

Original Research Report

The Associations Between Dispositional Mindfulness, Sense of Control, and Affect in a National Sample of Adults

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Abstract

Objectives: The present study examined factors associated with better affective experiences across the life span, extending existing research to older adults. Specifically, we investigated dispositional mindfulness and sense of control as predictors of affect and sense of control as a potential mediator of the mindfulness— affect associations.

Method: We hypothesized that dispositional mindfulness mediated by sense of control would predict affective outcomes. An archival analysis of a sample of 4,962 adults, aged 28 to 84 years, was conducted using the Midlife in the U.S. national survey (MIDUS-II). Exploratory analyses were conducted with age as a moderator in all associations.

Results: Greater dispositional mindfulness predicted more positive and negative affect irrespective of age. Dispositional mindfulness did not predict sense of control. Greater sense of control predicted more positive and less negative affect, and these associations were significantly moderated by age. Sense of control did not mediate the dispositional mindfulness— affect associations.

Discussion: The present study extends existing research on the dispositional mindfulness—positive affect association to older ages. The sense of control and positive and negative affect associations are enhanced and buffered, respectively, at older ages, indicating that the association between control and affect differs by age.

Keywords: Aging—Life span—MIDUS-II

Older adults often face many challenges including changing health (i.e., decline in muscle strength and mobility; [Samson et al., 2000](#)), losses within their social network ([Hansson, Hayslip, & Stroebe, 2007](#)), bereavement of spouses ([Whitbourne & Meeks, 2011](#)), and other stressors that negatively affect psychological well-being ([Rejeski, 2008](#)). However, contrary to popular thought, older adults often meet these stressors with emotional resilience ([Gooding, Hurst, Johnson, & Tarrier, 2012](#)). How is it that despite confronting stressor after stressor, older adults still report better well-being compared with their younger counterparts?

The present study examines traits associated with positive affective experiences across the life span, extending research into older adulthood. Prior research has identified

benefits of dispositional mindfulness for affective outcomes across younger, middle age, and, to a lesser extent, older adult samples. Additionally, several studies examine the link between mindfulness and self-control prior to older adulthood, but to our knowledge, no studies examine the association between mindfulness and sense of control across the life span. Sense of control has been implicated as a predictor of affect throughout the literature and has the potential to be a mechanism by which mindfulness predicts affect. The present study assesses the extent to which dispositional mindfulness and sense of control predict positive affect and negative affect in a community-dwelling, nationally representative sample of adults. Additionally, sense of control is investigated as a mediator in the association between an

individual's dispositional mindfulness and reported affect. Lastly, given insufficient research and/or inconsistent findings within these associations, age is explored as a moderator of all associations.

Dispositional Mindfulness and Affect

Mindfulness is defined as a state of attentiveness and awareness to the present (Brown & Ryan, 2003). Being mindful is associated with feelings of curiosity, openness, and acceptance (Bishop et al., 2004). Generally, mindfulness includes awareness and openness to the present moment, but Langer and Moldoveanu (2000) further extend the definition of mindfulness to include an environmental and problem-solving approach, which presents individuals with enhanced sensitivity to all of their available options.

Overall, previous research has well-defined dispositional mindfulness as beneficial for affective outcomes among young and middle-aged adults. However, few studies have examined the benefits for affective outcomes in older adults, as well as age differences in the magnitude of this association. Specifically, greater dispositional mindfulness is associated with greater affect regulation, lower levels of unpleasant affect, and increased positive affect in younger and middle-aged adult samples (Brown & Ryan, 2003). Higher dispositional mindfulness also predicts lower rates of reaction to threatening emotional stimuli, greater emotional acceptance and awareness, and an increased ability to fix unpleasant moods in the early and middle adulthood (Brown & Ryan, 2003; Brown, Ryan, & Creswell, 2007; Creswell, Way, Eisenberger, & Lieberman, 2007). Importantly, dispositional mindfulness has been implicated as a possible mediator in the relationship between increases in age and decreases in negative affect in a sample of adults aged 18 to 85 years, suggesting that greater age is associated with more mindfulness, which, in turn, predicts less negative affect (Raes, Bruyneel, Loeys, Moerkerke, & De Raedt, 2013).

Unfortunately, few dispositional mindfulness studies have focused exclusively on older adults or have examined age differences in the mindfulness—*affect* association. It is warranted to examine the potential benefits of dispositional mindfulness in a sample including this population, as higher levels of dispositional mindfulness may be beneficial in a time of transition. State mindfulness has previously been shown helpful, as adults aged 20 through 80 years reported increased mindfulness practice allowed them to accept the unchangeable situations and physical discomfort in their own lives by encouraging engagement with alternative goals (Morone, Lynch, Losasso, Liebe, & Greco, 2012). Dispositional mindfulness has been shown to act as a buffer between life stressors and poorer mental health in older adults (de Frias & Whyne, 2014). Focusing on the present, which is inherent in dispositional mindfulness or can be achieved through mindfulness practice, shows the potential to enhance overall well-being in older adults

(Ryan & Deci, 2000). The present study extends existing research by examining the mindfulness—*affect* association in a sample of adults from mid to late life and by exploring age differences in this association.

Mindfulness and Sense of Control

Conceptual and empirical support exists suggesting that dispositional mindfulness may promote stronger control *over the self* in younger adult samples (self-control; Barnes, Brown, Krusemark, Campbell, & Rogge, 2007; Lakey, Campbell, Brown, & Goodie, 2007). Less is known about the role of dispositional mindfulness in promoting a sense of control *over one's life* across the adult life span. In a qualitative analysis of a small sample of middle-aged to older adult breast cancer survivors, participants engaging in mindfulness practice noted that mindfulness helped them to regain and sustain mindful control in their lives and become aware of what was within their power to change (Dobkin, 2008). However, to our knowledge, the association between dispositional mindfulness and sense of control over one's life has yet to be examined in any age group. Maintaining a present focus, which serves to interrupt rumination of uncontrollable factors (Epel, Daubenmier, Moskowitz, Folkman, & Blackburn 2009), may heighten an individual's sense of control by decreasing the focus on perceived constraints and increasing sense of mastery. Given the lack of research investigating the mindfulness—*sense of control* association across the adult life span, the present study investigates this association and explores potential age differences.

Sense of Control and Affect

The feelings of control adults experience within their own lives are also associated with affective outcomes. Sense of control is a latent variable comprised of personal mastery and perceived constraints scores (Infurna & Mayer, 2015; Ward, 2013). Personal mastery refers to how able an individual feels to execute his/her goals, whereas perceived constraints are the uncontrollable obstacles or factors an individual believes exist as a barrier to achieving his/her goals (Lachman & Weaver, 1998b; Skinner, 1996). Compared with someone with a lesser sense of control, a person with greater sense of control is more apt to think that he/she can influence life events and, to some extent, control what occurs within his/her own life (Ward, 2013).

Previous research evidences a relationship between perceived control and affect across the life span, with the majority of research focusing on middle and older age. In adults (aged 44–70 years, $M = 60$) transitioning from work to retirement, perceived control varied with positive and negative affect (Bye & Pushkar, 2009) with greater perceived control predicting higher positive affect and lower negative affect. In a sample of older adults aged 70 through 103 years, sense of control was positively associated with positive affect (but not negative affect) cross-sectionally

and with both positive and negative affect longitudinally (Kunzmann, Little, & Smith, 2002). Additionally, older adults with a stronger sense of perceived control reported higher positive affect and lower negative affect than those reporting a lower sense of perceived control (Tighe, Dautovich, & Allen, 2014).

Although less research exists that explicitly examines the relationship between sense of control and affect while also including younger adults in the sample, several studies have examined related affective concepts. For example, greater sense of control has been linked to improved psychological functioning and better well-being in studies including the entirety of the adult life span (Lachman, Neupert, & Agrigoroaei, 2011; Lachman, Rosnick, & Röcke, 2009; Neupert, Almeida, & Charles, 2007), which may translate to improved affective experiences for older, middle-aged, and younger adults. Additionally, research supports the decline of sense of control over time with increased age (Lachman & Weaver, 1998; Lachman, Rosnick, & Röcke, 2009; Mirowsky, 1995).

Existing research has examined sense of control and psychological well-being associations from a life span perspective, but, to our knowledge, no study has directly examined the association between sense of control and affect with younger, middle-aged, and older adult participants. Thus, exploring age differences in this association is warranted.

Sense of Control as a Mechanism Linking Mindfulness and Affect

Dispositional mindfulness is linked to improved outcomes of affect for younger and middle-aged individuals, but through which mechanism? Higher levels of mindfulness promote focus on the present and help individuals to reduce rumination over factors in life that may seem uncontrollable (Epel et al., 2009), which conceptually seems like mindfulness is providing the individual with a heightened sense of control over factors they previously viewed as out of their control. Therefore, we believe it is warranted to examine sense of control as a mechanism underlying the mindfulness— affective association.

Hypotheses

The first specific aim of the study was to examine the association between dispositional mindfulness and affect. Given previous research linking dispositional mindfulness to affect regulation and better affective outcomes, we hypothesized that higher levels of dispositional mindfulness would predict lower levels of negative affect and higher levels of positive affect. As the literature on dispositional mindfulness and affect regulation is not well-established for all age groups, we also tested an exploratory moderation of the relationship by age.

Our second aim was to examine the association between mindfulness and sense of control. Given related research examining state mindfulness and self-control, we

hypothesized that greater dispositional mindfulness would predict a greater sense of control. Existing literature does not adequately define the relationships between dispositional mindfulness and sense of control across age groups, so we also explored a moderation of this association by age.

Third, we sought to examine the association between sense of control and affect. Previous research indicates that a higher sense of control is associated with more positive affect and less negative affect. Consistent with prior research, we hypothesized that a higher sense of control would be associated with lower levels of negative affect and higher levels of positive affect. Although prior research has examined changes in sense of control across age groups in relation to well-being and other psychological factors, we sought to extend this research by explicitly examining the sense of control and affect association within a sample of middle-aged, older, and younger adults by testing an exploratory moderation of this relationship by age.

Our fourth aim was to evaluate whether mindfulness indirectly predicts affect through sense of control. We hypothesized that sense of control would mediate the mindfulness and affect associations.

Method

Participant Selection

Participants were part of a national longitudinal study of health and well-being funded by the National Institute on Aging—the Midlife in the United States (MIDUS-II) study. Participants were assessed through phone interviews and self-administered questionnaires. MIDUS-II is comprised of five Projects, with a total sample population of 5,900. For this study, we used data from Project One ($n = 4,963$). The final participant sample consisted of 4,962 adults aged 28 to 84 years ($M = 55.43$, $SD = 12.45$ years). On average, participants were primarily female and White (Table 1). When asked to rate their overall physical health in comparison with most others their age as somewhat better, about the same, somewhat worse, or much worse, on average participants rated their health as somewhat better. Table 1 provides complete demographic information.

Measures

MIDUS-II Mindfulness Scale

Dispositional mindfulness was measured by the MIDUS-II Mindfulness Scale, which is based on Langer and Moldoveanu's (2000) conception of mindfulness. The scale includes 9 items as a part of the self-administered questionnaire that begins by asking "Because of your religion or spirituality, do you try to be:." Sample items include "more engaged in the present moment" and "more likely to perceive things in new ways." Participants responded using a Likert-type scale: (1) Strongly agree; (2) Agree; (3) Neither agree nor disagree; (4) Disagree; or (5) Strongly disagree.

Table 1. Participant Demographic Variables

Variable	N	Range	Mean (SD)
Age	4962	28–84	55.43 (12.45)
Self-rated health	4962	1–5	2.46 (1.02)
Mindfulness	3967	9–45	34.04 (6.14)
Sense of control	4016	1–7	5.52 (1.00)
Positive affect	4015	2–10	7.01 (1.38)
Negative affect	3991	2–10	3.05 (1.05)
Extraversion	4012	1–4	3.11 (0.57)
Openness	3975	1–4	2.90 (0.54)
Neuroticism	4009	1–4	2.07 (0.63)
Spirituality	3998	2–8	6.43 (1.57)
Religiosity	3997	7–28	19.64 (5.57)

Variable	N	Percentage
Sex		
Female	2,647	53.3
Male	2,316	46.7
Race		
White	4,473	90.1
Black/African American	229	4.6
Asian	27	0.5
Native American	77	1.6
Native Hawaiian/Pacific Islander	7	0.1
Other	126	2.5
Don't know	19	0.4
Refused	5	0.1

The MIDUS-II Mindfulness Scale was developed as a part of the “subjective religiosity” component of the survey (Einolf, 2013) and has been shown reliable ($\alpha = .94$; Sesker, Súilleabháin, Howard, & Hughes, 2016).

MIDUS-II Sense of Control Scale

The MIDUS-II Sense of Control Scale is comprised of two subscales: Personal Mastery and Perceived Constraints. Personal Mastery assesses how capable a person feels of accomplishing his/her goals, whereas Perceived Constraints measures a person’s idea of the amount of uncontrollable obstacles standing in the way of his/her goals (Lachman & Weaver, 1998). The Personal Mastery subscale contains 4 items and the Perceived Constraints subscale is comprised of 8 items. Both subscales contain items from Pearlin and Schooler’s (1978) Mastery Scale and items created by Lachman and Weaver (1998). Sample Personal Mastery items include: “I can do just about anything I really set my mind to” and “when I really want to do something, I usually find a way to succeed at it.” Sample Perceived Constraints items include: “there is little I can do to change the important things in my life” and “I often feel helpless in dealing with the problems of life.” Participants respond on a Likert-type scale: (1) Strongly agree; (2) Somewhat agree; (3) A little agree; (4) Neither agree or disagree; (5) A little disagree; (6) Somewhat disagree; or (7) Strongly disagree. The scales have been found valid (Lachman & Weaver, 1998; Pearlin & Schooler, 1978; Prenda & Lachman, 2001)

and reliable (Personal Mastery Scale, $\alpha = .73$; Perceived Constraints, $\alpha = .86$; and overall Perceived Control scale, $\alpha = .87$).

MIDUS-II positive and negative affect measure

Negative affect was measured using 11 items. The first 6 items come from the MIDUS-II Negative Affect Scale (e.g., “During the past 30 days, how much of the time did you feel: so sad nothing could cheer you up, nervous, restless or fidgety, hopeless, that everything was an effort, and worthless?”). The remaining 5 items are Negative adjectives from the Positive and Negative Affect Scale (PANAS): afraid, jittery, irritable, ashamed, and upset.” Participants rate to what extent they experienced each mood during the past month: (1) All of the time; (2) Most of the time; (3) Some of the time; (4) A little of the time; or (5) none of the time. Higher scores are indicative of higher levels of negative affect. Positive affect was measured using 10 items. The first 6 items come from the MIDUS-II Positive Affect Scale: “During the past 30 days, how much of the time did you feel: cheerful, in good spirits, extremely happy, calm and peaceful, satisfied, and full of life?” The remaining 4 items are Positive adjectives from the PANAS: enthusiastic, attentive, proud, and active.” Participants used the same Likert-type scale to answer as with the negative affect measure. Higher scores indicate higher levels of positive affect. Both measures have been shown valid (Mroczek & Kolarz, 1998; Walen & Lachman, 2000) and reliable (Negative Affect Scale, $\alpha = .85$; PANAS Negative adjectives, $\alpha = .80$; Positive Affect Scale, $\alpha = .90$; and PANAS Positive adjectives, $\alpha = .86$).

Personality traits

Neuroticism, openness to experience, and extraversion were measured using self-descriptive adjectives selected for use within MIDUS-II. Neuroticism adjectives include “moody, worrying, nervous, and calm,” whereas extraversion adjectives are “outgoing, friendly, lively, active, and talkative.” Openness to experience adjectives include “creative, imaginative, intelligent, curious, broad-minded, sophisticated, and adventurous.” Participants were asked to rate how well the adjectives describe them using the following options: (1) A lot; (2) Some; (3) A little; and (4) Not at all. The personality trait measures have been shown reliable (Neuroticism items, $\alpha = .74$; Extraversion items, $\alpha = .76$; and Openness to experience items, $\alpha = .77$) and valid (Staudinger, Fleeson, & Baltes, 1999).

Religious identification and spirituality

The MIDUS-II questionnaire uses 7 items to assess participant religious identification including: “How religious are you?” and “How important is religion in your life?” The MIDUS-II questionnaire uses 2 items to assess participant spirituality: “How spiritual are you?” and “How important is spirituality in your life?” Participants rate their answers items on a Likert-type scale: (1) Very; (2) Somewhat; (3) Not very; or (4) Not at all.

Design and Analyses

Given known associations with affect, we controlled for sex (Raes et al., 2013), self-evaluated physical health (Stephoe, Leigh, & Kumari, 2011), and race (Stephoe et al., 2011) in all analyses. As personality characteristics may also influence an individual's dispositional mindfulness, we also controlled for extraversion, openness to experience, and neuroticism in all analyses. Neuroticism and extraversion have previously been used as covariates in studies examining dispositional mindfulness (Creswell et al., 2007; Seear & Vella-Brodrick, 2013). Also, because an individual's level of openness to experience can influence dispositional mindfulness and *vice versa*, given that a core component of mindfulness is openness to novel stimuli, openness to experience was also included as a covariate. Lastly, given the preface of the Mindfulness scale referencing religion or spirituality, we assessed the level of religion or spirituality reported by participants using the MIDUS Religious Identification and Spirituality scales (see Measures section). Only a small minority of participants ($n = 41$) identified as either "not at all religious" or "not at all spiritual," suggesting that 97% of all participants possessed at least some level of spirituality or religiosity. Consequently, we did not include religion or spirituality as a covariate in the analyses.

SPSS version 21 was used for all analyses. Using G*Power (Faul, Erdfelder, Buchner, & Albert-Georg, 2009) to run power calculations, we determined that for a mediation analysis with 10 predictors, a sample size of at least 822 participants was needed to predict a small effect size of 0.02 at an α level of 0.05, with a power of 0.80.

We used Hayes' SPSS PROCESS macro to examine all aims and followed the guidelines recommended by Hayes (2013). Moderated mediation models were run for both positive and negative affect as outcomes, testing for age as a moderator of all paths. Based on these analyses, age was a significant moderator for only the control—affect path of the model. As a result, we report the results for moderated mediation models with age moderating the control—affect paths (Figures 1 and 3). Using the PROCESS macro, we performed a nonparametric bootstrapping procedure to calculate a confidence interval (CI) around the indirect effect to test for mediation. If 0 lands outside of the CI, mediation has occurred, whereas if 0 is within the CI, there is no evidence for mediation (Hayes, 2013). The mean indirect effect was computed across 5,000

bootstrap samples to represent the final indirect effect estimate. We used direct effect output from the mediation analyses to analyze aims 1 through 3. Significant moderation effects were interpreted through graphing the effects.

Results

Mindfulness, Sense of Control, and Positive Affect

Using moderated mediation with age as a moderator of the control—positive affect path (Figure 1), mindfulness significantly predicted positive affect (Table 2), such that higher levels of mindfulness were associated with higher levels of positive affect across ages. Mindfulness was not a predictor of sense of control (Table 2). Sense of control significantly predicted positive affect, such that higher levels of sense of control were associated with higher levels of positive affect (Table 2), and this effect was conditional on age, 95% CI $[-.0057, -.0006]$. Sense of control did not mediate the effect of mindfulness on positive affect, 95% CI $[-.00002, .00001]$.

Graphing the age moderation of the sense of control and positive affect association shows that the association between sense of control and positive affect is enhanced with age, such that older adults report more positive affect in association with sense of control in comparison with younger adults, even at lower levels of sense of control (Figure 2).

Mindfulness, Sense of Control, and Negative Affect

Using moderated mediation with age as a moderator of the control—negative affect path (Figure 3), mindfulness significantly positively predicted negative affect (Table 3), but did not predict sense of control (Table 3). Sense of control significantly predicted negative affect, such that higher levels of sense of control were associated with lower levels of negative affect (Table 3), and this association was significantly moderated by age, 95% CI $[.0032, .0072]$. Sense of control did not mediate the effect of mindfulness on negative affect, 95% CI $[-.00002, .00003]$.

Graphing the age moderation of the sense of control and negative affect association shows that the relationship between sense of control and negative affect is exacerbated at younger ages, such that younger adults with a lower sense of control report greater negative affect compared with older adults reporting the same level of sense of control. This moderation appears to be strongest at lower levels of control; at higher levels of sense of control, the association is more similar across age groups (Figure 4).

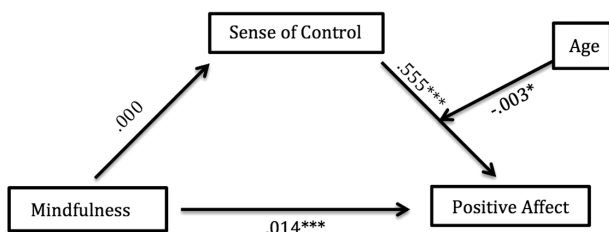


Figure 1. Moderated mediation model for positive affect as the outcome variable with unstandardized coefficients displayed for each path. * $p < .05$. ** $p < .01$. *** $p < .0001$.

Discussion

The results from the present study indicate that dispositional mindfulness directly predicts affective outcomes

Table 2. Coefficients for Moderated Mediation Model With Positive Affect as Outcome

Predictor	Outcome					
	M (Sense of Control)			Y (Positive Affect)		
	Coeff.	SE	<i>p</i>	Coeff.	SE	<i>p</i>
Constant	5.19	.127	.000	2.44	.450	.000
X (Mindfulness)	.000	.002	.937	.014	.003	.000
M (Sense of control)	—	—	—	.555	.077	.000
W (Age)	—	—	—	.030	.007	.000
Sense of control × Age	—	—	—	-.003	.001	.017
C ₁ Sex	-.100	.028	.000	.034	.034	.505
C ₂ Race	-.023	.015	.114	.018	.018	.169
C ₃ Extraversion	.321	.028	.000	.034	.034	.000
C ₄ Openness	.329	.029	.000	.036	.036	.342
C ₅ Neuroticism	-.460	.022	.000	.029	.029	.000
C ₆ Self-reported health	-.196	.014	.000	.017	.017	.000
	<i>R</i> ² = .317			<i>R</i> ² = .467		
	<i>F</i> (7, 3865) = 256.675, <i>p</i> < .001			<i>F</i> (10, 3862) = 338.77, <i>p</i> < .001		

Note: Labels within the table reflect the following: X refers to the independent variable, Y refers to the dependent variable, M refers to the mediator, W refers to the moderator, and C_x refer to covariates.

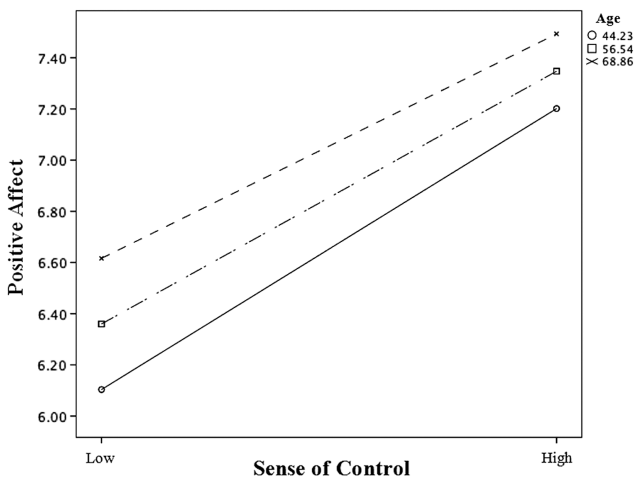


Figure 2. Graph of the association between sense of control and positive affect moderated by age. High and low sense of control represent ± 1 SD of the mean. Older and younger age represents ± 1 SD of the mean and middle age represents the mean sample age. At all levels of control, older adults reported the highest positive affect and younger adults reported the lowest.

across all ages. Greater dispositional mindfulness predicted more positive affect, which supports previous research showing that higher dispositional mindfulness predicts higher positive affect (Bishop, 2002; Brown & Ryan, 2003). Additionally, the present study extends existing research by showing that the dispositional mindfulness—positive affect association is not dependent on age and applies to older adults in addition to younger and middle-aged adults. The results for the dispositional mindfulness—negative affect association—were also uniform across ages. However, dispositional mindfulness

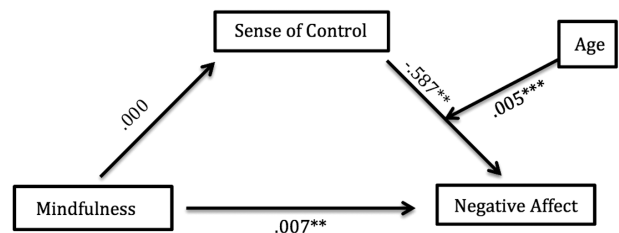


Figure 3. Moderated mediation model for negative affect as the outcome variable with unstandardized coefficients displayed for each path. **p* < .05. ***p* < .01. ****p* < .001.

was positively associated with negative affect regardless of age, indicating that lower dispositional mindfulness predicted lower levels of negative affect within our sample. This result conflicts with previous research that linked higher dispositional mindfulness with less unpleasant affect (Brown & Ryan, 2003; Brown et al., 2007) and suggested dispositional mindfulness may mediate the relationship between increased age and lower negative affect (Raes et al., 2013). However, given the relatively low levels of negative affect reported by our sample, greater dispositional mindfulness was not associated with high levels of negative affect. As such, we may have observed results more consistent with prior research if our sample had reported higher levels of negative affect. Also, perhaps greater mindfulness in our sample reflects greater self-awareness of affective states and allowed participants to more accurately report their affective states. Since we found differing associations between dispositional mindfulness and positive and negative affective outcomes, future research may consider combining positive and negative affect into a ratio (e.g., the positivity ratio; Diel,

Table 3. Coefficients for Moderated Mediation Model With Negative Affect as Outcome

Predictor	Outcome					
	M (Sense of Control)			Y (Negative Affect)		
	Coeff.	SE	<i>p</i>	Coeff.	SE	<i>p</i>
Constant	5.18	.127	.000	4.63	.348	.000
X (Mindfulness)	.000	.002	.883	.007	.002	.003
M (Sense of Control)	—	—	—	-.587	.059	.000
W (Age)	—	—	—	-.038	.006	.000
Sense of Control × Age	—	—	—	.005	.001	.000
C ₁ Sex	-.096	.028	.001	.026	.026	.312
C ₂ Race	-.023	.015	.127	.018	.014	.195
C ₃ Extraversion	.323	.028	.000	-.129	.027	.000
C ₄ Openness	.328	.029	.000	.161	.028	.000
C ₅ Neuroticism	-.463	.022	.000	.696	.023	.000
C ₆ Self-reported health	-.197	.014	.000	.168	.014	.000
	$R^2 = .319$			$R^2 = .454$		
	$F(7, 3845) = 257.183, p < .001$			$F(10, 3842) = 319.278, p < .001$		

Note: Labels within the table reflect the following: X refers to the independent variable, Y refers to the dependent variable, M refers to the mediator, W refers to the moderator, and C_x refer to covariates.

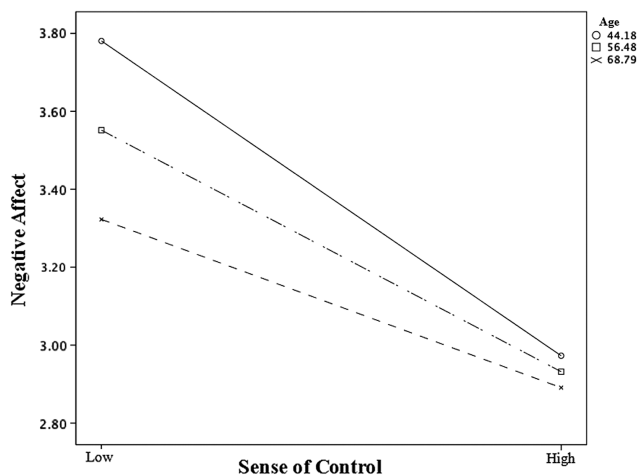


Figure 4. Graph of the association between sense of control and negative affect moderated by age. High and low sense of control represent ± 1 SD of the mean. Older and younger age represents ± 1 SD of the mean and middle age represents the mean sample age. The biggest age differences were observed at a lower level of sense of control with older adults reporting the lowest negative affect and younger adults reporting the highest.

Hay, & Berg, 2011), to fully understand the role of dispositional mindfulness in affectively complex individuals.

Dispositional mindfulness did not significantly predict sense of control as hypothesized, and participants' beliefs about their control over external events did not link dispositional mindfulness and affect. Previous research has linked dispositional mindfulness with another type of control (self-control; Barnes et al., 2007; Lakey et al., 2007) and state mindfulness with the type of control assessed in this study (sense of control; Dobkin, 2008). This study

was the first to investigate the dispositional mindfulness and sense of control association across ages. Dispositional mindfulness may be a better predictor of internal sense of control and less relevant for sense of control that focuses on perceived control over external stimuli and situations. Specifically, previous research linked dispositional mindfulness to internal control using measures focused on self-control: "I am good at resisting temptation," "I wish I had more self-discipline," and so on (Lakey et al., 2007; Self-Control Scale from Tangney, Baumeister, & Boone, 2004). However, the sense of control examined within our study asked about external situations that may be beyond an individual's control: "Other people determine most of what I can and cannot do," "What happens in my life is often beyond my control," and so on (Lachman & Weaver, 1998; Pearlin & Schooler, 1978). The external versus internal sense of control discrepancy may also explain why sense of control was not a mediator of the dispositional mindfulness and affect associations. Perhaps control of one's own internal state (i.e., what the individual can actually influence) would serve as a more effective mechanism linking dispositional mindfulness and affect. Future research is needed to explore the distinction between internal and external sense of control and how dispositional mindfulness may differentially affect these states.

Consistent with prior research, greater sense of control predicted lower levels of negative affect and higher levels of positive affect (Tighe, Dautovich, & Allen, 2014). However, these associations were moderated by age. Even when older adults reported a lower sense of control, the association with negative affect was weaker compared with their younger counterparts. Given that previous research suggests older adults experience an overall decreased sense of

control compared with other groups (Lachman & Weaver, 1998; Lachman, Rosnick, & Röcke, 2009; Mirowsky, 1995), it is encouraging that a lower sense of control may not be as detrimental for the affective outcomes of older individuals. Additionally, given the lower levels of negative affect typically reported by older adults compared with younger adults (Carstensen, Isaacowitz, & Charles, 1999; Carstensen, Mayr, Pasupathi, & Nesselrode, 2000; Mroczek & Kolarz, 1998), it is possible we are observing a “ceiling effect” where the amount of higher negative affect to be predicted by control is limited for older adults. Conversely, the age interaction for positive affect suggests that the sense of control—positive affect association is enhanced at older ages. Even though the older age group is vulnerable to environmental constraints, social limitations, and changing health that can make life seem uncontrollable (Mirowsky, 1995), the presence of sense of control can have even greater benefits for older adults’ positive affect. In sum, the moderation of the control—affect associations by age suggest older adults accrue the least risk associated with a lower sense of control and report the greatest benefits of a higher sense of control.

Limitations and Future Directions

By conducting an archival analysis of nationally sampled data, we were limited in our selection of measures. In particular, the use of the MIDUS-II mindfulness measure is a limitation, because measure has not been widely used and lacks evidence for validity. Additionally, the scale began with the statement, “Because of your religion or spirituality, do you try to be ...” which may not have been applicable to all of the participants. However, as only a small minority of participants identified as either “not at all religious” or “not at all spiritual,” the religion/spirituality preface likely did not affect our ability to detect participant dispositional mindfulness. Despite the scale’s limitations, it should also be noted that the scale itself was developed from Langer and Moldoveanu’s (2000) definition of mindfulness, which encompasses several facets of the mindfulness construct (e.g., engagement in the present moment, environmental sensitivity, and the use of different perspectives in problem-solving).

It is also important to note that our study only examined dispositional mindfulness. The inability to study state mindfulness and/or daily mindfulness practices within this sample limits the applicability of the results to all mindfulness practices. Other limitations include the lack of racial/ethnic and religious diversity, which can affect the generalizability of the results to more diverse and nonreligious samples. Because the older adult population is an increasingly heterogeneous population, future research is needed with a more diverse sample of participants.

Finally, because the study was cross-sectional, we cannot make directional assumptions or causal inferences about the associations between mindfulness, control, and affect. For the present study, given that dispositional mindfulness

is a trait and less likely to change based on circumstances (e.g., an individual’s sense of control), we were interested in examining the ability of dispositional mindfulness to predict sense of control. Future, preferably longitudinal, research is needed to explore the temporal associations between these constructs.

Potential Implications

By 2030, approximately 20% of Americans will be aged 65 years and older (Colby & Ortman, 2014), so the need to extend research on traits associated with positive affective experiences across the life span to the older adult population is imperative. As the American population ages, more individuals will face changes associated with aging, regardless of whether such changes are positive or negative. For many older adults, changes in health, living situations, and even family dynamics may be out of their control and seem debilitating (Rejeski, 2008). According to the results from the present study, even when confronted by less control, older adults can experience more positive affect and less negative affect compared with younger adults, reinforcing the greater affective advantage with older age (Carstensen et al., 2000; Mroczek & Kolarz, 1998). Furthermore, dispositional mindfulness, which can allow an individual to discover new meaning in an area they cannot change and help them to embrace the present (Bishop et al., 2004; Brown & Ryan, 2003; Langer & Moldoveanu, 2000), was associated with greater positive affect regardless of age. Consequently, both dispositional mindfulness and a sense of control show potential to promote positive affective outcomes in younger, middle-aged, and older adults. However, more research is needed to determine the full effect of dispositional mindfulness on individual negative affect across the life span.

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