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A Decade Apart: Reciprocal Links Between Spiritual Mindfulness, Sense of Control, and Well-Being in Middle and Older Age Americans

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Abstract

Evidence suggests that spiritual mindfulness, sense of control, and psychological well-being are associated. However, less research has examined these connections over long time periods in middle-aged and older adults, who generally experience less control in their lives. The present study investigated the long-term reciprocal links between a spiritual form of mindfulness, sense of control, and psychological well-being in middle-aged and older adults, across a decade. Middle-aged and older adult ($N = 2878$; $M_{age} = 54.94$ years; 55.3% female) data from the Midlife in the US (MIDUS) study were collected across two time points spanning a decade ($M_{interval} = 9.09$ years). A cross-lagged panel model with spiritual mindfulness, sense of control, and psychological well-being was estimated using full information maximum likelihood estimation to investigate cross-time and reciprocal associations. Reciprocal associations were found between spiritual mindfulness and sense of control and between sense of control and psychological well-being. There was no reciprocal association between spiritual mindfulness and psychological well-being; spiritual mindfulness at the earlier time point was associated with psychological well-being a decade later, but the reverse path was not significant. The study's findings suggest permanence in these spiritual mindfulness associations over long period of time. The results also suggest that sense of control may be important when we consider spiritual mindfulness and well-being in middle-aged and older adults.

Keywords Spiritual mindfulness · Psychological well-being · Sense of control · Aging adults · MIDUS

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Introduction

Control over actions and outcomes naturally lessens as part of the aging process (Lachman et al., 2009; Wolinsky et al., 2003). As adults grow older, they increasingly encounter life circumstances beyond their control. Older adults may experience changes such as declines in physical and cognitive health, new environments (e.g., nursing homes), and the loss of close friends and family (Lachman & Firth, 2004; Williamson & Christie, 2012). Although middle-aged adults tend to have higher sense of control than older adults (Robinson & Lachman, 2017), sense of control is still relevant to midlife. Research suggests that reports of physical limitations are more detrimental to sense of control in middle adulthood, compared to older adulthood (Infurna & Infurna, 2017). Moreover, middle-aged adults can begin to feel reduced control over relationships with their children or experience role overload, limiting their ability to engage in personally meaningful activities (Clark-Plaskie & Lachman, 1999; Lachman & Firth, 2004). Middle-aged adults may also experience a loss of perceived control as they feel the need to disengage from important life goals, such as finding a romantic partner or having children (Heckhausen et al., 2010). Across both midlife and older adulthood, less control has been linked to poorer well-being (Lachman & Firth, 2004; Ryff et al., 2015; Williamson & Christie, 2012). It is, thus, important to identify factors that may associate with middle-aged and older adults' well-being and sense of control as they age.

Mindfulness—the awareness of and attention to the present with an attitude marked by non-reactivity and non-judgment (e.g., Bishop et al., 2004; Kabat-Zinn, 2003)—may be one such factor. Mindfulness facilitated by religiosity or spirituality may be particularly relevant as these beliefs have been deemed to be important for aging adults' sense of control and well-being (Jackson & Bergeman, 2011). Although there is some evidence that mindfulness, sense of control, and well-being are connected (Hamarta et al., 2013), little work has examined these connections over long periods of time or bidirectionality among these associations in middle-aged and older adult populations. This research is needed to understand the potential permanence of beneficial mindfulness effects in aging individuals. Further, given the pertinence of sense of control during the aging process, its long-term connections with mindfulness and well-being are important to consider. Thus, the present study evaluated the longitudinal associations between spiritual mindfulness, sense of control, and psychological well-being (PWB) in middle-aged and older adults across two time points approximately a decade apart.

Spiritual Mindfulness and Sense of Control

The concept of mindfulness originated from Eastern Buddhist traditions and was initially conceived as a state of being involving attention to the present, non-attachment, and moral action toward others (Gethin, 2015). Although other conceptualizations of mindfulness have been proposed, Western social-cognitive perspectives of mindfulness appear most relevant to sense of control in aging adults. From

this perspective, mindfulness is a form of cognitive flexibility comprised of being present-oriented, perceptive of diverse perspectives and environmental contexts, and guided (but not dictated) by rules and routines. Such cognitive flexibility was thought to allow mindful individuals to perceive novelty and note distinctions, even within routine experience (Langer, 1989; Langer & Moldoveanu, 2000). Some mindfulness scholars suggest that sense of control should be considered when examining the link between mindfulness and adaptive outcomes, especially in middle-aged and older adults whose capacity to control certain domains of their lives (e.g., declining physical and cognitive health, changing relationships with their children) diminishes with age (Clark-Plaskie & Lachman, 1999; Lachman & Firth, 2004; Lachman et al., 2009; Wolinsky et al., 2003). Sense of control is described as one's belief regarding the extent to which they can direct internal states and influence external circumstances (Lachman & Weaver, 1998; Pearlin & Schooler, 1978). The cognitive flexibility offered by mindfulness has been suggested to allow an individual to effectively adapt to changes and view every moment as an opportunity to modify actions and reactions, thereby facilitating sense of control (Elkins-Brown et al., 2017). On the other hand, less mindful individuals are said to depend on established expectations and routines. In such states, individuals may view their experience as fatalistically stable or unchangeable, which obstructs sense of control (Pagnini et al., 2016).

Mindfulness can be derived from religious or spiritual beliefs, and research suggests that spiritually mindful approaches may be useful for aging adults (Rudaz et al., 2018, 2020). Spiritual mindfulness involves the cognitive flexibility inherent to mindfulness while incorporating interconnectedness, defined as a perception of connection with all life and harmony with others (Zinnbauer et al., 1999). It has been suggested that spiritual interconnectedness may emphasize the awareness and receptivity of others (Corpuz, 2024). Middle-aged and older adults with less control over their lives may particularly benefit from spiritual mindfulness as feelings of interconnectedness transcend physical limitations and might allow individuals to have greater personal control over perceptions of interpersonal connection (Ellison & Burdette, 2012). Despite the theorized connections between spiritual mindfulness and sense of control in aging adults, one cross-sectional study found nonsignificant associations between these constructs in middle-aged and older adults (Imel & Dautovich, 2018). With inconsistent theory and evidence, further research on these constructs is needed to extend our understanding of the proposed association over longer periods of time.

Spiritual Mindfulness, Sense of Control, and Psychological Well-Being

Moving beyond the direct associations between spiritual mindfulness and sense of control, research and theory point to a link among both of these constructs and well-being. For example, in early work with nursing home residents, increased sense of control produced physical health benefits and decreased mortality at an 18-month follow-up (Rodin & Langer, 1977). Researchers later found that those with heightened sense of control and mindfulness had better physical health (Pagnini et al., 2016). However, with these research findings focused on physical health in older

adults, the relevance of the theorized links for both middle-aged and older adults' psychological well-being (PWB) is not well known.

Although physical health is important, it is essential to assess the soundness of this mechanism for the psychological aspects of well-being. Psychological well-being is a type of eudaimonic well-being (i.e., focusing on optimal functioning in life and self-fulfillment). Carol Ryff (Ryff, 1989) conceptualized PWB as consisting of six elements: *Autonomy*, a sense of independence and resistance to strict adherence to status quo; *environmental mastery*, the ability to influence environments to be personally suitable; *personal growth*, the achievement of prior and current developmental goals; *positive relations with others*, having warm and trusting interpersonal relationships; *purpose in life*, comprehension of one's purpose and life's meaning; and *self-acceptance*, holding positive attitudes toward oneself and one's past actions.

Like physical health, research indicates that a sense of control augments PWB (Villarreal & Heckhausen, 2016). Additionally, mindfulness has been consistently found to associate with greater PWB (Brown & Ryan, 2003; Tang et al., 2019). Mindfulness specifically derived from spirituality may also be expected to be linked with PWB. According to scholars, spirituality fosters a sense of purpose and meaning in life, which are core elements of spiritual experience. (Paul Victor & Treschuk, 2020). Spiritual purpose and meaning have been found to be positively associated with eudaimonic well-being in prior empirical research (Ivtzan et al., 2013). One study explored spiritual mindfulness in a sample of cancer survivors aged 35–84 years old and found that spiritual mindfulness was linked to increased personal growth, an aspect of PWB (Rudaz et al., 2018). Nonetheless, to the authors' knowledge, no research has examined the connections between spiritual mindfulness, sense of control, and PWB among a general sample of middle-aged and older adults. Additionally, the permanence of these connections across long periods of time, over several years, has not been empirically tested (Solhaug et al., 2019). For middle-aged and older individuals who may experience less control (Lachman & Firth, 2004; Lachman et al., 2009; Wolinsky et al., 2003), it is critical to determine how spiritual mindfulness, sense of control, and PWB are longitudinally linked.

Covariates

A substantial body of literature highlights key demographic covariates in the link between mindfulness, sense of control, and PWB, including age, biological sex, socioeconomic status, and mental health concerns (Fava, 2012; Hohaus & Spark, 2013; Kaplan et al., 2008; Kwon, 2021; Lachman & Firth, 2004; Mahlo & Windsor, 2021; Ross & Mirowsky, 2002; Wang et al., 2022; Zábó et al., 2024). For example, mindfulness has been found to increase with age, possibly because older adults, recognizing the time-limited nature of life, are more motivated to fully experience the present moment (Hohaus & Spark, 2013; Johnson et al., 2024; Mahlo & Windsor, 2021). In terms of biological sex, research shows that males report a greater sense of control than females, a difference often attributed to societal inequities, such as restricted employment opportunities for women (Lachman

& Firth, 2004; Ross & Mirowsky, 2002). Increased socioeconomic status, often measured as income, has also been associated with a greater sense of control, likely due to access to resources that enable exploration and choice (Kraus et al., 2012; Kwon, 2021). Finally, mental health concerns are strongly linked to reduced well-being, as symptoms can interfere with one's ability to flourish and function adaptively (Fava, 2012; Zábó et al., 2024). Given these associations, we controlled for the demographic factors of age, biological sex (*female; male*), annual household income, and past-year mental health professional visit (*no visits; at least one visit*), in our analysis of the links between spiritual mindfulness, sense of control, and PWB.

The Current Study

To address these gaps in the research, we investigated the connections between spiritual mindfulness, sense of control, and PWB in middle-aged and older adults across two time points, approximately a decade apart. Of particular interest were the cross-lagged and reciprocal associations between constructs, as these would point to sustained associations among constructs across time, as well as bidirectionality at least across the two time points. See Fig. 1 for a conceptual model. Based on the aforementioned prior literature, we expected that spiritual mindfulness at time one (*T*1) would be associated with sense of control at time two (*T*2), and sense of control at *T*1 would be associated with PWB at *T*2. Furthermore, based on previous empirical research, it was also expected that spiritual mindfulness at *T*1 would be associated with PWB at *T*2. Although much research points to these unidirectional effects, no tests reciprocal effects have been conducted to date among these constructs. As such, we had no specific hypotheses for reciprocal associations between these variables and maintained an exploratory approach for these links.

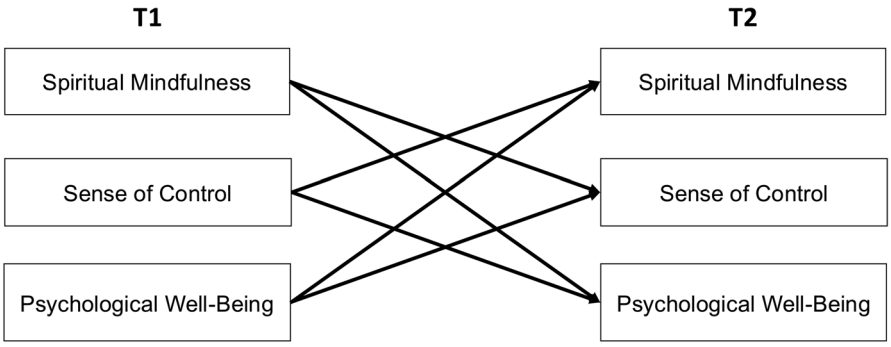


Fig. 1 Conceptual model for connections between spiritual mindfulness, sense of control, and psychological well-being at *T*1 and *T*2

Materials and Methods

Participants

The current study used data from the Midlife in the US (MIDUS) project, funded by the National Institute on Aging. In this project, middle-aged and older adult American participants were recruited as part of a longitudinal investigation of health and well-being. Participants were interviewed over the phone and administered self-report questionnaires that queried demographic information, physical health, mental health, and well-being at three time points across 20 years. The current study utilized open-access data from MIDUS-II (2004–2006; *T*1; Ryff et al., 2021) and MIDUS-III (2013–2014; *T*2; Ryff et al., 2019), which contained data of relevance to the proposed analysis. The MIDUS project received ethical approval from Education and Social/Behavioral Sciences and the Health Sciences Institutional Review Boards at the University of Wisconsin-Madison, USA. All participants provided written informed consent prior to participation in the MIDUS study.

The present sample consisted of 2878 middle-aged and older adults who completed both time points and were interviewed 8–11 years apart ($M = 9.09$ years, $SD = 0.53$ years). See Table 1 for participant demographic characteristics.

Table 1 Participant demographic characteristics ($N = 2878$)

Variable	*T*1 *M* (SD) or *n* (%)	T2 *M* (SD) or *n* (%)
Age	54.94 (11.16)	64.04 (11.16)
Sex (Female)	1591 (55.3%)	–
Ethnoracial identity		
White	2654 (92.2%)	–
Black/African American	106 (3.7%)	–
Native American or Alaska Native	39 (1.4%)	–
Asian	12 (0.5%)	–
Other	57 (2.0%)	–
Household income[a]	$75,671.75 ($61,084.97)	$88,116.65 ($73,972.58)
Marital Status		
Married	2083 (72.4%)	1923 (66.8%)
Not Married	792 (27.5%)	951 (33.0%)
Education		
Did not complete high school	124 (4.3%)	–
High school	694 (24.1%)	–
Some college or college degree	1469 (51%)	–
Some graduate or graduate/professional degree	585 (20.2%)	–

Time 1 (*T*1) data were collected between 2004 and 2006. Time 2 (*T*2) data were collected between 2013 and 2014

[a]Income measured in USD

Measures

Spiritual Mindfulness

Spiritual mindfulness was measured using the 9-item MIDUS mindfulness scale (Ryff et al., 2021). The MIDUS team utilized Langer and Moldoveanu's (2000) conceptualization of mindfulness to generate the items. The scale assessed mindfulness with respect to one's religious or spiritual conviction (e.g., "Because of your religion or spirituality, do you try to be…"; "more engaged in the present moment"; "more receptive to new ideas"). Items are answered on a five-point scale from 1—*strongly agree* to 5—*strongly disagree*. Responses are reverse coded and summed so that higher total scores represent greater spiritual mindfulness. The reliability of the MIDUS mindfulness scale has been supported by previous research (e.g., Sesker et al., 2016). For the present sample, interitem reliability as measured by Cronbach's alpha (α) was 0.94 for $T1$ and 0.96 for $T2$.

Sense of Control

Sense of control was measured using two subscales adapted from Lachman and Weaver's (1998) and Perlin and Schooler's (1978) Mastery Scale, consisting of personal mastery and perceived constraints. Personal mastery represents one's sense of efficacy in achieving goals and objectives. Perceived constraints are characterized by the extent to which one believes there are obstacles outside of their control that interfere with goal achievement. The personal mastery subscale has four items (e.g., "I can do just about anything I really set my mind to") and the perceived constraints subscale has eight items (e.g., "There is little I can do to change the important things in my life"). Participants responded to questions on a seven-point scale (ranging from 1—*strongly agree* to 7—*strongly disagree*) and items were coded such that greater scores were indicative of a greater sense of personal mastery and a reduced sense of perceived constraints. A total sense of control score is derived by calculating the average of the personal mastery and perceived constraint items, with higher scores indicating higher sense of control. Previous research has suggested good reliability for these scales (Zilioli et al., 2017). Interitem reliability for the total sense of control score in the current sample was satisfactory; α at $T1$ was 0.87 and α at $T2$ was 0.87.

Psychological Well-Being

Psychological well-being was measured using the Psychological Well-Being Scale, a 42-item scale created by Carol Ryff for use in the MIDUS project. The measure was adapted from Ryff (1989b) and has six subscales, each with seven items: autonomy (e.g., "My decisions are not usually influenced by what everyone else is doing"); environmental mastery (e.g., "In general, I feel I am in charge of the situation in which I live"); personal growth (e.g., "I have the sense that I have developed a lot as a person over time"); positive relations with others (e.g., "Most people see me as loving and affectionate"); purpose in life (e.g., "I have a sense of direction and

purpose in life"); and self-acceptance (e.g., "In general, I feel confident and positive about myself"). All items are answered on a seven-point scale from 1—*strongly agree* to 7—*strongly disagree* with some items reverse-coded so that higher scores represent higher PWB. In the present study, a composite overall PWB score was generated by taking the average of the responses across all subscale items as was done in previous studies (e.g., Bassi et al., 2017; Urban-Wojcik et al., 2022). The Psychological Well-Being Scale has been shown to be reliable (Urban-Wojcik et al., 2022). For the current study, interitem reliability was satisfactory for the PWB overall score; α at $T1$ was 0.93, α at $T2$ was 0.94.

Analytic Plan

Autocorrelative and cross-lagged associations between spiritual mindfulness, sense of control, and PWB were examined across $T1$ and $T2$ using path modeling techniques in Mplus version 8.1 (Muthén & Muthén, 2017).[1] Prior to running the model, the missingness of the longitudinal data was estimated using Little's (1988) Missing Completely at Random (MCAR) test. The MCAR test was significant at $p < .001$, suggesting that the data were not missing completely at random. To account for missing data, the path model was conducted using full information maximum likelihood (FIML) estimation. Satisfactory model fit was evaluated by conventional fit statistics as follows: chi-square (χ^2) p value greater than .05, comparative fit index (CFI) greater than 0.90, standardized root-mean-square residual (SRMR) less than 0.07, and root-mean-square error of approximation (RMSEA) less than 0.08 (Hooper et al., 2008). We note that the χ^2 coefficient was expected to generate a $p < .05$ because the statistic is influenced by sample size. Thus, the χ^2 value was not weighed heavily in the evaluation of model fit.

Covariates

A number of covariates were chosen for inclusion in the cross-lagged panel model: participant age, biological sex (0 = *male,* 1 = *female*), annual household income, and whether the participant had visited a mental health professional in the past year (0 = *no visits*, 1 = *at least one visit*). The income variable was considered a proxy measure of socioeconomic status, and the mental health professional variable was considered a proxy measure of mental health concerns within the sample. These demographics were chosen as covariates because previous research indicates that these variables significantly associate with at least one of the variables of interest (i.e., mindfulness, sense of control, or PWB; Alispahic & Hasanbegovic-Anic, 2017; Navarro-Carrillo et al., 2020; Wolinsky et al., 2003).

[1] The authors are aware of and acknowledge the strengths of using latent factors in cross-lagged panel models. However, in this study, including latent factors led to model non-convergence. Thus, we report on a path model using only observed factors.

Table 2 Means, standard deviations, intercorrelations, of the variables of interest across both time points

Variable	1	2	3	4	5	6
1. Spiritual mindfulness *T*1	–					
2. Spiritual mindfulness *T*2	.58	–				
3. Sense of control *T*1	.09	.08	–			
4. Sense of control *T*2	.07	.11	.64	–		
5. PWB *T*1	.20	.18	.73	.56	–	
6. PWB *T*2	.17	.20	.56	.74	.72	–
M (SD)	34.09 (6.19)	33.76 (6.94)	5.60 (0.97)	5.45 (1.02)	5.55 (0.82)	5.50 (0.83)

$N = 2878$. PWB = Psychological Well-Being, *T*1 = data from MIDUS-II (2004–2006), *T*2 = data from MIDUS-III (2013–2014). All correlations were significant at $p < .001$. Possible ranges: 9–45 for spiritual mindfulness, 1–7 for sense of control, and 1–7 for PWB

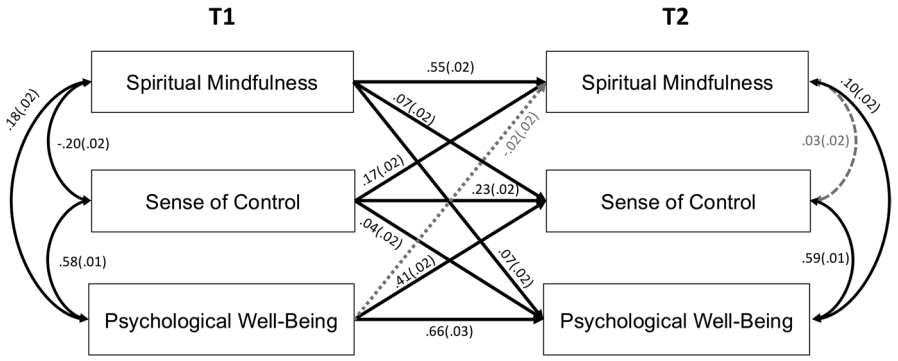


Fig. 2 Path model of the associations between spiritual mindfulness, sense of control, and psychological well-being at *T*1 and *T*2. *Note.* All coefficients are standardized

Results

Table 2 contains the means, standard deviations, and intercorrelations of mindfulness, sense of control, and PWB at *T*1 and *T*2. All correlations were significant at $p < .001$ due to the large sample size represented. See Supplementary Material for intercorrelations across males and females.

Path Model

The cross-lagged path model showed satisfactory fit, $\chi^2(6) = 49.28$, $p < .001$; CFI = .992; SRMR = .018; RMSEA = .050 (90% C.I. = .038, .063). As depicted in Fig. 2, all autoregressive paths were significant in the model indicating that scores on spiritual mindfulness, sense of control, and PWB at *T*1 were positively associated with their respective values at *T*2 (βs from 0.23 to 0.66; $p < .001$). Reciprocal

associations between spiritual mindfulness and sense of control, and sense of control and PWB were found. Thus, heightened spiritual mindfulness at *T*1 was significantly associated with heightened sense of control at *T*2 ($\beta = 0.07$, SE = 0.02, $p < .001$), and greater sense of control at *T*1 was significantly associated with greater spiritual mindfulness at *T*2 ($\beta = 0.17$, SE = 0.02, $p < .001$). Greater sense of control at *T*1 was significantly linked to increased PWB at *T*2 ($\beta = 0.04$, SE = 0.02, $p = .024$), and increased PWB at *T*1 was significantly linked to greater sense of control at *T*2 ($\beta = 0.41$, SE = 0.02, $p < .001$). A reciprocal association between spiritual mindfulness and PWB was not found as greater spiritual mindfulness at *T*1 was significantly associated with increased PWB at *T*2 ($\beta = 0.07$, SE = 0.01, $p < .001$) but the association between PWB at *T*1 and spiritual mindfulness at *T*2 was not significant ($\beta = -0.02$, SE = 0.02, $p = .427$).

Covariates

There were a number of significant associations found between the covariates (i.e., age, biological sex, annual household income, and past-year mental health professional visit) and the outcome variables (i.e., *T*2 spiritual mindfulness, sense of control, and PWB) within our cross-lagged panel model. Greater age was linked to heightened spiritual mindfulness ($\beta = 0.04$, SE = 0.02, $p = .020$) and reduced sense of control ($\beta = -0.14$, 0.02, $p < .001$). Females tended to have higher spiritual mindfulness ($\beta = 0.12$, SE = 0.02, $p < .001$), and PWB ($\beta = 0.03$, SE = 0.01, $p = .041$) than males. Greater household income was significantly associated with increased sense of control ($\beta = 0.07$, SE = 0.02, $p < .001$) and psychological well-being ($\beta = 0.12$, SE = 0.02, $p < .001$). Finally, those who had at least one mental health professional visit in the past year tended to have heightened spiritual mindfulness ($\beta = 0.03$, SE = 0.02, $p = .030$), but a reduced sense of control ($\beta = -0.13$, SE = 0.02, $p < .001$), and PWB ($\beta = -0.11$, SE = 0.01, $p < .001$) than those who did not.

Discussion

The objective of the present study was to examine the long-term links between spiritual mindfulness, sense of control, and PWB among middle-aged and older adults. Reciprocal associations were found between spiritual mindfulness and sense of control and between sense of control and PWB. No reciprocal association was found between spiritual mindfulness and PWB; although spiritual mindfulness at *T*1 was significantly associated with PWB at *T*2, the path from PWB at *T*1 to spiritual mindfulness at *T*2 was not significant.

Theorists have long maintained that mindful attention allows an individual to flexibly approach the present, which decreases the tendency to fixate on uncontrollable experiences and provides the capacity to engage in self-directed behavior (Elkins-Brown et al., 2017; Langer & Moldoveanu, 2000; Pagnini et al., 2016). Without a mindful approach, one may view the world as rigid and uncontrollable, which is especially pertinent for aging adults' whose sense of control naturally declines over time (Lachman et al., 2009; Wolinsky et al., 2003). Spiritual mindfulness

specifically may support one's perception of control over interpersonal relationships with others, as this type of mindfulness emphasizes interconnectedness (Corpuz, 2024). Although there is some evidence of daily links between mindfulness and sense of control (Smith & Neupert, 2022), no work to date has tested long-term, reciprocal associations among these constructs. Our findings point to the effects of spiritual mindfulness on sense of control and vice versa over a decade-long period, suggesting sustained links over many years for middle-aged and older adults.

Interestingly, in the current path model, the strength of the standardized coefficient representing the link between the sense of control at *T*1 to spiritual mindfulness at *T*2 was greater than the coefficient representing the reverse association. Little work has addressed whether sense of control may be related to mindfulness over time. However, it is conceivable that those with a low sense of control may be predisposed to behaving less mindfully, in their everyday lives (Pagnini et al., 2016). More specifically, middle-aged and older adults who feel they have little control over their lives might be more likely to approach the world based on expectations rather than mindfully notice the novelties and subtleties of their experience. Additionally, lower sense of control has been found to be linked with decreased perceptions of community connectedness in later life (de Quadros-Wander et al., 2014). Thus, similarly, aging adults with a lower sense of control might be expected to have reduced perceptions of the interconnectedness inherent to spiritual mindfulness. Overall, however, the present findings suggest spiritual mindfulness and sense of control may elevate simultaneously over time. More research is needed to experimentally evaluate the directionality of this association and determine whether sense of control is a stronger predictor of mindfulness than the reverse.

Aside from sense of control, spiritual mindfulness at *T*1 also predicted PWB at *T*2, echoing past works (e.g., Brown & Ryan, 2003; Tang et al., 2019). While spiritual mindfulness predicted later PWB, PWB did not predict later spiritual mindfulness. Although causality cannot be surmised on the basis of our study, our findings may indicate a longitudinal unidirectionality to this connection, at least for middle-aged and older adults. Cross-lagged panel path models with mindfulness and other aspects of well-being have been estimated for Chinese youth with inconsistent results. In line with our findings, a previous study similarly determined that mindfulness was related to youths' life satisfaction eight months later, but the reverse link was not significant (Ma & Xiang, 2023). Another study, however, found a significant reciprocal association between youths' mindfulness and emotional well-being across six months (Lee et al., 2022). The authors cited the mindfulness-to-meaning theory (Garland & Fredrickson, 2019) as supportive of their findings, suggesting that the cognitive flexibility offered by mindfulness allows for less-biased and habitual views of the world, thereby protecting against rigid negative schemas and facilitating more positive affective states and psychological well-being. This increased well-being and positivity, in turn, has been argued to further support mindful ways of thinking (Garland & Fredrickson, 2019). Interestingly, our findings align only with the first part of this model, highlighting the potential of mindfulness skills development or mindfulness training as a tool for boosting well-being in midlife and older adulthood. Our findings also support the line of research suggesting that the purpose and meaning derived

from spirituality—and, by extension, spiritual mindfulness—are linked to eudaimonic well-being (i.e., PWB; Ivtzan et al., 2013). More research is needed to confirm whether there truly exists bidirectionality in the links between mindfulness and PWB.

A reciprocal association between sense of control and PWB was discovered in our findings. This result is complementary to a study by Park and colleagues (2022) that established a reciprocal link between sense of control and general well-being across five years in a sample of middle-aged and older adult German, American, and Chinese participants. The association between sense of control and PWB confirms both theory and research findings on adult samples (e.g., Langer & Moldoveanu, 2000; Villarreal & Heckhausen, 2016). As we age, objective control over actions and outcomes decreases over time. With this loss of objective control comes decreased perceptions of control. Sustaining sense of control is, thus, a major aspect of successful aging and promotes the well-being of middle-aged and older adult individuals (Lachman et al., 2009; Ryff et al., 2015). The present results reinforce this assertion and further suggest that PWB may in turn link to increased perceptions of control.

Indeed, the strongest path in the present model was the connection between PWB at *T*1 to sense of control at *T*2. Park and colleagues (2022) also found that general well-being was more strongly linked to later sense of control than the reverse, albeit the difference in standardized coefficients was not as pronounced as in the current study. This finding may be explained in part by the silver lining effect (e.g., Wesnousky et al., 2015); aging adults experiencing high PWB may be better able to identify a positive aspect to a given negative situation, such as exerting some sense of control over what they are able to control rather than cognitively lingering on aspects completely outside of their control. Other researchers have proposed that mood and well-being may act as a *resource* that can be utilized to enhance one's self-esteem or assess one's abilities (Park et al., 2022). Thus, PWB, comprehended as a resource, may help to boost beliefs about one's control.

The cross-lagged paths specified in the current model supported our hypotheses that spiritual mindfulness at *T*1 was associated with sense of control at *T*2, and sense of control at *T*1 was associated with PWB at *T*2. Although directionality cannot be implied given the nature and limitations of our tested model, the reciprocal nature of the findings allows for an initial consideration of directional arrangements of these variables. The model showed that spiritual mindfulness was a unidirectional predictor of PWB. However, our model also indicated that PWB was a stronger predictor of sense of control than the reverse and sense of control was a stronger predictor of spiritual mindfulness than the reverse. Our findings offer insight into how well-being might be fostered in middle-aged and older adults. If we consider that the path between sense of control and spiritual mindfulness was found to be stronger than the reverse, perhaps practices that boost a middle-aged or older adult's sense of control could have the added benefit of increasing spiritual mindfulness; together, sense of control and spiritual mindfulness could support well-being. However, such ideas cannot be substantiated until future research directly investigates the directional and mechanistic explanations for the connections between mindfulness, sense of control, and well-being.

Implications for Practice and Future Research

Aging is often accompanied by a range of uncontrollable physical, mental, social, and environmental changes that can impact an individual's mental health and well-being (Lachman & Firth, 2004; Williamson & Christie, 2012). To ease the burden of these developmental changes in aging adults, it is imperative to find ways to bolster one's sense of control and well-being. In recent years, there has been a magnification of interest in mindfulness as a practice that benefits middle-aged and older adults (e.g., Mahlo & Windsor, 2021), and the amount of research supporting the beneficial effects of mindfulness has expanded concurrently (Lee et al., 2021). The current work adds to this knowledge base, suggesting that spiritual mindfulness may have a twofold benefit for middle-aged and older adults, associated with both an increased sense of control and greater well-being. This result helps to justify spiritual mindfulness as an interventional focus for aging adults, especially those experiencing challenges with autonomy and control. Spirituality has been integrated into adult care with positive outcomes (de Diego-Cordero et al., 2022; Ukpo et al., 2024). For example, religious and spiritual counseling in geriatric settings has been shown to enhance psychological well-being, improve mental health, and reduce feelings of loneliness and despair in older adults (Ukpo et al., 2024). Based on the findings of the present study, perhaps promoting mindfulness through one's spiritual or religious faith may offer benefits that extend beyond spirituality alone. This study also found that sense of control was linked with PWB, further supporting the importance of control perceptions during aging. Future research investigating the effectiveness of spiritual mindfulness-based interventions for middle-aged and older adult individuals may thus consider implementing exercises that explicitly bolster perceptions of control in addition to mindfulness skills.

The present work also serves as a foundation for understanding whether mindfulness may have lasting effects on psychological outcomes; a question that remains largely unanswered in the literature (Solhaug et al., 2019). In our study, spiritual mindfulness at *T*1 was associated with sense of control and PWB around 10 years later, implying a degree of residual effect in the beneficial outcomes of mindfulness. Our finding supports the premise that implementing mindfulness-enhancing practices and interventions in adulthood may pay dividends, even in the distant future. Further work testing the long-term lasting effects of mindfulness, particularly using an experimental or intervention design, with adult populations may be fruitful for bolstering our understanding of these effects.

Limitations and Future Directions

There are several limitations of the present study that must be considered. The sample was limited in terms of diversity and socioeconomic status; a large proportion of participants were White (89.1%) and earned considerably more than the US median income at the start of the MIDUS-II study (in 2004, $44,684 USD; Fronczek, 2005). The restricted diversity of the sample may be partially explained by the recruitment methods. In the MIDUS study, a Random Digit Dial technique was used, in

the hopes of creating a national sample of Americans. With this recruitment technique in mind, there are a few explanations for sparse diversity. Firstly, the original MIDUS dataset that MIDUS-II and MIDUS-III were based on was collected in 1996, when ethnoracial diversity was lacking in the USA in comparison to today (Hall et al., 2016). Furthermore, systemic socioeconomic inequities (Banaji et al., 2021) decrease the probability that those of diverse ethnoracial identities have the same access to a personal phone number. The original MIDUS sample also consisted of siblings of the Random Digit Dial respondents. Therefore, any initial paucity of ethnoracial representation would have been amplified. The lack of diversity means that the present findings cannot be generalized to other, more ethnoracially and socioeconomically diverse middle-aged and older adult populations. Indeed, in past research, reciprocal longitudinal links between sense of control and physical health were found among American but not Japanese individuals (Toyama & Fuller, 2021). Thus, future research should, for example, investigate the mindfulness, sense of control, and well-being across diverse groups to ascertain the consistency in these reciprocal associations.

Another limitation of the present work was that only two time points were represented in the current study. Having three or more time points would have been preferred, especially in the context of assessing directional assertions. With three or more time points, a longitudinal meditation analysis could have been performed with mindfulness at *T*1, sense of control at *T*2, and PWB at a third time point. Additionally, having a third time point of data would have allowed for use of a random intercept cross-lagged panel model, which has been proposed to offer more nuanced within- and between-person cross-lagged effects within a sample (Hamaker, 2023). This type of analysis would allow researchers to approach accurate conclusions about the directionality and complexity of these effects.

Another limitation concerns the current study's path model. The variables of interest could not be represented by latent factors due to non-convergence. Latent factors account for random measurement error while observed scores are theorized to be influenced by measurement error to a greater extent (Borsboom, 2008). The mode of data collection, differences in understanding of survey questions, and participant response biases are all potential sources of measurement error. Therefore, a replication of the present work with latent factors for the target constructs would provide a stronger conclusion regarding the reciprocal nature of these links.

Conclusion

This study examined the longitudinal, reciprocal connections between spiritual mindfulness, sense of control, and PWB across a decade in middle-aged and older adults. Spiritual mindfulness and sense of control and sense of control and PWB were reciprocally associated while spiritual mindfulness was linked to PWB, but PWB was not linked to spiritual mindfulness across time. The findings suggest that there is an amount of permanence in these effects over long periods for aging adults. The results also provide some insight into the understanding of spiritual mindfulness in aging adults, suggesting that it may support sense of control and

well-being. In addition, spiritual mindfulness may link to heightened psychological well-being across time, but not vice versa, thereby putting spiritual mindfulness in the spotlight of positive psychological interventions for middle-aged and older adults.

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Data Availability The data presented in the manuscript come from the Midlife in the US (MIDUS) study, a large, publicly available dataset of American adults. The data can be accessed via the MIDUS website (https://midus.wisc.edu/). This study was not preregistered.

Declarations

Conflict of interest The authors report that there are no relevant competing interests to declare.

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