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RESEARCH PAPER

Associations Between Mindfulness, Psychological Well-Being, and Subjective Well-Being with Respect to Contemplative Practice

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Abstract The relationship between mindfulness and well-being has received considerable empirical and theoretical attention in the scientific literature recently, with researchers hypothesizing a number of ways in which the two interact. However, a closer examination of the literature indicates that the two primary conceptualizations of well-being, psychological well-being (PWB) and subjective well-being (SWB), are theoretically distinct, yet regularly conflated and rarely examined in tandem. As such, the purpose of this study was to explore the associations between dispositional mindfulness, SWB, and PWB, with respect to contemplative practice, using canonical correlation analysis to examine data derived from an online sample of 361 respondents (106 contemplative practitioners and 245 non-practitioners). Results indicate that contemplative practitioners typically report significantly higher levels of mindfulness, as well as psychological and SWB. Furthermore, dispositional mindfulness is associated with both PWB and SWB, but more closely associated with PWB, irrespective of contemplative practice experience. Finally, mindfulness and well-being appear to be similarly related regardless of contemplative practice, although our findings suggest that contemplative practitioners and non-practitioners may conceptualize SWB differently. Contemplative practitioners appear to group PWB and SWB together in a unified well-being construct, while non-practitioners appear to conceptualize SWB as distinct from PWB.

Keywords Mindfulness · Psychological well-being · Subjective well-being · Contemplative practice

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1 Introduction

The relationship between mindfulness and well-being has received considerable empirical and theoretical attention in the scientific literature, with researchers hypothesizing a number of ways in which the two interact (Chambers et al. 2009; Farb et al. 2012; Garland et al. 2011; Hölzel et al. 2011; Shapiro et al. 2006). Increases in mindfulness, defined as "paying attention in a particular way: on purpose, in the present moment, and nonjudgementally" (Kabat-Zinn 1994, p. 3), are thought to enhance well-being, "a broad category of phenomena that includes people's emotional responses, domain satisfaction, and global judgments of life satisfaction" (Diener et al. 1999, p. 277). Despite growing evidence supporting this link and the general salutary nature of mindfulness (Chisea and Serreti 2009; Chiesa et al. 2011; Grossman et al. 2004; Hofmann et al. 2010), the nature of the relationship between these multidimensional constructs remains unclear.

Meditation practices that have been incorporated in most modern mindfulness-based interventions originated in Chinese Taoist, and Indian Buddhist and Hindu traditions (Shear 2006). The word meditation is derived from the Latin term, *meditari*, meaning contemplation or reflection, and is generally intended to regulate mental processes through awareness and attention. Evidence suggests that meditation and related contemplative practices decrease stress levels and increase mindfulness, often accompanied by the experience of inner calmness, self-worth, and self-respect, and promotes well-being (Kabat-Zinn 1994; McGarrigle and Walsh 2011). Meditators report significantly greater well-being in comparison with non-meditators (Lykins and Baer 2009) and both primary types of meditation practice (*open monitoring*—openness to perceive and observe any sensation or thought without focusing on a concept in the mind or a fixed item; and *focused attention*—focusing on a particular item, thought, or object) have been found to increase mindfulness and well-being (Colzato et al. 2012; Grossman et al. 2004; Ott et al. 2006), suggesting that the frequency of meditation practice is a better predictor of well-being than the type of meditation (Schoormans and Nyklícek 2011). Beyond specific mindfulness meditation practices, Davidson et al. (2012), suggest that a diversity of practice styles (e.g., contemplative practices), including yoga, tai chi, etc., can promote states of mindfulness. Contemplative practices are defined as "structured and socially scaffolded activities that train skills by placing some constraint or imposing some discipline on a normally unregulated mental or physical habit" (Davidson et al. 2012, p. 147). As such, Davidson et al. (2012) offer contemplative practice as an inclusive term that groups practices believed to share a common mechanism of change. Regardless of the practice type, mindfulness is thought to be cultivated by all contemplative practices, contributing to well-being *directly* by increasing the capacity to engage with, enjoy, and savor positive experiences, and *indirectly* by enhancing self-regulatory skills that promote adaptive appraisals of adversity and values-consistent behavior (Brown and Ryan 2003).

Psychologists and philosophers conceptualize the complex construct of well-being in various ways. Two of the most common conceptualizations of well-being, subjective well-being (SWB) and psychological well-being (PWB), are constructs of increasing interest to the field of positive psychology (Linley et al. 2009). While the terms SWB and PWB are often used interchangeably, they are derived from separate traditions: hedonism and eudaimonism (Joseph and Linley 2005). Heightened positive affect, lowered negative affect, and life satisfaction are understood to define SWB (Deiner 1984; Durkin and Joseph 2009), a derivative of the hedonistic tradition of well-being (Joseph and Linley 2005; Kahneman 1999). Alternatively, PWB is derived from eudaimonia, conceptualized in Aristotle's Nichomachean Ethics to be the highest of all goods achievable by human

action. Ryff and Singer (2008) argue that Aristotle was primarily concerned with self-realization and virtue, maximizing individual dispositions and talents to these ends while actively doing good in their pursuit. Dimensions of well-being that measure PWB, according to Aristotle's construct of eudaimonism, include: self-acceptance, positive relations with others, personal growth, purpose in life, environmental mastery, and autonomy.

While well-being has consistently been found to be a correlate of mindfulness across a number of studies, a closer examination of the literature indicates that these differing conceptualizations of well-being (i.e., SWB and PWB) are regularly conflated (e.g., Eberth and Sedlmeier 2012; Keng et al. 2011) and rarely examined in tandem. In that regard, several studies have examined the respective conceptualizations of well-being independently, finding dispositional mindfulness to be consistently associated with both SWB (Brown and Kasser 2005; Brown et al. 2009; Kong et al. 2014; Schutte and Malouff 2011) and PWB (Baer et al. 2008; Carmody and Baer 2008; Hollis-Walker and Colosimo 2011; Howell et al. 2008; Van Gordon et al. 2013) throughout the literature. Moreover, specific dimensions of PWB, such as self-acceptance (Jimenez et al. 2010; Thompson and Waltz 2008), autonomy (Bowlin and Baer 2012; Brown and Ryan 2003), positive relationships (Coatsworth et al. 2010; Jones et al. 2011), and personal growth (Benn et al. 2012) are also positively correlated with mindfulness. Interestingly, studies that investigated the relationship between mindfulness and SWB primarily used unidimensional conceptualization of mindfulness (e.g., MAAS or FMI), while studies that explored the boarder construct of PWB frequently used a multidimensional conceptualization of mindfulness (e.g., FFMQ).

In one of the few studies addressing both SWB and PWB, Brown and Ryan (2003) observed significant correlations between mindfulness and multiple constructs of well-being, including SWB (as measured by pleasant affect, unpleasant affect, and life satisfaction) and PWB (as measured by vitality, self-actualization, autonomy, competence, and relatedness). While theory and evidence suggest that SWB and PWB may be distinct but related concepts, how these two conceptualizations of well-being relate to a multidimensional conceptualization of mindfulness has not been directly investigated. Further, it is not known how contemplative practice might influence the relations between mindfulness and these two types of well-being. The purpose of this study was to explore the associations between dispositional mindfulness, SWB, and PWB, with respect to contemplative practice, using canonical correlation analysis (CCA) of data derived from an online sample. Informed by prior studies, as well as the direct and indirect means by which contemplative practices are thought to encourage well-being, we hypothesize that contemplative practitioners will report higher levels of dispositional mindfulness, SWB, and PWB, in comparison with non-practitioners. Furthermore, we hypothesize that the correlation between mindfulness and well-being will be stronger for contemplative practitioners than for their non-practicing counterparts, given the diversity of established associations between mindfulness and well-being.

2 Methods

2.1 Participants and Procedures

All participants (n = 361) were registered users of Amazon's crowd sourcing website, mechanical turk. Participants are compensated, typically in the range of 10–15 ¢ (Buhrmester et al. 2011), for completing tasks available on the mechanical turk website.

Table 1 Demographics and characteristics

	Contemplative (n = 106)	Non-contemplative (n = 245)	*t*
Age (year)			1.82
Mean (SD)	37.25 (12.58)	34.57 (12.67)	
			χ^2
Gender			1.35
Female, *n* (%)	78 (74)	165 (67)	
Race			2.05
White/Caucasian, *n* (%)	83 (77)	180 (74)	
Asian, *n* (%)	9 (9)	26 (11)	
Black/African American, *n* (%)	9 (9)	26 (11)	
Education			11.02
Attended some college, *n* (%)	32 (30)	72 (29)	
Completed a 2-year degree, *n* (%)	14 (13)	30 (12)	
Completed a 4-year degree, *n* (%)	28 (26)	78 (32)	
Master's degree, *n* (%)	19 (18)	20 (8)	
Religious affiliation			15.35
None, *n* (%)	29 (27)	95 (39)	
Protestant Christian, *n* (%)	22 (21)	57 (23)	
Roman Catholic, *n* (%)	19 (18)	46 (19)	
Other, *n* (%)	17 (16)	20 (8)	

Recruitment through mechanical turk enjoys growing empirical support, with findings indicating that the level of compensation does not greatly influence the quality of participant responses (Buhrmester et al. 2011). mechanical turk users are comparable to the general US population (Ross et al. 2010), and are arguably more representative of the population than traditional university subject pools (Paolacci et al. 2010). Participants in this study were paid 10 ¢ and all surveys were administered online in a single session, with the average session length lasting approximately 11 min.

The sociodemographic information for the contemplative practitioners ($n = 106$) and non-practitioners ($n = 255$) is provided in Table 1. No significant sociodemographic between group differences were observed.

3 Measures

3.1 Dispositional Mindfulness

The Five-Facet Mindfulness Questionnaire (FFMQ; Baer et al. 2006) is a 39-item instrument that uses a 5-point Likert-type scale to measure dispositional mindfulness across five dimensions: observing, describing, acting with awareness, non-judging, and non-reacting. Baer et al. (2006) report satisfactory internal consistency for the trait mindfulness dimensions; alpha levels for this study are provided in Table 2.

Table 2 One-way ANOVA

	Contemplative		Non-contemplative		*F*	*df*	Cohen's d
	Mean (SD)	a	Mean (SD)	a			
Mindfulness							
Observing	30.44 (5.39)	.82	27.08 (5.62)	.82	27.18***	349	.61
Describing	29.36 (6.50)	.91	27.12 (6.62)	.90	8.57**	349	.34
Acting with awareness	27.84 (6.39)	.91	26.15 (6.80)	.91	4.73*	349	.26
Non-judging	27.20 (7.17)	.91	25.55 (7.26)	.91	3.84	349	.23
Non-reacting	22.37 (4.42)	.77	21.47 (4.74)	.78	2.74	349	.20
Psychological well-being	95.09 (14.15)	.83	87.01 (16.09)	.85	20.06***	349	.53
Self acceptance	15.81 (3.40)	.65	13.64 (4.18)	.71	22.25***	349	.57
Purpose in life	15.01 (3.07)	.02	14.13 (3.45)	.25	5.08*	349	.27
Environmental mastery	14.39 (3.73)	.65	13.67 (3.93)	.70	2.58	349	.19
Positive relations	14.94 (4.08)	.63	13.66 (3.99)	.61	7.58**	349	.32
Personal growth	17.94 (3.16)	.71	16.12 (3.32)	.57	23.08***	349	.56
Autonomy	17.00 (3.03)	.63	15.79 (3.33)	.61	10.29**	349	.38
Subjective well-being	23.85 (7.07)	.89	20.69 (7.51)	.92	13.60***	349	.43

FFMQ Five Facet Mindfulness Scale, *PGTI* Post Traumatic Growth Scale

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

3.2 Subjective Well-Being

The Satisfaction with Life Scale (SWLS; Diener et al. 1985) is a 5-item instrument that uses a 7-point Likert-type scale to measure SWB. Diener et al. (1985) report satisfactory internal consistency for the SWLS; the alpha level for this study is provided in Table 2.

3.3 Psychological Well-Being

The Scales of Psychological Well-Being (SPWB; Ryff 1989) is an 18-item instrument that uses a 7-point Likert-type scale to measure well-being across six dimensions: self-acceptance, purpose in life, environmental mastery, positive relations, continued personal growth and development, and autonomy. While multiple forms of the SPWB have been used, the 18-item version is the most frequently employed (Springer and Hauser 2006). Alpha levels for this study are provided in Table 2.

3.4 Contemplative Practice Items

A single dichotomous item assessed respondents' engagement with contemplative practices: "Do you have a regular contemplative/meditative practice (e.g., meditation, yoga, tai chi)?" Participants indicating a regular contemplative practice were then provided a free response space to describe the type of practice they engaged in as well as the number of days per week they practiced. The most commonly reported practice types were meditation, yoga, and prayer. Participants with a contemplative practice reported practicing an average of 5.3 days per week and practice time was significantly correlated

with dispositional mindfulness (r = .32, p = .002), suggesting that individuals reporting a greater frequency of contemplative practice also report behaving more mindfully in their daily lives.

3.5 Statistical Analysis

In the present study, two phases of data analysis were performed, with the first exploring mean differences with respect to contemplative practice, and the second investigating the strength of relationship between the variables of interest with respect to contemplative practice. First, a multivariate analysis of variance (MANOVA) was used to compare mean differences in mindfulness, SWB, and PWB, with respect to contemplative practice. Then a series of univariate analyses (ANOVAs) were used to compare mean differences between main variables of interest for contemplative practitioners and non-practitioners. Second, canonical correlation analyses (CCA) were performed, investigating the relationship between mindfulness and the well-being constructs, with separate analyses for contemplative practitioners and non-practitioners. The first set of CCAs examined the broad relationships between the mindfulness dimensions and the aggregated well-being constructs. The second set of CCAs investigated the associations between mindfulness and the disaggregated dimensions of PWB along with SWB. CCA is a multivariate technique, similar to multiple regression, that quantifies the strength of the relationship between two meaningful variable sets. A synthetic variable is created for each variable set that maximizes the relationship between the two sets, resulting in a canonical correlation coefficient, akin to a Pearson r. More specifically, CCA yields structure coefficients indicating how the specific variables function in the larger, multivariate relationship (Nimon et al. 2010). Nimon et al. (2010) suggest that CCA "honors the ecological validity of much behavioral science research" (p. 703), citing Thompson's assertion concerning the complexity of exploring lived experiences ''in which the researcher cares about multiple outcomes, in which most outcomes have multiple causes, and in which most causes have multiple effects" (cited in Nimon et al. 2010). Importantly, using CCA can significantly reduce experiment-wise Type I error rates generally associated with the use of multiple univariate analyses (Nimon et al. 2010).

4 Results

4.1 Multivariate and Univariate ANOVAs

Separate MANOVAs revealed significant differences between contemplative practitioners and non-practitioners with respect to the mindfulness dimensions, $F(5, 208) = 4.589$, $p = .001$, as well as the PSW dimensions, $F(6, 207) = 5.109$, $p < .001$. Contemplative practitioners reported higher scores on all mindfulness and PWB dimensions, with separate univariate ANOVAs indicating significant between group differences for three mindfulness dimensions (observing, describing, and acting with awareness), as well as five PWB dimensions (self-acceptance, personal growth, positive relations, purpose in life, and autonomy). Table 2 presents the means, standard deviations, Cronbach's alphas, and univariate ANOVA results for each variable in this study.

Table 3 Canonical solutions for trait mindfulness predicting subjective and PWB with respect to contemplative practice

Variable	Contemplative practitioners			Non-practitioners		
	Coef	r_s	r_s^2 (%)	Coef	r_s	r_s^2 (%)
Psychological well-being	.971	*.999*	99.80	1.071	*.995*	99.00
subjective well-being	.047	*.612*	37.45	−.126	*.520*	27.04
R_c^2			48.44			47.52
Mindfulness						
Observing	.016	.395	15.60	.318	.449	20.16
Describing	.413	*.777*	60.37	.341	*.741*	54.91
Acting with awareness	.417	*.787*	61.93	.230	*.764*	58.37
Non-judging	.150	*.583*	33.99	.445	*.703*	49.42
Non-reacting	.382	*.673*	45.29	.134	*.465*	21.62

Structure coefficients (r_s) > |.45| are italicized. Communality coefficients (h^2) > 45 % are italicized

Coef standardized canonical function coefficient, r_s structure coefficient, r_s^2 squared structure coefficient, R_c^2 squared canonical correlations

4.2 Canonical Correlation Analyses

4.2.1 Total Score Analyses

Two CCA were performed using the five mindfulness dimensions as predictors of PWB and SWB to evaluate the strength of the relationship between the two variable sets (i.e., trait mindfulness and well-being). The first analysis investigated the multivariate-shared relationship between the two variable sets in a sample of contemplative practitioners, with the second analysis doing the same for a sample of non-practitioners. Each analysis yielded two functions. The squared canonical correlations (R_c^2) for the sample of contemplative practitioners were .48, .01, and .48, and .03 for the non-practitioners. Across all functions, the practitioner's full model was statistically significant using the Wilk's $\lambda = .511$ criterion, $F(10, 198) = 7.90$, $p < .001$, as was the non-practitioner model's, Wilk's $\lambda = .510$, $F(10, 476) = 19.04$, $p < .001$. With Wilk's λ representing the model's unexplained variance, both the practitioner (49 %) and the non-practitioner models (49 %) explained substantial portions of the shared variance between the variable sets. These results indicate that relatively strong relationships exist between trait mindfulness and the synthetic well-being variable for both contemplative practitioners as well as non-practitioners.

Tables 3 presents the standardized canonical function coefficients, structure coefficients, and squared structure coefficients for the first Function of each sample. For contemplative practitioners and non-practitioners, both psychological and SWB were found to be relevant criterion variables [structure coefficients (r_s) > |.45|], with PWB emerging as the most primary variable in both samples. Regarding predictor variable set (i.e., trait mindfulness dimensions), acting with awareness, describing, non-reacting, and non-judging were found to be relevant predictors. Only observing fell below the .45 relevance cut-point. Interestingly, while sign differences in the standardized canonical coefficients for practitioners indicate a unified well-being construct, non-practitioners' sign differences indicate that SWB and PWB differentially contribute to the synthetic well-being variable.

4.2.2 Dimensional Analyses

Two CCA were performed using the five mindfulness dimensions as predictors of the six dimensions of PWB as well as SWB to evaluate the strength of the relationship between the two variable sets (i.e., trait mindfulness and PWB). Consistent with the first set of CCAs, the first analysis investigated the multivariate-shared relationship between the two variable sets in a sample of contemplative practitioners, with the second analysis doing the same for a sample of non-practitioners. Each analysis yielded five functions. The squared canonical correlations (R_c^2) for the sample of contemplative practitioners were .52, .23, .17, .05, .01 and .48, .25, .10, .05, .00 for the non-practitioners. Across all functions, the practitioner's full model was statistically significant using the Wilk's $\lambda = .287$ criterion, $F(30, 386) = 4.71$, $p < .001$, as was the non-practitioner's, Wilk's $\lambda = .331$, $F(30, 386) = 4.09$, $p < .001$. With Wilk's λ representing the model's unexplained variance, both the practitioner (71 %) and the non-practitioner models (67 %) explained substantial portions of the shared variance between the variable sets. These results suggest that relatively strong relationships exist between trait mindfulness and PWB for both contemplative practitioners as well as non-practitioners. Furthermore, given the increase in the percentage of variance explained for this second set of CCAs, exploring the disaggregated dimensions of PWB appears to provide a better picture of the relationship between mindfulness and well-being.

Beyond the statistical significance of the full model (Functions 1–5) for both samples, dimension reduction analyses indicated that Functions 2–5, $F(20, 322.66) = 2.69$, $p < .001$, and 3 to 5, $F(12, 259.58) = 2.19$, $p = .01$, were statistically significant for contemplative practitioners. These functions also explained significant portions of the shared variance (40 and 23 %, respectively) between the variable sets in the sample of contemplative practitioners. For non-practitioners, Functions 2–5 were also significant, $F(20, 322.66) = 2.35$, $p = .001$, explaining 36 % of the shared variance between the variable sets. For both samples, the remaining functions failed to reach significance and explained only marginal amounts of variance. Thus, it appears that trait mindfulness and PWB relate in a multi-faceted manner, especially with respect to contemplative practitioners. Similar to the total score analyses, the standardized canonical coefficient signs indicate a unified well-being construct for practitioners but not for non-practitioners.

Tables 4 and 5 present the standardized canonical function coefficients, structure coefficients, squared structure coefficients, and communalities across the significant functions for each sample.

4.2.2.1 Function 1 (General Well-Being) For contemplative practitioners, the relevant criterion variables (i.e., well-being dimensions) in Function 1 were environmental mastery, autonomy, positive relations, self-acceptance, and personal growth, with the standardized canonical function coefficients indicating environmental mastery and autonomy as the primary criterion variables. Only purpose in life fell below the .45 cut-point, failing to emerge as a relevant criterion variable. Regarding the Function 1 predictor variable set (i.e., trait mindfulness dimensions), the primary criterion variables were acting with awareness, describing, and non-reacting, with non-judging making a secondary contribution as evidenced by both the canonical function coefficients and structure coefficients.

For non-practitioners, the relevant Function 1 criterion variables were positive relations, environmental mastery, self-acceptance, autonomy, personal growth, and purpose in life,

Table 4 Canonical solutions for trait mindfulness predicting PWB for contemplative practitioners

Variable	Function 1			Function 2			Function 3			h^2 (%)
	Coef	r_s	r_s^2 (%)	Coef	r_s	r_s^2 (%)	Coef	r_s	r_s^2 (%)	
Psychological well-being										
Self acceptance	−.055	*.670*	44.89	−.772	−.181	3.27	−.278	.029	0.08	*48.24*
Purpose in life	.144	.432	18.66	.881	*.473*	22.37	−.039	−.084	0.71	41.74
Environmental mastery	.441	*.784*	61.47	.598	.030	0.09	.935	*.547*	29.92	*91.48*
Positive relations	.137	*.679*	46.10	−.428	−.301	9.06	−.120	−.036	0.13	*55.29*
Personal growth	.135	*.617*	38.07	−.759	−.391	15.29	.233	.209	4.37	*57.73*
Autonomy	.468	*.746*	55.65	.229	.006	0.00	−.773	*−.573*	32.83	*88.48*
Subjective well-being	.177	*.586*	34.34	.437	−.001	0.00	−.026	.010	0.01	34.35
R_c^2			52.75			24.32			16.79	
Mindfulness										
Observing	−.009	.375	14.06	−.656	*−.461*	21.25	−.404	−.415	17.22	*52.53*
Describing	.431	*.787*	61.94	.208	−.014	0.02	−.794	*−.544*	29.59	*91.55*
Acting with awareness	.486	*.822*	67.57	.597	.212	4.49	.275	.102	1.04	*73.10*
Non-judging	.083	*.538*	28.94	−.953	*−.626*	39.19	.262	.309	9.55	*77.68*
Non-reacting	.347	*.632*	39.94	.165	−.142	2.02	.649	.449	20.16	*62.12*

Structure coefficients (r_s) > |.45| are italicized. Communality coefficients (h^2) > 45 % are italicized

Coef standardized canonical function coefficient, r_s structure coefficient, r_s^2 squared structure coefficient, R_c^2 squared canonical correlations

with the canonical function coefficients indicating autonomy and positive relations as the primary criterion variables. Regarding the Function 1 predictor variable set, the primary criterion variables were acting with awareness, describing, and non-reacting, with non-judging making a secondary contribution as evidenced by both the canonical function coefficients and structure coefficients.

4.2.2.2 Function 2 For contemplative practitioners, the Function 2 structure coefficients indicate that purpose in life was the only relevant PWB dimension, while non-judging and observing emerged as the only relevant mindfulness dimensions. The relevant PWB dimensions from Function 2 were inversely related with the relevant trait mindfulness dimensions, such that observing and non-judgment were negatively related to purpose in life.

For non-practitioners, the Function 2 structure coefficients indicate that personal growth was the only relevant PWB dimension, while non-reacting and observing emerged as the relevant mindfulness dimensions. The relevant variables demonstrated a complex association, with the non-reacting mindfulness dimension being positively related with personal growth, while the observing dimension was negatively related to personal growth.

Table 5 Canonical solutions for trait mindfulness predicting PWB for non-practitioners

Variable	Function 1			Function 2			h^2 (%)
	Coef	r_s	r_s^2 (%)	Coef	r_s	r_s^2 (%)	
Psychological well-being							
Self acceptance	.213	*.746*	55.65	.114	.029	0.08	*55.73*
Purpose in life	.172	*.610*	37.21	−.346	−.394	15.52	*52.73*
Environmental mastery	.469	*.831*	69.06	.289	.129	1.66	*70.72*
Positive relations	.321	*.782*	61.15	.332	.076	0.58	*61.73*
Personal growth	.091	*.629*	39.56	−1.042	*−.665*	44.22	*83.78*
Autonomy	.219	*.614*	37.70	.556	.194	3.76	41.46
Subjective well-being	−.187	*.516*	26.63	−.115	.031	0.10	26.73
R_c^2			48.99			14.29	
Mindfulness							
Observing	.258	.417	17.39	.886	*.533*	28.41	*45.80*
Describing	.334	*.742*	55.06	.097	.026	0.07	*55.13*
Acting with awareness	.335	*.778*	60.53	−.390	−.153	2.34	*62.87*
Non-judging	.401	*.696*	48.44	.424	.029	0.08	*48.52*
Non-reacting	.120	*.509*	25.91	−.850	*−.533*	28.41	*54.32*

Structure coefficients (r_s) > |.45| are italicized. Communality coefficients (h^2) > 45 % are italicized

Coef standardized canonical function coefficient, r_s structure coefficient, r_s^2 squared structure coefficient, R_c^2 squared canonical correlations

4.2.2.3 Function 3 For contemplative practitioners, the structure coefficients in Function 3 suggest two relevant PWB dimensions, autonomy and environmental mastery, with one relevant mindfulness dimension, describing. Looking at the entire function's structure coefficients, describing was positively associated with personal growth and negatively associated with environmental mastery. For non-practitioners, Function 3 was non-significant.

5 Discussion

This study examined the multidimensional relationship between dispositional mindfulness and well-being (psychological and subjective) with respect to contemplative practice. Results indicate that contemplative practitioners report significantly higher levels of mindfulness, PWB, and SWB. Furthermore, dispositional mindfulness is associated with both PWB and SWB, but more closely associated with PWB, irrespective of contemplative practice experience. Finally, mindfulness and well-being appear to be similarly related regardless of contemplative practice as evidenced by small to moderate effect sizes (Table 2). Thus, a relative consistency appears to exist with respect to the broad associations between the two constructs for both contemplative practitioners and non-practitioners.

Given the general uniformity in the associations between mindfulness and well-being, our results appear to support previous findings suggesting that dispositional mindfulness is associated with both PWB (Carmody and Baer 2008; Van Gordon et al. 2013) and SWB (Brown et al. 2009; Kong et al. 2014). It may be that contemplative practice accentuates

hedonic and eudemonistic appraisals, but it does not appear to promote dramatically different routes to well-being. Indeed, contemplative practitioners and non-practitioners appear to find many of the same dimensions of mindfulness effective in the promotion of well-being, however, practitioners may be more proficient or efficient with their use. Yet, despite considerable commonality, several important relational differences emerged from the final set of CCAs suggesting that the associations between mindfulness and well-being may be more complex for individuals with contemplative practices.

The CCA investigating the relationship between the mindfulness dimensions and the dimensions of well-being yielded three significant functions, or distinct routes of association, between the constructs in the contemplative sample, but only two significant functions for the non-contemplative respondents (see Tables 4 and 5). However, it is important to note that the interpretation of the associations emerging in the CCAs should be understood as preliminary heuristics given the exploratory nature of this study. For both practitioners and non-practitioners, the first route might be understood as a general well-being function, with the majority of the mindfulness and well-being dimensions implicated. The remaining functions appear to be more narrowly concentrated, specifically addressing personal growth in non-practitioners and purpose in life, as well as control in contemplative respondents.

Sign differences in the standardized coefficients of both samples' first functions may suggest that contemplative practitioners and non-practitioners conceptualize SWB differently. For non-practitioners, SWB and PWB appear to be inversely related in the synthetic well-being variable. Conversely, contemplative practitioners may interpret the concept of SWB differently, aligning it more closely with the elements of PWB (with the exception of self-acceptance) as evidenced by the positive standardized coefficients. Speculatively, contemplative practitioners' subjective interpretations of life satisfaction may be more informed by the PWB factors.

The non-practitioners' second function suggests that personal growth is of particular importance for the wellbeing of individuals not engaged in contemplative practice, with the mindfulness skill of observing internal and external experiences central to the promotion of such growth, while a tendency to be non-reactive appears to be a hindrance. As to the contemplative practitioners' second function, it appears that purpose in life may be uniquely related to dispositional mindfulness as it is inversely related with non-judging and observing, suggesting that individuals actively engaging in cognitive reappraisal, wise evaluation, or discernment are more likely to construct a meaningful life (Hanley et al., 2014). This negative relationship may be an artifact of the tendency in Western mindfulness research to conceptualize mindfulness as necessarily non-cognitive and non-evaluative. However, recent conceptualizations of mindfulness emphasize the importance of cognition (Bodhi 2011; Dreyfus 2011), an assertion that may be supported by these results. The practitioners' third function appears to be primarily oriented to experiences of control, with the mindful capacity to observe and describe internal and external events positively associated with autonomy, but negatively associated with environmental mastery. It may be that enhanced self-observation encourages the ability to control the self, while greater awareness of the environment highlights uncontrollable external forces.

Overall, this study's data suggest that acting intentionally and with awareness appears to be the most important mindfulness dimension with respect to well-being for non-practitioners, specifically the personal growth dimension of PWB. For contemplative practitioners, using words to describe internal and external experiences appears to be the most influential dimension of mindfulness in relation to well-being, specifically the dimensions of PWB related to control (e.g., environmental mastery and autonomy). However, design

limitations suggest further investigation of the relationship between mindfulness and well-being is needed given the correlational nature of this study, the broad grouping of contemplative practices, the lack of precision in measuring contemplative practice engagement, and the use of a relatively new sampling technique. It may be that certain contemplative practices promote mindfulness more directly (e.g., seated meditation vs. yoga), and that specific practices may more directly target specific dimensions of mindfulness (e.g., vipassana vs. loving-kindness). As such clarification is needed with respect to the relationship between mindfulness and well-being with attention paid to differing practice types. Similarly, the measurement of practice frequency lacked specificity in that the amount of daily practice was not reported. There would likely be significant differences between individuals practicing several hours a day in comparison with individuals practicing 10 min daily. With respect to the sample, using the Internet to conduct experiments yields less control over subjects despite counter evidence highlighting the benefits of using MTurk as a sampling tool (e.g., Buhrmester et al. 2011; Paolacci et al. 2010). Some research has suggested that MTurk users are younger and more liberal than the public when participating in political research (Berinsky et al., 2014), have incentive (payment) to participate with higher quality answers, are more attentiveness to instructions than the public, and may respond more than once if respondents create additional accounts. Future research could account for demographic inconsistencies among MTurk respondents and the general population, continue to offer minimal incentive, and review IP addresses to ensure participants only completed surveys once. Future research could also explore causal relationships between mindfulness and PWB as well as SWB, tracking changes in both well-being constructs across standardized mindfulness-based interventions, such as MBSR. Nevertheless, this study supports the relationship between mindfulness and well-being, with preliminary evidence that contemplative practice may enhance well-being through diverse means, as well as align practitioner's understanding of PWB and SWB.

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