfulness (MAAS), optimism (LOT), spirituality (DSES), and social support (SBI-SS) as parallel mediators



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

Discussion

The goal of this study was to explore the relationship between Muslim forms of prayer and well-being. Consistent with previous research, the current study found a link between frequency of prayer and well-being. Specifically, we found that increased frequency of prayer was associated with increased levels of subjective well-being. Throughout the levels of analyses conducted, frequency of prayer had a more significant impact on well-being than duration of prayer. In fact, duration of prayer was not significantly associated with satisfaction with life. This finding extends those of Zeng et al., (2015) who also found that time spent on meditation practice does not significantly predict well-being. Overall, findings from this study lend support for the hypothesis that contemplative practice leads to sustained psychological well-being

(Lacaille et al., 2018), and that among Muslims, a regular continuous practice yields more benefit than spending long periods of time praying a single prayer.

Results of this study also revealed that frequency of obligatory prayer and voluntary prayer were positively associated. Furthermore, across the levels of analyses conducted, both prayer types shared similar patterns. Both were positively associated with well-being and these associations were mediated by the effects of spirituality and optimism. Our findings are inconsistent with other research that differentiate between obligatory and other forms of prayer. For example, Poloma and Gallup (1991) examined a similar concept to obligatory prayer termed "ritualistic" prayer, and found this prayer type had a negative effect on well-being. However, their study did not include Muslims, a population for whom obligatory prayer is a central religious practice. A subsequent study by Whittington and Scher (2010), which included a sample of Jewish, Muslim, Buddhist, and Christian participants, found that in contrast to thanksgiving, adoration, and reception prayer types, obligatory, supplication, and confession prayer had negative effects on optimism and well-being. These authors concluded that prayers that are ego-less and focus more on God have stronger benefits for well-being than those that are more ego-focused. However, it is important to note that apart from obligatory prayer, the prayer types studied by Whittington and Scher (2010) are defined by their content, while obligatory prayer is defined by its role in religion. Thus, it could be that within an obligatory prayer other prayer types are practiced that can enhance well-being. For example, one may feel gratitude and love towards God while performing obligatory prayers. The negative aspects of obligatory prayer found by Whittington and Scher (2010) may result for those who pray only out of a sense of duty rather than with an intention to feel close to God. It would be worthwhile for future research to

examine not only the role a prayer has in the religion (i.e. obligatory or voluntary) but also the content of the prayer and how it relates to well-being.

The larger aim of this research was to explore mediators of the link between prayer and well-being. Four variables were hypothesized to potentially mediate this relationship. First, most contemplative practices have some form of mindful awareness as part of the practice (Cobb, Kor & Miller, 2015) and Muslim prayer is no different in this regard. Part of Muslim forms of prayer is mindful awareness of the prayer and the different aspects of it such as the Quranic verses recited during the prayers, the body movements and their symbolic significance, as well as the specific refrains spoken in each body posture that glorify God's Oneness and Greatness. In fact, a prayer performed without mindfully setting the intention of the prayer before beginning it, is an invalid prayer as decreed by religious texts (al-Uthaimeen, 2015). In addition, intentional awareness during prayer is an important part of Muslim forms of prayer. It is narrated that Prophet Mohammad said "A person may offer a prayer and nothing of it is recorded for him except one tenth of it, one ninth of it, one eighth of it, one seventh of it, one sixth of it, one fifth of it, one quarter of it, one third of it, or half of it." (Abu- Dawud, 2008). Islamic scholars have used this saying to illustrate the importance of staying mindful during prayer so that the worshipper receives full rewards by God.

The links between mindfulness and well-being are well documented in research (Goyal et al., 2014). The hypothesis that mindfulness, prayer and well-being would correlate with each other in a sample of Muslims was supported in this study, although the associations were generally small in magnitude. However, contrary to expectation, mindfulness was not found to be a significant mediator in the relationship between prayer and well-being. This finding seems to be consistent with previous research. For example, Levy (2018) found that mindfulness did

not mediate the relationship between obligatory forms of prayer and well-being, while Ijaz and colleagues (Ijaz et al., 2017) found strong positive associations between frequency of prayer and mindfulness. Thus, it seems that though mindfulness is not a mechanism that explains the relationship between prayer and well-being, it is significantly associated with both variables. It is conceivable that mindfulness is a separate variable that needs to be intentionally practiced while praying. Furthermore, it may be the intentional practice of mindfulness in prayer that contributes to increased well-being in an individual. This hypothesis is supported by research by Ijaz and colleagues (Ijaz et al., 2017) who found that those who prayed with mindfulness had significantly better mental health compared with those who prayed without mindfulness. Unfortunately, the current study did not include a measure of state mindfulness such as the State Mindfulness Scale (Tanay & Berstein, 2013). Future research would benefit from evaluating both trait and state mindfulness and its role in Muslim forms of prayer.

Positive psychology research has long considered optimism as an index of well-being. Optimism has also been shown to play a major role in faith and religious practices. Past research based on Christian-based faith practices have recognised optimism as a mediator in the relationship between religious practices and well-being (Ai at al., 2004). Extending past findings, the current study showed evidence of the same pathway in a Muslim population, suggesting that optimism may explain some of the effects of Muslim prayer on well-being. Theoretically, prayer can be conceptualized as an act of hope and optimism (Ai et al., 2004). In the Quran, God is described as merciful and forgiving. Verses in the Quran encourage followers to have a hopeful and optimistic attitude towards God; “for indeed with hardship comes ease” (94:5); “Do not worry, Verily God is with us”. In fact, believing in better outcomes for the future is in itself a pillar of Islamic belief as illustrated in the Quaranic verses “Despair not of the Mercy of God”

(39:53) and “When My servants ask thee (O Mohammad) concerning Me, I am close to them, I answer the prayer of the supplicant when he prays to Me” (2:186). The findings of this study suggest that optimism may be an important mechanism that underlies the relationship between prayer and well-being. In other words, through frequent daily prayers, worshippers develop increased levels of optimism, which in turn, increases well-being. However, although the mediation analysis was statistically significant, optimism explained a small portion of the variance in the relationship between prayer and well-being. Furthermore, other factors related to optimism could play a more significant role in the mediation. For example, Ai et al., (2004) conceptualized hope and optimism as distinct and separate factors and found both to be significant independent mediators between prayer and coping with crises. However, more research is needed to investigate this in a Muslim population.

Not surprisingly, spirituality was also found to be a mediator of the relationship between prayer and well-being. Past research has established the importance of spirituality in contemplative practices and well-being. Our study showed that spirituality was significant in all pathways investigated. Spiritualty was the only factor investigated that mediated the pathways between frequency of prayer and well-being and the duration of prayer and well-being. This is unsurprising given the plethora of past research that establishes spirituality as an important mechanism underlying the benefits of contemplative practices on health. When comparing secular to spiritually-based meditations, there is evidence that spiritual meditations are significantly more effective in increasing pain tolerance (Wachholtz et al., 2017), improved mental health, and subjective well-being (Koenig et al., 2001). In a meta-analysis comparing various meditation and relaxation practices, increased health and mental health effects were

found more often after the use of spiritually-based practices than secular meditation techniques (Alexander et al., 1991).

Since secular meditation practices grew out of spiritual traditions, researchers have questioned whether the observed positive effects of meditation could be due, in part, to its inherent spirituality (Brown, 2016). In an experimental study comparing spiritual to secular practices, self-reported daily spiritual experiences increased even in those who practiced secular forms of meditation (Wascholtz & Paragment, 2005). Furthermore, a number of studies in clinical populations have shown that secular mindfulness practices are associated with increased aspects of spirituality, such as personal faith, meaning and peace, and a sense of engagement and closeness with some form of higher power or God (Birnie et al., 2010; Carmody et al., 2008; Shapiro et al., 1998). Through a mediation analysis, Greeson et al., (2011) found that increased daily spiritual experiences following the Mindfulness-Based Stress Reduction program partially explained improved mental health. The current study further adds to the literature and supports the notion that it is spirituality inherent in prayer that is an important mediator of the relationship between prayer and well-being. Moreover, the word prayer in Arabic "salah" shares the same linguistic roots as the word 'sila' which translates to 'connection'. Prayer (i.e. salah), in Islamic teachings, is conceptualized as the individual's connection to God. Ibn-Alqaiim, a theologian of Islamic faith, states that 'one stands between God's hands when praying' to illustrate the importance of one's connection to God during prayer. The study shows that it is this spiritual connection that one experiences when praying that makes the relationship between the act of prayer and well-being possible.

Social support was found to correlate with both frequency and duration of prayer. The more frequently participants prayed the more they reported experiencing social support from

their religious community. It could be that those who prayed frequently also prayed in a group with other worshipers and so experienced social support through the act of praying in a congregation. Though it is beyond the scope of this study, it is also suggested that frequent prayers are an indication of frequent acts of worship such as going to mosque and attending sermons and learning circles, which could explain the correlation between prayer and social support. Additionally, research focusing on church attenders found that attenders who engaged in private devotional activities were more likely to provide and receive social support (McClure, 2013).

Though the relationship between prayer and social support was significant, social support was not found to mediate the relationship between prayer and well-being. Past research has been clear in differentiating between intrinsic and extrinsic forms of faith and their effect on well-being. People who are intrinsically religious see their religion as an end in itself (Allport, 1966). Intrinsically religious people are thought to live their religion through spirituality and meaning making while extrinsically religious people are believed to use their religion to seek status, sociability, and support (Allport 1966). Several studies (Garcia-Alandete & Bernabe-Valero, 2013, Jansen et al., 2010, Stewart, 2001) have found positive relationships between intrinsic religiosity and psychological well-being and negative relationships between extrinsic religiosity and well-being (Hill & Pargament, 2008, Maltby & Day, 2000, Steger et al., 2010, Steger et al., 2008). Among religious samples, intrinsic religiosity has been identified as a protective factor for depressive symptoms, anxiety symptoms, and alcohol-related outcomes (Berry & York, 2011., Stewart, 2001, Wood & Hebert, 2005). In contrast, extrinsic religiosity has been linked to poor mental health outcomes including anxiety and depression (Kuyel, Cesur, & Ellison, 2012). In comparing religious orientations, Bravo, Pearson, and Stevens (2016)

reported that intrinsic religiosity groups showed high levels of positive religious coping, purpose in life, psychological well-being, self-regulation abilities, and psychological flexibility, and low levels of rumination. Comparatively, in a study that examined the relationship between religious orientation and mental health symptoms among students, extrinsic orientation emerged as the only significant predictor for hostility, anxiety and depression (Kuyel et al., 2012).

As such, social support can be categorized as an extrinsic value of religious practices while experiences of spirituality can be categorized as intrinsic religiosity. Consequently, extrinsic religiosity (as illustrated by social support) did not have as significant effect as intrinsic religiosity (as illustrated by spirituality) in the current study. However, further research is needed to explore this hypothesis by explicitly using intrinsic and extrinsic religiosity scales in a Muslim population.

Study limitations

The findings of this study should be considered in light of its limitations. First, the cross-sectional nature of the study design prevents conclusions from being drawn regarding causality. Longitudinal research designs are therefore needed to better understand how these constructs operate and relate to one another over time. Experimental designs can also be helpful to further understand any causal relationships between the constructs. For example, to further understand the relationship between mindfulness, prayer and well-being, future research might consider a comparative trial on the effects of prayer as usual versus a mindfulness-based prayer condition on well-being, and determine if combining mindfulness with prayer enhances well-being over and beyond prayer as usual.

Second, the overrepresentation of women in the sample is a potential concern. Given that research shows there are differences between men and women on religious and spiritual matters (Loewenthal, MacLeod, & Cinnirella, 2002), it would have been preferable to have a more equitable gender split. Studies with predominantly Christian samples report higher levels of religious involvement, prayer, and overall religiosity in women compared to men. (Beit-Hallahmi & Argyle, 1997) However, these findings could be culture specific. Many religious traditions, including Islam, differentiate between the religious obligations of men and women. For example, attendance at a place of religious worship may be less frequent for Muslim women compared to men as women are not required to pray with a congregation while men are (Adam, 1991). Furthermore, Muslim women are not permitted to enter a mosque, perform salah prayer, or fast during menstruation (Adam. 1991). As a result, preliminary studies show some gender differences in the frequency of religious observance between Muslim men and women; notably higher frequency of prayer, mosque attendance and study of religious text among men (Loewenthal et al., 2002). In addition, survey response studies have shown that women are more likely to participate in online surveys than men (Curtin et al., 2000; Moore & Tarnai, 2002; Singer et al., 2000). Therefore, a sample that includes an equal number of men and women would make findings more generalizable and also allow for further exploration of gender differences.

Implications

The current study's finding that prayer exerts its beneficial effects by increasing optimism and spirituality has practical significance in understanding how contemplative practices promote well-being in the Muslim community as well as in counselling settings. Canada is a culturally and religiously diverse country and religion is important to many ethnic

groups. While some mental health professionals may not fully appreciate the religious dimension in the context of client care due to their own personal biases or lack of training (McCullough, 1999; Pargament, 1997), the majority acknowledge the relevance of religious belief systems and practices in their work with clients (Rosmarin, Forester, & Shassian, 2015). The increased recognition of the relevance of religion in the provision of mental health care may stem, in part, from the growing empirical evidence of a generally salutary effect of religion and spirituality on psychological health, evidence that many individuals use religious coping during times of stress and adversity (Ai et al., 2006; Braun-Lewensohn, 2014; Hill, Hawkins, Raposo, & Carr, 1995; Carvalho et al., 2014; Pargament, 1997), and recognition that many clients, especially those with religious affiliation and those who place a high value on spiritual/religious involvement, have a preference for religious and spiritually integrated care (Rosmarin et al., 2015).

There has also been interest in developing and evaluating therapies for devout clients that explicitly incorporate religious and spiritual practices and teachings (Pargament, Murray-Swank, & Tarakeshwar, 2005). For example, interventions that blend faith-based principles and practices such as prayer, Bible reading, and ritual with CBT have been found to be effective for depression (Rasic, 2011), anxiety (Rasic et al., 2011), eating disorders (Weisman et al., 2010), and schizophrenia, (Mohr et al., 2006). Meta-analytic studies have found the benefits of religious or spiritual adaptations of psychotherapy, although there is some variability in the effect size across studies (Smith, Bartz, & Richards, 2007). These studies also conclude that patients who are religiously committed show greater improvement with spiritually-integrated psychotherapies than with secular therapies. The few studies that have been conducted in Muslim clients also report the benefits of integrating religious practices in psychotherapy (Razali et al., 1998; Azhar, Varma, & Dharap, 1994). For example, Muslim patients with anxiety and depression who

received religious-based psychotherapy responded significantly faster to treatment than those who received standard treatment (Razali, et al., 1998). Similarly, Muslim patients with generalized anxiety disorder receiving religious psychotherapy showed significantly more rapid improvement in anxiety symptoms than those who received supportive psychotherapy only (Azhar et al., 1994). The mechanisms underlying the positive effects of religious based psychotherapy on mental health in Muslim patients is not known and should be the target of future research.

Despite the importance of prayer in Islamic practices, Muslims remain an unexplored population in the study of contemplative practices and well-being. Therefore, understanding prayer and how it relates to well-being is critical to implementing intervention and prevention strategies to build resilience to negative mental health outcomes in this religious group. A high prevalence of mental health problems including post-trauma stress, depression, and anxiety has been documented in Muslim refugees from the Middle East (Hosin, Moore, & Gaitanou, 2006; Miller et al., 2006; Mofidi et al., 2008). Furthermore, prayer and other forms of religious coping were identified as one of the most frequently used coping strategies for refugees (Suleiman-Hill & Thompson, 2012). Accordingly, treatment models that incorporate or teach spiritual and mindful prayer could be used in mental health practices for Muslim clients, especially refugees. It would be worthwhile for future research to compare the relative efficacy of prayer-based treatments on mental health to treatment as usual, or a combination of both prayer and treatment as usual in Muslim clients seeking mental health care. Identifying mechanistic pathways through which a prayer-based intervention improves psychological health is also important to explore. Results from the current study suggest that optimism and spirituality may be two mediators of interest for future mechanistic studies of prayer-based interventions.

In sum, mental health practitioners working with Muslim clients need to develop a greater awareness of the relationship between religious practices and well-being. While this study focused on prayer, and suggests that enhancing optimism and spirituality is a key "ingredient' of the effect of prayer on well-being, it is conceivable that other practices of Islam improve well-being via similar mechanisms.

General Discussion

As a contemplative practice, prayer has been shown in research to have many positive mental health benefits (Ismail & Desmukh, 2012; Lawler-Row & Elliot, 2016; Meisenhelder & Chandler, 2000). However, the mechanism by which prayer influences well-being is poorly understood. Accordingly, the aim of the current study was to examine potential mediators of the relationship between prayer and well-being. First, it was hypothesized that higher levels of frequency and duration of prayer would be associated with higher levels of subjective well-being. Throughout the levels of analyses conducted, results revealed that frequency of prayer had a more significant associations on well-being than duration of prayer. In fact, duration of prayer was not significantly associated with satisfaction with life. This finding extends those of Zeng and colleagues (2015), who also found that time spent on meditation practice does not significantly predict well-being. Overall, findings from the current sample lend support to the hypothesis that contemplative practice leads to sustained psychological well-being (Lacaille et al., 2018) and that among Muslims, a regular continuous practice yields more benefit than spending long periods of time praying a single prayer.

Second, it was hypothesized that higher levels of frequency and duration of prayers would predict increased levels of mindfulness, spirituality, optimism, and social support. Results confirmed that higher prayer frequency significantly predicted higher levels of mindfulness, optimism, spirituality, and social support. However, higher levels of duration of prayer only predicted higher levels of social support and spirituality and did not predict levels of mindfulness or optimism. Social support was found to correlate with both frequency and duration of prayer. The more frequently participants prayed the more they reported experiencing social support from their religious community. It could be that those who prayed frequently also prayed in a group with other worshipers and so experienced social support through the act of praying in a congregation. Though it is beyond the scope of this study, it is also suggested that frequent prayers are an indication of frequent acts of worship such as going to mosque and attending sermons and learning circles, which could explain the correlation between prayer and social support. Additionally, research focusing on church attenders found that attenders who engaged in private devotional activities were more likely to provide and receive social support (McClure, 2013).

Lastly, it was hypothesized that mindfulness, spirituality optimism, and social support would individually mediate the relationship between frequency and duration of prayer and well-being. First, although mindfulness was related to prayer and well-being, it was not found to be a significant mediator in the relationship between prayer and well-being. This finding seems to be consistent with previous research. For example, Levy (2018) found that mindfulness did not mediate the relationship between obligatory forms of prayer and well-being, while Ijaz and colleagues (2017) found strong positive associations between frequency of prayer and mindfulness. Thus, it seems that though mindfulness is not a mechanism that explains the relationship between prayer and well-being, it is significantly associated with both variables. It is conceivable that mindfulness is a separate variable that needs to be intentionally practiced while praying. Furthermore, it may be the intentional practice of mindfulness in prayer that contributes to increased well-being in an individual. This hypothesis is supported by research by Ijaz and colleagues (2017) who found that those who prayed with mindfulness had significantly better mental health compared with those who prayed without mindfulness. Unfortunately, the current study did not include a measure of state mindfulness such as the State Mindfulness Scale (Tanay & Berstein, 2013). Future research would benefit from evaluating both trait and state mindfulness and its role in Muslim forms of prayer.

Positive psychology research has long considered optimism as an index of well-being. Optimism has also been shown to play a major role in faith and religious practices. Past research based on Christian-based faith practices have recognised optimism as a mediator in the relationship between religious practices and well-being (Ai at al, 2004). Extending past findings, the current study showed evidence of the same pathway in a Muslim population, suggesting that . optimism may explain some of the effects of Muslim prayer on well-being. Theoretically, prayer can be conceptualized as an act of hope and optimism (Ai et al., 2004). Verses in the Quran encourage followers to have a hopeful and optimistic attitude towards God; “for indeed with hardship comes ease” (94:5); “Do not worry, Verily God is with us. The findings of this study suggest that optimism may be an important mechanism that underlies the relationship between prayer and well-being. In other words, through frequent daily prayers, worshippers develop increased levels of optimism, which in turn, increases well-being. However, although the mediation analysis was statistically significant, optimism explained a small portion of the variance in the relationship between prayer and well-being.

Not surprisingly, spirituality was also found to be a mediator of the relationship between prayer and well-being. Past research has established the importance of spirituality in contemplative practices and well-being. The current study showed that spirituality was significant in all pathways investigated. Spirituality was the only factor investigated that mediated the pathways between frequency of prayer and well-being and between duration of prayer and well-being. This is unsurprising given the plethora of past research that establishes spirituality as essential in increasing the benefits of contemplative practices. When comparing secular to spiritually-based meditations, there is evidence that spiritual meditations are significantly more effective in pain tolerance (Wachholtz et al., 2017), improved mental health, and subjective well-being (Koenig et al., 2001). In a meta-analysis comparing various meditation and relaxation practices, increased health and mental health effects were found more often after the use of spiritually- based practices than secular meditation techniques (Alexander et al., 1991).

Since secular meditation grew out of spiritual traditions, researchers have questioned whether the observed positive effects of meditation could be due, in part, to its inherent spirituality (Brown, 2016). In an experimental study comparing spiritual to secular practices, daily spiritual experiences increased even in those who practiced secular forms of meditation (Wascholtz & Paragmont, 2005). Furthermore, through a mediation analysis, Greeson et al., (2011) found that increased daily spiritual experiences following the Mindfulness-Based Stress Reduction program may partially explain improved mental health. The current study further adds to the literature and supports the notion that it is spirituality inherent in prayer that is an important mediator of the relationship between prayer and well-being. Prayer (i.e. salah), in Islamic teachings, is conceptualized as the individual's connection to God. Ibn-Alqaiim, a theologian of Islamic faith, states that 'one stands between God's hands when praying' to illustrate the importance of one's connection to God during prayer. This study shows that it is this spiritual connection that one experiences when praying that makes the relationship between the act of prayer and well-being possible.

The findings of this study should be considered in light of its limitations. First, the cross-sectional nature of the design prevents conclusions from being drawn regarding causality. Longitudinal research designs are needed to better understand how these constructs operate and

relate to one another through time. Experimental designs can also be helpful to further understand any causal relationships between the constructs.

Second, the overrepresentation of women in the sample is a potential concern. Given that research shows there are differences between men and women on religious and spiritual matters (Loewenthal et al., 2002), it would have been preferable to have a more equitable gender split to make findings more generalizable and also allow for further exploration of gender differences.

Conclusion

The findings of this study give important insight on prayer's role on Muslim's subjective well-being. Prayer is a pillar of Islamic belief and practices and many Muslims report praying regularly. This study was one of the few studies conducted that explores the relationships between prayer and well-being in a Muslim sample. Findings suggest that regular and continuous obligatory and voluntary prayer practice predicts higher levels of well-being and that this effect may be partially explained by spirituality and optimism. Findings from this study also suggest that frequent and continuous prayer practice predicts higher levels of trait mindfulness which predicts higher levels of satisfaction with life. These results could be further developed into spiritual based interventions specifically designed for Muslim patients. Future research will need to focus on longitudinal research designs and experimental designs to further understand the relationships between prayer, subjective well-being, mindfulness, spirituality, social support, and optimism.

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