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The Mindful Personality II: Exploring the Metatraits from a Cybernetic Perspective

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Abstract

Relationships between dispositional mindfulness and the personality metatraits, stability and plasticity, remain unexplored despite continued efforts to more accurately characterize associations between dispositional mindfulness and personality. The metatraits are theorized to constitute basic requirements for biological survival and their expression is believed to be a strong determinant of well-being. As such, this study used path analysis to explore associations between dispositional mindfulness, the metatraits and psychological well-being in a sample of 403 American adults. Results indicate that dispositional mindfulness is principally associated with stability, or the capacity to sustain currently operative schemas and goals. Results further suggest a positive relationship between dispositional mindfulness and plasticity, or the tendency to flexibly adapt to changing circumstances. A more granular investigation of these associations demonstrated that the facets of dispositional mindfulness are differentially related with the metatraits. Ultimately, the metatraits were found to fully mediate the relationship between dispositional mindfulness and psychological well-being.

Keywords

Mindfulness; Personality; Personality Metatraits; Stability; Plasticity; Well-Being

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Declaration of Conflicting Interests

Adam Hanley, Anne Baker and Eric Garland declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethics Statement

This research was approved by Florida State University's Institutional Review Board.

Informed Consent Statement

To ensure informed consent, all participants actively selected that they consented to take part in the study before being able to proceed to the survey questions.

Author Contributions

AWH designed and executed the study, performed the data analyses, and wrote the first draft of the manuscript. AKB collaborated in the writing and editing of the final manuscript. ELG collaborated with the data analysis plan and writing of the manuscript.

Introduction

Associations between dispositional mindfulness and the Big Five personality factors continue to be clarified by empirical and theoretical advances (e.g., Hanley & Garland, 2017; Rau & Williams, 2016). However, few investigations of dispositional mindfulness and the Big Five have organized personality in an integrative fashion or have attempted to examine personality from a mechanistic framework. Typically, the Big Five personality factors are examined in isolation and discussed as functionally distinct traits. In contrast, the Cybernetic Big Five Theory (DeYoung, 2015) challenges the traditional conceptualization of the Big Five as separate and distinct traits. The Cybernetic Big Five Theory organizes the Big Five into two higher-order personality metatraits, stability and plasticity, that serve as latent factors onto which the Big Five selectively load in factor analyses (DeYoung, 2006; Digman, 1997). Beyond being merely statistical entities, these two metatraits are theorized to constitute basic requirements for biological survival (DeYoung, 2015; Grossberg, 1987; Macy, 1991), and their expression is thought to be directly linked to well-being (Hirsh, Mar, & Peterson, 2012).

The Cybernetic Big Five Theory asserts that personality can be understood as a cybernetic system that evolved to aid human survival (DeYoung, 2015). Cybernetic systems are defined by two core components. First, the system must have a goal (e.g., survival) to guide its efforts (DeYoung, 2015; Macy, 1991). Second, the system must have the ability to receive and process environmental feedback (e.g., via the senses and the mind), thereby informing goal-relevant progress (DeYoung, 2015; Macy, 1991). The Cybernetic Big Five Theory proposes that the Big Five personality factors and the two hierarchically situated metatraits operate as adaptive parameters in the human cybernetic system. Each of the Big Five personality factors evidence distinct, but interactive, roles in furthering goal-related behavior (see DeYoung 2015 for a complete analysis of these roles). More broadly, the metatraits capture interpersonal variance in individual efforts to maintain established goals while simultaneously adjusting to environmental change.

The *stability* metatrait can be understood as the mechanism by which cybernetic systems maintain goal directedness when encountering disruptive impulses. Stability is comprised of emotional stability (i.e., low neuroticism), motivational stability (i.e., conscientiousness), and social stability (i.e., agreeableness). The *plasticity* metatrait can be understood as the mechanism by which cybernetic systems approach and explore the unknown, either cognitively (i.e., openness) or behaviorally (i.e., extraversion). The balance between stability and plasticity is arguably the core tension in cybernetic systems (Grossberg, 1987), as “they not only must be capable of maintaining stable functioning, they must also be sufficiently plastic to adapt to changing and unpredictable environments” (p.47). It is important to emphasize that although stability is characterized by security and certainty regarding knowledge of the self and the world, learning occurs when novel information is extracted from the unknown (Peterson, 1999). As such, the metatraits, are oriented around the intersection of the known and unknown. The capacity to continuously navigate this intersection, maintaining and appropriately modifying a set of value-based goals in the face anomalous, unexpected events, appears fundamental for learning, growth and well-being.

Mindfulness may operate at the intersection of stability and plasticity. In fact, “flux-balance” (Von Bertalanffy, 1968), or the capacity to find stability in instability, may be supported by mindfulness. Mindfulness can be understood as a quality of consciousness characterized by the metacognitive capacity to maintain focus on a particular attentional object with equanimity (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Desbordes et al., 2015; Dreyfus, 2011; Kabat-Zinn, 1994). Conversely, being mindless is characterized by distractibility and impulsivity. The cognitive state of mindfulness can be intentionally fostered by a number of practices (e.g., Carmody & Baer, 2008), but it can also exist as a naturally-occurring, uncultivated quality (Brown & Ryan, 2003).

As cybernetic operations are guided by both proximal and distal goals, a mindful disposition may impact the motivational draw of goal-relevant, desired states. In short, desire could be understood to motivate cybernetic systems (Peterson, 1999). In the pursuit of desired states, discerning between proximal goals that serve either hedonic or eudaimonic ends is likely to have substantive consequences for well-being. Mindfulness is believed to support the maintenance of personally valued, distal goals by facilitating non-reactivity to proximal, appetitive desires (Garland, Farb, Goldin, & Fredrickson, 2015). Indeed, traditional Buddhist thought contends that desire is the root of all suffering (Gyatso, 1994; R. hula, 1974), and mindfulness is a skillful means of relinquishing attachment to desire. Thus, mindfulness may skew the cybernetic cycle itself towards the conservation of distal, eudaimonic goals. In this capacity, mindfulness may serve a stabilizing role by supporting distal goal stability, which may in turn encourage the subjective experience of stability.

Two mechanisms of mindfulness, attentional control and emotion regulation (Hölzel et al., 2011; Tang, Hölzel, & Posner, 2015; Vago & Silbersweig, 2012), may provide some insight into the stabilizing function of dispositional mindfulness. First, greater attentional control allows for sustained focus on a particular target, as well as the capacity to voluntarily re-direct wandering or distracted attention back to a previously selected target. Growing evidence suggests that dispositional mindfulness is associated with both attentional capacities (e.g., Baer et al., 2006; Herndon, 2008; Moore & Malinowski, 2009; Schmertz, Anderson & Robins, 2009). As such, more mindful individuals may be better able to stabilize their attention, a capacity central to maintaining the motivational stability characterizing conscientiousness. Second, greater emotion regulation would likely reduce the impact of affective disruptions on goal stability, as emotion is a primary motivator of behavior (e.g., Craig, 2002; Easterbrook, 1959). Dispositional mindfulness is also associated with reduced physiological reactivity (e.g., Brown, Goodman & Inzlicht, 2013; Brown, Weinstein & Creswell, 2012; Fogarty, Lu, Sollers & Considine, 2013), suggesting that more mindful individuals are generally less reactive and more equanimous (e.g., Desbordes et al., 2015, Hill & Updegraff, 2012). Furthermore, more mindful individuals also appear to experience quicker emotional recovery following a stressor (e.g., Bullis, Boe, Asnaani & Hofmann, 2014). Thus, more mindful individuals may be better able to stabilize their emotions, a capacity central to maintaining the emotional stability characterizing low neuroticism.

The same two mechanisms of mindfulness, attentional control and emotional regulation, may also provide some insight into the role dispositional mindfulness may play in

supporting plasticity. Emotion is believed to influence both behavior (e.g., Craig, 2002) and attention (e.g. Dolan, 2002). Negative emotion is associated with behavioral inhibition and is thought to constrict attentional resources while positive emotion is associated with behavioral approach and an expanded attentional field (Garland et al., 2010).

Mechanistically, mindful emotion regulation capacities may limit the scope of attentional and behavioral constriction related to negative emotion. As a consequence of more mindful emotion regulation, attentional and behavioral ranges may remain broader. Indeed, evidence suggests that more mindful individuals are more cognitively flexible (Hodgins & Adair, 2010; Moore & Malinowski, 2009) and better able to change the way they are thinking about life situations (e.g., Hanley & Garland, 2014). More globally, mindful individuals report greater positive affect (Goyal et al., 2014; Sedlmeier et al., 2012), likely predisposing them to broader attentional fields and more expansive behavioral repertoires. Such attentional and behavioral breadth may allow more mindful individuals to be more flexible in their goal pursuit.

Despite these theoretical links between dispositional mindfulness and the metatraits, no empirical investigations of these constructs have been conducted. However, recent meta-analytic work suggests that dispositional mindfulness may be more accurately positioned as a metatrait correlate than in relation to any of the Big Five personality factors independently (Hanley & Garland, 2017). Given these results, a strong theoretical association has been proposed between dispositional mindfulness and stability, as well as a more moderate association between dispositional mindfulness and plasticity (see Hanley & Garland, 2017). Empirical work is needed to unpack these relationships and situate them in relation to well-being.

Psychological well-being is a multidimensional conceptualization of well-being, in which the good life is often characterized by six components of positive psychological functioning: self-acceptance, personal growth, purpose in life, positive relations with others, environmental mastery and autonomy (Ryff & Keyes, 1995, Ryff, 1989). The metatraits (e.g., Hirsh et al., 2012; Simsek & Koydemir, 2013) and dispositional mindfulness (e.g., Brown & Ryan, 2003; Hanley, Warner & Garland, 2015) are intimately linked with well-being. An expanding body of theoretical work supports the centrality of the metatraits in sustaining positive psychological functioning (Hirsh et al., 2012; Peterson, 1999; DeYoung, 2015), and emerging empirical work supports this relationship (Simsek, 2014; Simsek & Koydemir, 2013). Comparatively, the association between dispositional mindfulness and psychological well-being is well substantiated, with a variety of results converging to suggest a robust relationship between the two constructs (e.g., Brown & Ryan, 2003; Hanley, Warner & Garland, 2015). Yet, despite these theoretical and empirical links, no study to date has connected all four constructs by directly examining associations between psychological well-being, the metatraits and dispositional mindfulness.

The primary purpose of this study was to investigate the relationship between dispositional mindfulness and the metatraits, stability and plasticity, linking all three constructs to psychological well-being. Path analysis was used to investigate these relationships. It was hypothesized that dispositional mindfulness would be positively associated with both metatraits, stability and plasticity. However, dispositional mindfulness was expected to be

more strongly associated with the stability metatrait given findings from a recent meta-analyses which indicated that dispositional mindfulness was most closely associated with the three personality factors constituting stability (Hanley & Garland, 2017). It was further hypothesized that the metatraits would mediate the relationship between dispositional mindfulness and psychological well-being.

Method

Participants

Participants ($n=403$) were recruited from Amazon's crowdsourcing website, Mechanical Turk. Respondents were awarded 25¢ for their participation. Female participants (61%) outnumbered male participants, with a mean age of 36.99 ± 12.62 . Ethnically, participants identified as Caucasian (75%), African America (8%), Asian (8%), Latino (5%), Multiracial (2%), or American Indian (2%).

Procedures

The three measures used in this study were part of a larger investigation of the relationships between dispositional mindfulness and self-configurations that was completed online in a single testing administration and took respondents an average of 24 minutes to complete.

Measures

Dispositional Mindfulness—The Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006) is a well validated 39-item measure using a 5-point Likert scale (1 = "Never or very rarely true", 5 = "Very often or always true") to assess core characteristics of dispositional mindfulness ($\alpha=.91$). The FFM is composed of five scales: observing ($\alpha=.83$), describing ($\alpha=.86$), acting with awareness ($\alpha=.90$), non-reacting ($\alpha=.84$) and non-judging ($\alpha=.91$).

Big Five Personality Traits—The Ten Item Personality Inventory (Gosling, Rentfrow, & Swann, 2003) is a well validated 10-item measure using a 7-point Likert (1 = "Disagree Strongly", 7 = "Agree Strongly") scale to assess the five factor model of personality: emotional stability ($\alpha=.70$), conscientiousness ($\alpha=.68$), agreeableness ($\alpha=.48$), openness ($\alpha=.45$), extraversion ($\alpha=.63$). The latent, stability metatrait variable was factor analytically derived from the agreeableness, conscientiousness and emotional stability total scores. The latent, plasticity metatrait variable was factor analytically derived from the openness and extraversion total scores.

Psychological Well-Being—The Scales of Psychological Well-Being (Ryff & Keyes, 1995) is a well validated 18-item measure using a 5-point Likert (1 = "Disagree Strongly", 7 = "Agree Strongly") scale to assess well-being across six domains ($\alpha=.86$): Autonomy, Environmental Mastery, Personal Growth, Positive Relations with Others, Purpose in Life, Self-Acceptance.

Data Analyses

First, a preliminary bivariate correlational analysis was performed to explore the relationships between dispositional mindfulness, the five facets of dispositional mindfulness and the five personality factors. A correlation matrix is reported in Table 1 along with descriptive statistics for each variable.

Second, path modeling procedures were conducted in AMOS 24 to a) identify the basic relationships between dispositional mindfulness, the metatraits and psychological well-being (and, more specifically, to test whether the metatraits mediated the relationships between dispositional mindfulness and psychological well-being), and b) outline the relationships between dispositional mindfulness, the metatraits and psychological well-being in greater detail by modeling the five facets of mindfulness in relation to the metatraits and psychological well-being.

Results

Bivariate correlational analysis (Table 1) indicated that dispositional mindfulness was most strongly associated with the three personality factors constituting the stability metatrait, emotional stability (.48), conscientiousness, or motivational stability (.49), and agreeableness, or social stability (.42). Dispositional mindfulness also evidenced positive relationships of similar magnitudes with the two personality factors constituting the plasticity metatrait, extraversion (.16) and openness (.19).

This pattern of associations appears to be the result of differential relationships between the facets of dispositional mindfulness and the personality factors. The *self-regulation* mindfulness facets, non-judging, acting with awareness and non-reacting, appeared to be most closely associated with the stability personality factors, neuroticism, conscientiousness and agreeableness. Comparatively, the *self-awareness* mindfulness facets, observing and describing, evidenced slightly stronger associations with the plasticity personality factors, extraversion and openness.

Mindful Metatrait Model

The mindful metatraits model evidenced excellent fit: $\chi^2/df=2.32$, CFI=.98, GFI=.92, RMSEA=.06, SRMR=.04 (Figure 1). Dispositional mindfulness was found to be positively associated with both metatraits, but evidenced a significantly stronger relationship with stability as revealed by a Fisher's r-to-transformation ($z=9.66$, $p<.001$). Dispositional mindfulness also demonstrated a significant indirect effect on psychological well-being via the metatraits (.67*). Both metatraits were found to be positively associated with psychological well-being; however, stability evidenced a significantly stronger relationship with psychological well-being as revealed by a Fisher's r-to-transformation ($z=9.37$, $p<.001$).

Mindful Facets Metatrait Model

The full mindful facet metatrait model evidenced good fit ($\chi^2/df=3.93$, CFI=.94, GFI=.96, RMSEA=.085, SRMR=.044) across several indices, and fit was improved by removing non-

significant paths: $\chi^2/df=3.43$, CFI=.94, GFI=.96, RMSEA=.078, SRMR=.05. All associations between the mindfulness facets and the metatraits were positive; and, generally the associations between the mindfulness facets and stability were stronger than the associations between the mindfulness facets and plasticity. As observed in the preliminary correlation analysis, the mindfulness facets appeared to relate differentially with the metatraits. Two of the self-regulation mindfulness facets, acting with awareness and non-reacting, were most closely associated with stability, while the self-awareness mindfulness facets, observing and describing, were most closely associated with plasticity. The non-judging mindfulness facet evidenced similar magnitudes of association with both stability and plasticity (Figure 2).

Discussion

This study investigated the relationships between dispositional mindfulness, the personality metatraits—stability and plasticity—and psychological well-being. Path analysis was used to examine associations between dispositional mindfulness, the metatraits and psychological well-being at increasing levels of granularity, using the aggregated dispositional mindfulness score in the first model, and then modeling the five facets of dispositional mindfulness (observing, describing, acting with awareness, non-reacting, and non-judging) in the second.

Mindfulness and Stability

Results indicated that dispositional mindfulness was principally associated with stability, or the capacity to sustain goal-directed efforts, despite distraction or anomalous interference. Stability appears to manifest as the capacity to inhibit disruptive impulses, regardless of whether stimuli are appetitive or aversive. DeYoung (2015) contends that, upon encounters with unexpected events, more stable individuals are less likely to allow immediate goals, such as hedonistic gain, to supplant ongoing, long-term goals, such as the pursuit of a meaningful career. Comparatively, individuals with low stability scores tend to exhibit features of impulsivity, leaving them more susceptible to emotional distress and disrupted goal-related pursuits in the face of experiential aberrations. Instability increases uncertainty, thereby increasing the incidence of highly disorganized internal states believed to prompt emotional distress (Hirsh et al., 2012). As such, stability has significant emotional consequences. This characterization of stability is strikingly similar to descriptions of mindfulness typified by non-reactivity and equanimity (Baer et al., 2006; Desbordes et al., 2015; Dreyfus, 2011). In fact, dispositional mindfulness may reflect an orientation to experience that is marked by stability—potentially a product of enhanced attention control and emotion regulation. Examination at the dispositional mindfulness facet level provides preliminary support for this assertion. The mindful self-regulatory skills (acting with awareness, non-reacting and non-judging) were most closely associated with stability, suggesting that individuals who are more attentive to their own automatic reactions and better able to regulate negative emotions and judgments may have more stable personalities.

Applying these findings to daily life, it may be that small, mindfully performed, serial behaviors (e.g., household chores) have a cumulative effect on global estimations of personal stability that result in a trait like tendency towards stability. While the correlational results

from this study are insufficient for causal claims, experimental studies are needed to test this possibility. As dispositional mindfulness suggests a general orientation towards the present moment, it may be that engaging with everyday tasks with mindful attention fundamentally alters the experience of those tasks (Hanley, Warner, Dehili, Canto, & Garland, 2015). For example, acting with awareness and intention during everyday activities (e.g., eating, walking, or household chores), may first lead to short-term reductions in distractibility. Regularly approaching everyday activities with awareness and intention may further strengthen and develop the qualities of sustained attention and behavioral perseverance that underlie stability. In turn, this practice in stability may be generalized across time and circumstance as well as recruited in the service of more complex, self-relevant pursuits. Given these hypothesized links, examining the relationship between informal mindfulness practices, such as mindful eating or mindful walking, may be particularly relevant in better understanding the development of a more stable personality.

Mindfulness and Plasticity

Results further suggested a positive relationship between dispositional mindfulness and plasticity. Although this relationship has not been explicitly articulated in the literature, it is logically supported by previous findings linking mindfulness with greater cognitive flexibility—a pairing that is extensively outlined in the Mindfulness to Meaning Theory (Garland et al., 2015). Mindfulness has long been theoretically linked with greater de-automatization (Deikman, 1966; Vago & Silbersweig, 2012), or less habitual, rigid behavioral patterns. Empirical work provides evidence in support of this claim, suggesting that mindfulness training reduces automatic responding (Wenk-Sormaz, 2005) and decreases attentional bias (Garland & Howard, 2013; Garland, Baker, & Howard, 2017), thereby expanding perceptual and cognitive fields that may then yield a broader range of behavioral options (Garland et al., 2015). Attentional control appears to be a critical feature of these broadening processes; without attending to feedback from goal-directed actions, no behavioral change can be initiated. Given that mindfulness is fundamentally a quality of attention, it appears theoretically consistent that the mindful meta-awareness skills -- observing and describing (e.g., Hadash, Plonsker, Vago & Bernstein, 2016) -- were most closely linked with the plasticity metatrait in this study. Presumably, individuals with greater meta-awareness would be more likely to recognize errors in an operative strategy or alternative opportunities. As such, mindfulness may strengthen and expand the feedback pathways between the individual and environment, while also allowing more selective responding to such communication.

The Metatraits and Well-Being

The pronounced difference in the relationships between the metatraits and psychological well-being is noteworthy. Stability evidenced a strong relationship with psychological well-being, but plasticity evidenced only a minimal relationship with psychological well-being. From an Aristotelian perspective, psychological well-being reflects an enduring, global estimation of meaningful living that de-emphasizes hedonic pleasure as a critical marker of the good life (Ryan & Deci, 2001; Ryff, 1989). It may be that psychological well-being reflects a more proactive and intentional approach to well-being, wherein present-moment actions and behaviors are situated in relation to a persisting commitment to personal growth

and development. This pursuit of psychological well-being may eschew momentarily rewarding possibilities for future satisfactions, an approach to well-being requiring emotional and behavioral stability.

While this study offers novel empirical evidence linking dispositional mindfulness, the personality metatraits and well-being, limitations should also be noted. First, the sample was recruited from a crowdsourcing website; and, although evidence suggests Mechanical Turk users provide good quality data (Buhrmester, Kwang & Gosling, 2011; Mason & Suri, 2012) replication in alternative samples is needed. Second, the cross-sectional nature of the data precludes causal testing and it may be that alternatively specified path models may also fit the data well. Longitudinal studies are needed to explore causal relationships between mindfulness training, personality development and well-being. Despite these limitations, evidence from this study suggests that dispositional mindfulness has a robust relationship with the metatraits, and the metatraits fully mediate the relationship between dispositional mindfulness and psychological well-being. As such, more mindful individuals appear to represent their personalities in ways that have substantive implications for well-being. Most notably, more mindfulness is linked with more stability, which is linked with greater well-being.

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Figure 1. Mindful Metatrait Model

Standardized regression coefficients for the relationships between dispositional mindfulness, the metatraits and psychological well-being. Standardized indirect effect of dispositional mindfulness is provided in the white, dashed box. Amount of variance explained in psychological well-being is provided in the grey, dashed box.

Figure 2. Mindful Facets Metatrait Model

Standardized regression coefficients for the relationships between the dispositional mindfulness facets, the metatraits and psychological well-being. Standardized indirect effect of each dispositional mindfulness facet is provided in the white, dashed box. Amount of variance explained in psychological well-being is provided in the grey, dashed box.

Table 1

Bivariate Correlations between Dispositional Mindfulness, the Big Five Personality Factors, and Psychological Well-Being

	1	1a	1b	1c	1d	1e	2	3	4	5	6	M (SD)
1. Dispositional Mindfulness	-											129.89 (20.24)
1a. Observing	.48***	-										28.19 (5.53)
1b. Describing	.77***	.41***	-									27.30 (6.28)
1c. Acting with Awareness	.77***	.11*	.46***	-								27.04 (7.00)
1d. Non-reacting	.52***	.38***	.26***	.18***	-							21.54 (5.01)
1e. Non-judging	.65***	-.14**	.36***	.56***	.08	-						25.81 (7.32)
2. Emotional Stability	.48***	.03	.22***	.42***	.44***	.39***	-					9.22 (3.15)
3. Conscientiousness	.49***	.11*	.30***	.50***	.25***	.37***	.44***	-				10.60 (2.78)
4. Agreeableness	.42***	.18***	.25***	.41***	.17**	.31***	.45***	.29***	-			10.46 (2.57)
5. Openness	.19***	.17***	.10*	.14**	.12*	.10*	.17***	.10*	.24***	-		10.01 (2.57)
6. Extraversion	.16**	.08	.17**	.07	.13*	.07	.15**	.04	.05	.22***	-	7.09 (3.18)
7. Psychological Well-Being	.66***	.25***	.44***	.57***	.35***	.49***	.49***	.51***	.42***	.25***	.23***	86.85 (16.61)