



## Examining mindfulness and psychological inflexibility within the framework of Big Five personality

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### ABSTRACT

Psychological inflexibility and mindfulness represent two constructs that have garnered a great deal of interest in recent years as central components in the conceptualization of many new cognitive and behavioral therapies. Nonetheless, though theoretically related, relatively little is known regarding associations between these two constructs and consensus models of trait personality such as the Big Five. The current study therefore aimed to more fully elucidate associations among these three domains within a relatively large, diverse undergraduate sample ( $N = 429$ ). Mindfulness was negatively associated with Neuroticism and positively associated with Conscientiousness while psychological inflexibility was positively associated with Neuroticism and negatively associated with Conscientiousness. Further, while Conscientiousness evidenced the strongest contribution to mindfulness, Neuroticism evidenced the strongest contribution to psychological inflexibility. Better elucidating how psychological inflexibility and mindfulness differentially relate to Big Five personality traits expands the nomological network surrounding these constructs and begins to reveal common processes underlying psychopathology and health behaviors.

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### 1. Introduction

A number of new cognitive and behavioral therapies have emerged in recent years that include mindfulness (e.g., enhanced attention to present moment), and psychological inflexibility (e.g., maladaptive experiential avoidance combined with diminished global functioning) in their conceptual frameworks and attempt to promote greater wellbeing through targeting these processes (Hayes, Luoma, Bond, Masuda, & Lillis, 2006).<sup>1</sup> This movement is, in part, a response to empirically based models postulating psychological health to be affected by how people respond and relate to their internal and external experiences, more so than by the presence of these experiences themselves. The constructs of psychological inflexibility and mindfulness reflect how an individual responds to his or her own internal and external environment and they have been found to be strongly associated with various forms of psychopathology and behavioral health (Brown, Ryan, & Creswell, 2007; Hayes et al., 2006).

Although psychological inflexibility and mindfulness are theorized to be related but distinct processes (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Masuda & Tully, 2012), a relative paucity of empirical evidence supports this conceptual position. In particular, it is surprising that although a large number of published studies have examined these constructs in relation to various outcomes of interest, only recently has the nomological net (Cronbach & Meehl, 1955) of these two constructs begun to be examined. As such, investigations of relations between these two processes and more well-established and understood constructs (e.g., the Big Five model of personality) are relatively scarce. To date, the Big Five model of personality is the dominant conceptual personality framework accounting for a diverse range of psychopathology (Kotov, Gamez, Schmidt, & Watson, 2010) and health-related (Goodwin & Friedman, 2006) outcomes. The present study aimed to more fully elucidate associations among these three domains within a relatively large, diverse undergraduate sample. Better elucidating how psychological inflexibility and mindfulness differentially relate to Big Five personality traits expands the nomological network surrounding these relatively newer constructs and may help to reveal common processes underlying psychopathology and health behaviors.

#### 1.1. Psychological inflexibility

The concept of psychological inflexibility stems from a contemporary behavioral account of complex human behavior and

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<sup>1</sup> We acknowledge that mindfulness and psychological inflexibility may be considered trait-like but are also commonly viewed as behavioral processes subject to contextual factors. For the purposes of the current paper, we chose to take an agnostic position.

psychopathology (Hayes et al., 2006). It refers to “the rigid dominance of psychological reaction over chosen values and contingencies in guiding actions” (Bond et al., 2011, p. 678). More specifically, psychological inflexibility is marked by experiential avoidance (e.g., unwillingness to remain in contact with distressing thoughts, feelings, memories, and other private experiences) combined with diminished daily functioning. Accumulating evidence suggests that psychological inflexibility is associated with a wide range of psychopathology, including depression (Bond et al., 2011), anxiety (Masuda & Tully, 2012), and general psychological distress (Masuda, Price, & Latzman, 2012).

### 1.2. Mindfulness

Mindfulness, although defined differently across investigations (Baer et al., 2006), is most often conceptualized as a regulation process of enhanced attention to present moment experiences (Brown & Ryan, 2003). Thoughts, feelings, and bodily sensations are considered as events to be noticed rather than on which to be elaborated (e.g., acting on them, taking them literally). Mindfulness has been found to be positively related to psychological well-being (Brown et al., 2007) and inversely associated with a wide range of more problematic psychological outcomes, including depression (Roemer et al., 2009), anxiety (Roemer et al., 2009), and general distress (Masuda et al., 2012).

### 1.3. Big Five personality

The Big Five model of personality is the most widely used model of personality in the research literature (John, Naumann, & Soto, 2008). Specifically, extensive factor analytic examinations have consistently revealed five robust broad personality dimensions across languages and cultures (McCrae & Costa, 1997): Extraversion (e.g., energetic approach-oriented), Agreeableness (e.g., prosocial tendency towards others), Conscientiousness (e.g., impulse control abilities and attention to detail), Neuroticism (e.g., general tendency to experience negative emotions and distress), and Openness (e.g., open-mindedness, originality). A large body of literature confirms the importance of Big Five personality traits with respect to both psychological and physical health. For example, meta-analytic findings confirm the link between Conscientiousness and a variety of health-related behaviors including diet and exercise, substance use behaviors, violence, risky sexual behaviors, among others (Bogg & Roberts, 2004). Additionally, in addition to coping difficulties in general (David & Suls, 1999), Neuroticism has repeatedly been shown to be the core personality trait associated with a range of psychopathology, most notably anxiety and, along with low levels of Extraversion, depression (Clark & Watson, 1991; Mineka, Watson, & Clark, 1998). Additionally, low Agreeableness has been repeatedly found to be associated with aggression (e.g., Latzman, Vaidya, Watson, & Clark, 2011) and extreme variants of Openness have been shown to be associated with various forms of personality pathology (e.g., Widiger & Trull, 1992). Overall, given the exceedingly large extant literature concerning strong associations between Big Five personality and a wide range of psychological and physical health outcomes, these set of traits should be included in investigations of other constructs linked to health-related outcomes.

### 1.4. Relations among psychological inflexibility, mindfulness, and Big Five personality

Although several studies have demonstrated an inverse association between psychological inflexibility and mindfulness (Baer et al., 2006; Masuda & Tully, 2012), less is known concerning associations between these two constructs and Big Five personality

traits. In fact, with regard to psychological inflexibility, we could locate only three studies that report data on associations with Big Five personality (Bond, Lloyd, & Guenole, in press; Gloster, Klotsche, Chaker, Hummel, & Hoyer, 2011; Gámez, Chmielewski, Kotov, Ruggero, & Watson, 2011). Specifically, all three studies found the strongest association between psychological inflexibility and Neuroticism (*Mdn*  $r = .68$ ). Further, Gloster et al. (2011) found psychological inflexibility to be negatively associated with Extraversion, Conscientiousness, and Openness ( $r_s = -.49, -.35,$  and  $-.18$ , respectively). No association was found with Agreeableness. Similarly, across two independent samples, Gámez et al. (2011) found psychological inflexibility negatively associated with Conscientiousness, Extraversion, and Agreeableness ( $r_s = -.37, -.26,$  and  $-.47$ , respectively). Associations with Openness were less consistent. Taken together, results of these three extant studies clearly showed a large association between Neuroticism and psychological inflexibility, followed by negative associations with Conscientiousness, suggesting that psychological inflexibility strongly involves the tendency to experience greater levels of distress and negative emotions and difficulties with controlled and deliberate actions.

With respect to mindfulness, research examining relationships with Big Five personality traits has been equivocal. In an attempt to begin to address these inconsistent findings, however, Giluk (2009) conducted a meta-analysis investigating associations between mindfulness and Big Five personality traits. Mindfulness was found to be strongly negatively associated with Neuroticism and moderately correlated with Conscientiousness.

To date, however, researchers have yet to examine associations between mindfulness and psychological inflexibility and Big Five personality in concert. This is surprising given not only the strong theoretical (Kashdan & Rottenberg, 2010) and empirical (Bond et al., in press; Giluk, 2009; Gloster et al., 2011) associations between these two relatively newer constructs and Big Five personality, but also the strong association between mindfulness and psychological inflexibility.

### 1.5. Current study

The current study aims to fill this void in the literature by examining both mindfulness and psychological inflexibility simultaneously within the context of Big Five personality. Such an investigation will contribute to the conceptualization of these two, relatively newer constructs as it represents an examination of the nomological net of these two constructs. In addition, the current investigation examines similarities and differences in associations between these constructs and the well-defined, widely-used Big Five model of personality. Investigating mindfulness and psychological inflexibility simultaneously is crucial as the conceptual and empirical associations between the two constructs still remain oblique; mindfulness has been viewed as a facet of psychological inflexibility (Hayes et al., 2006) or as a process related to, but distinct from, psychological inflexibility (Baer et al., 2006). By examining these constructs in concert, the current study may help to reveal common processes underlying psychopathology and health behaviors.

Although this is the first investigation to date of these processes in concert, we offer a number of tentative hypotheses based on the relevant extant literature. Given the strong (negative) correlation repeatedly found between mindfulness and psychological inflexibility, we expect associations between Big Five personality and these two processes to be largely similar, albeit in opposite directions. Consistent with previous findings (Giluk, 2009; Gloster et al., 2011), and following from well-established associations with psychological distress (Hayes et al., 2006) as well as the connection between the experience of negative emotions (i.e., Neuroticism) and the processing of negative emotions (i.e., mindfulness and

psychological inflexibility), we expected mindfulness and psychological inflexibility to be most strongly associated with Neuroticism (negatively for mindfulness and positively for psychological inflexibility). We also expected both constructs to be associated with Conscientiousness, a personality dimension shown to be strongly predictive of health-related behaviors (Bogg & Roberts, 2004), behaviors that have also been shown to be associated with both mindfulness and psychological inflexibility (Giluk, 2009; Gloster et al., 2011). While Giluk's meta-analytic findings and Gamez et al.'s equivocal results do not suggest a significant association between either mindfulness or psychological inflexibility and Openness, theoretical work does suggest such an association. Specifically, due to the elements of attention, curiosity, and receptivity reflected in mindfulness and cognitive and behavioral flexibility reflected in psychological flexibility, all aspects of the Openness construct, it would seem that Openness would be associated both (Baer et al., 2006; Giluk, 2009). With regard to Extraversion, we expected divergent findings in terms of associations with mindfulness and psychological inflexibility. Given previous findings of significant associations between psychological inflexibility and Extraversion (e.g., Gloster et al., 2011; Gámez et al., 2011), we expected Extraversion to be negatively associated with psychological inflexibility but not associated with mindfulness (Giluk, 2009). Lastly, given equivocal previous findings with regard to associations with Agreeableness, with some investigators reporting significant associations with psychological inflexibility (e.g., Gámez et al., 2011) and others failing to find associations (e.g., Gloster et al., 2011), we did not advance any a priori hypotheses.

## 2. Method

### 2.1. Participants

Participants were 429 undergraduates (79.7% female) between the ages of 17 and 57 years ( $M_{\text{age}} = 21.26 \pm 5.61$ ) at a large urban Southeastern university, recruited from a departmental research participation pool. Participants received credit in partial fulfillment of a research exposure requirement. The ethnic composition of the sample was representative of the university with 35% self-identifying as "European-American," 30% identifying as "African-American," 21% identifying as "Asian-American/Pacific Islander," 7% identifying as "Hispanic American," and 7% identifying as "bicultural," "other," or "Native American".

### 2.2. Procedure and measures

#### 2.2.1. Mindfulness

The *Mindful Attention Awareness Scale* (MAAS; Brown & Ryan, 2003) is a 15-item, self-report measure, which is designed to assess the frequency of mindlessness, the opposite of the construct of mindfulness, over time (e.g., "It seems I am running automatic without much awareness of what I'm doing"). Participants rate the extent to which they function mindlessly in daily life, using a six-point Likert-type scale ranging from 1 (*almost always*) to 6 (*almost never*). The MAAS has been shown to evidence good convergent validity with other measures of mindfulness (Baer et al., 2006) and good internal consistency (Brown & Ryan, 2003). Cronbach's alpha in the present study was .90.

#### 2.2.2. Psychological inflexibility

The *Acceptance and Action Questionnaire* (AAQ-II; Bond et al., 2011) is a 7-item questionnaire designed to assess psychological inflexibility. Although AAQ is often referred to generically as a measure of experiential avoidance, it encompasses the other

features of psychological inflexibility, namely interference of these private events in daily functioning (e.g., "My painful memories prevent me from having a fulfilling life"). Participants rate the extent to which statements are true or not true of them on a 7-point Likert-type scale, ranging from 1 (*Never true*) to 7 (*Always true*). Previous research has found AAQ-II to have good psychometric properties (Bond et al., 2011). Cronbach's alpha of this measure in the present study was .92.

#### 2.2.3. Big Five personality

The *Big Five Inventory* (BFI; John et al., 2008) is a 44-item, self-report measure, designed to assess the Big Five personality traits: Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness. Participants rate the extent to which various statements describe them on a 5-point Likert-type scale ranging from *Agree Strongly* to *Disagree Strongly*. Previous research has confirmed strong psychometric properties (Rammstedt & John, 2007). In the current sample, Cronbach alphas ranged from .86 (Neuroticism) to .75 (Openness).

### 2.3. Analyses

We first examined zero-order correlations of Big Five personality traits with the mindfulness and psychological inflexibility scales. Structural equation modeling (SEM) procedures were then employed using MplusVersion 6 (Muthen & Muthen, 2010) using maximum likelihood estimation to examine associations between five latent Big Five personality traits and latent mindfulness and psychological inflexibility controlling for age, sex, and ethnicity. We used the items that make up each of the scales to model each of the Big Five personality traits, mindfulness, and psychological inflexibility. To account for shared variance between mindfulness and psychological inflexibility, we analyzed a single SEM model with Big Five personality traits simultaneously regressed on mindfulness and psychological inflexibility allowing them to correlate freely.

## 3. Results

### 3.1. Preliminary analyses

Table 1 shows bivariate correlations between mindfulness, psychological inflexibility, and Big Five personality. Consistent with expectations and previous research, mindfulness and psychological inflexibility were negatively associated with each other ( $r = -.48$ ). With regard to associations with Big Five personality, mindfulness was most strongly associated with Conscientiousness followed by Neuroticism (negatively) and Agreeableness. Psychological inflexibility was most strongly positively associated with Neuroticism and also evidenced moderate to strong negative correlations with Conscientiousness, Agreeableness, and Extraversion. Openness was largely unrelated to either mindfulness or psychological inflexibility. Further, as is often found, Big Five personality scales were found to have a small to moderate association with each other.

### 3.2. Predicting mindfulness and psychological inflexibility from Big Five personality

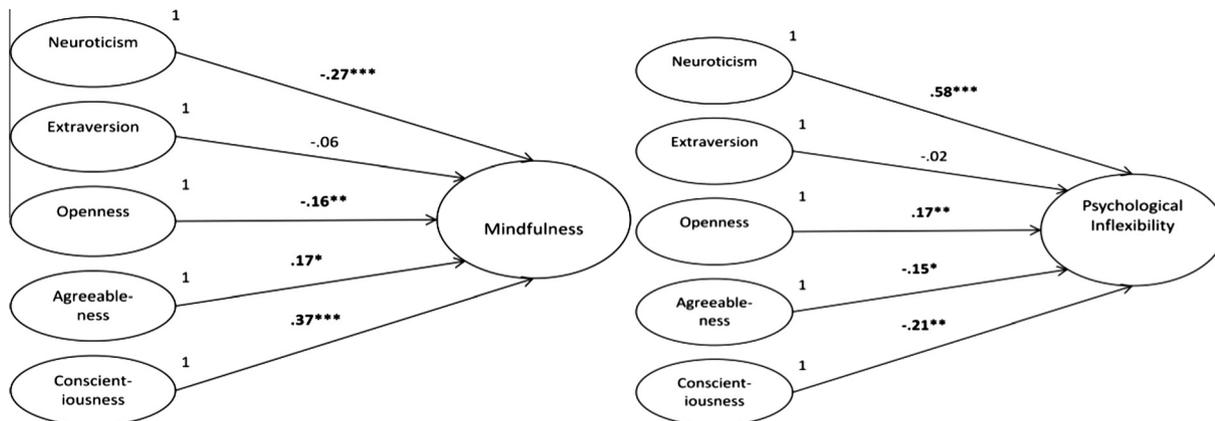
Measurement models for each of the five latent traits fit adequately with all but one of the single item indicators loading significantly on their target latent variable. The one exception was a BFI item on the Openness scale (BFI-35).<sup>2</sup> This item was therefore

<sup>2</sup> Although the fit of the model did improve, removal of this item did not change the results in any other way.

**Table 1**  
Correlations among Big Five personality, mindfulness, and psychological inflexibility.

	Mind	PIF	E	A	C	N	O
Mindfulness (Mind)							
Psychological inflexibility (PIF)	-.48						
<i>Big Five Personality</i>							
Extraversion (E)	.19	-.34					
Agreeableness (A)	.41	-.43	.15				
Conscientiousness (C)	.50	-.51	.31	.48			
Neuroticism (N)	-.44	.64	-.41	-.43	-.47		
Openness (O)	.09	-.10	.14	.27	.21	-.19	
$\alpha$	.90	.92	.83	.76	.81	.86	.75

Notes: N = 429. Correlations  $\geq .10$  are significant,  $p < .05$ .



**Fig. 1.** Big Five personality predicting mindfulness and psychological inflexibility. Note:  $X^2 = 4866.84$ ;  $\ln(L) = -42205.21$ ;  $k = 222$ ; RMSEA = .05; SRMR = .07. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ . As described in text, loadings shown are from full SEM model. Latent variable indicators, not shown, are all observed variables. Model controls for age, sex, and ethnicity.

dropped from the subsequent SEM analyses. To examine unique associations between Big Five personality and mindfulness and psychological inflexibility, the five latent Big Five personality dimensions were regressed on latent mindfulness and psychological inflexibility in a single SEM model that included age, sex, and ethnicity as covariates (see Fig. 1).<sup>3</sup> Age, sex, and ethnicity were not uniquely associated with either mindfulness or psychological inflexibility (all  $\beta$ s  $< |.08|$ ,  $t$ s  $< |1.78|$ ,  $p$ s  $> .05$ ). Mindfulness and psychological inflexibility were significantly correlated with each other at the latent level ( $r = -.14$ ,  $p < .05$ ). As shown in Fig. 1, with the exception of Extraversion, all personality dimensions evidenced significant unique contributions to the prediction of mindfulness, with Conscientiousness followed by low Neuroticism evidencing the largest contributions, respectively ( $\beta$ s = .37,  $-.27$ ;  $t$ s = 4.76,  $-3.99$ ,  $p$ s  $< .001$ , respectively). It should be noted that these findings are largely similar to the bivariate results except for Openness which was unrelated to mindfulness at the bivariate level but evidenced a significant unique negative association in our SEM model.

With regard to explaining psychological inflexibility, also with the exception of Extraversion, all personality dimensions evidenced significant unique contributions. Neuroticism, in particular, evidenced the strongest association with psychological inflexibility when considered simultaneously with the other personality traits ( $\beta = .58$ ;  $t = 10.71$ ,  $p < .001$ ) suggesting that much of psychological inflexibility is explained by Neuroticism. Again, although not associated at the bivariate level, Openness evidenced a significant main

effect in the SEM model emerging as positively associated with psychological inflexibility.

#### 4. Discussion

The current study investigated unique associations between Big Five personality and mindfulness and psychological inflexibility. As expected, while not strongly associated with one another, both mindfulness and psychological inflexibility evidenced similar associations with Big Five personality, albeit associations were in the opposite direction. Specifically, mindfulness was negatively associated with Neuroticism and positively associated with Conscientiousness while psychological inflexibility was positively associated with Neuroticism and negatively associated with Conscientiousness. Further, while Conscientiousness evidenced the strongest contribution to mindfulness, Neuroticism evidenced the strongest contribution to psychological inflexibility.

##### 4.1. Psychological inflexibility

Consistent with expectations, psychological inflexibility appears to reflect the general tendency to experience negative emotions and distress (i.e., Neuroticism) in addition to diminished impulse control abilities (i.e., Conscientiousness). Associations between psychological inflexibility and Neuroticism and Conscientiousness are particularly relevant to both theoretical and empirical links to a wide range of psychopathology (Hayes et al., 2006). Specifically, as these two personality traits are also associated with a wide range of mental health outcomes (Goodwin

<sup>3</sup> Loadings of indicators for each of the latent traits are not shown but are available from the first author.

& Friedman, 2006), our findings can be interpreted in a variety of ways. One possibility is that results of the current study further support the assertion that psychological inflexibility represents a generalized diathesis to psychopathology (Hayes et al., 2006). Just as plausible an assertion, however, may be that psychological inflexibility is a diathesis to psychopathology *only* because it is an indicator of Neuroticism. The strong association between Neuroticism and psychological inflexibility was not unexpected as both constructs are theorized to reflect distress (Gámez et al., 2011). Though strongly associated with one another in the current study, there does appear, however, to be unique variance in each. A number of studies have shown the incremental validity of psychological inflexibility beyond Neuroticism in predicting a variety of indices of functioning (Gloster et al., 2011) as well as symptoms of depression and anxiety (Boelen & Reijntjes, 2008). This may be a reflection of the assertion that in addition to distress and negative emotionality, psychological inflexibility, but not Neuroticism, reflects the way an individual responds to or is affected by negative emotionality and other private events, such as worries (Kashdan & Rottenberg, 2010).

#### 4.2. Mindfulness

While psychological inflexibility was most strongly associated with Neuroticism, as expected, mindfulness demonstrated the strongest association with conscientiousness, a trait reflecting impulse control abilities and attention to detail (John et al., 2008). The association between mindfulness and Conscientiousness is somewhat expected for several reasons. First, both mindfulness and Conscientiousness emphasize orientation to present moment-to-moment experiences (Brown & Ryan, 2003). Second, mindfulness has previously been found to be negatively associated with impulsivity, a dimension largely reflected by Conscientiousness (Murphy & MacKillop, 2012; Vaidya, Latzman, Markon, & Watson, 2010). As such, it is speculated that the association between mindfulness and Conscientiousness is established, in part, because both reflect present-moment awareness and low-levels of impulsivity.

Consistent with extant literature (Baer et al., 2006) mindfulness was negatively associated with Neuroticism suggesting the construct of mindfulness largely reflects low trait negative emotionality. Further, associations between Conscientiousness and Neuroticism and mindfulness are also consistent with findings confirming associations between these constructs and both psychological and physical health and well-being. Taken together, our findings provide further support for the role of mindfulness in understanding psychopathology and psychological health (Brown & Ryan, 2003). Further, results of the current study underscore the importance of considering general personality traits in examinations of associations between mindfulness, and psychological inflexibility, and outcomes of interest.

Though results of the current study were largely consistent with expectations, one surprising finding was the associations found between Openness and both psychological inflexibility and mindfulness in the SEM analyses. Although previous studies have largely been equivocal, we expected Openness to be negatively associated with psychological inflexibility and positively associated with mindfulness. Surprisingly, although the general direction of zero-order correlations were consistent with this hypothesis, opposite findings emerged in SEM analyses. When considered simultaneously with the other Big Five personality traits, Openness was positively associated with psychological inflexibility and negatively associated with mindfulness, suggesting a suppressor effect of some kind. When examined separately, as well as simultaneously with Extraversion and Neuroticism, in the explanation of mindfulness and psychological inflexibility, accounting for shared variance between the two dependent variables, results were

largely consistent with zero-order correlations. It was only when Agreeableness and Conscientiousness, both separately and simultaneously, were included did the direction of the association change suggesting that after accounting for shared variance with Agreeableness and Conscientiousness, the remaining features of Openness may be quite different from its original defining features (e.g., awareness, contact with present moment, open curiosity). Though not possible to directly examine in the current study given our unidimensional measurement of Openness, one potential explanation for this finding may be the multidimensional nature of the construct. Future research is needed to examine the replicability of this finding and to further examine this potential suppressor effect and should explicitly examine what exactly the remaining variance in Openness may be that is driving these paradoxical findings. Specifically, future research should utilize instruments that include facet-level Openness information.

The present findings are not without limitations. Due to the cross-sectional, correlational nature of our data, causal conclusions are not possible. It is therefore important for future longitudinal work to examine prospectively associations between Big Five personality and mindfulness and psychological inflexibility. Also, although sex was covaried in our multivariate analyses, the use of a predominantly female undergraduate sample may limit the generalizability of our findings to more diverse populations, including those that are less well educated, more clinical and, potentially, more male.

Additionally, the constructs of interest are bound to the self-report measures used. To date, there are several self-report instruments of mindfulness available (Baer et al., 2006), and each of them views mindfulness somewhat differently. The present study used the Mindful Awareness and Attention Scale (Brown & Ryan, 2003), one of the most widely used instruments of mindfulness. However, it is important to note the construct validity of MAAS has been challenged in recent years (Grossman, 2011; Van Dam, Earleywine, & Borders, 2010).

#### 5. Conclusions

Limitations notwithstanding, results of the current study are largely consistent with hypotheses as well as previous findings. Overall, the present study extended the extant literature by considering the widely-studied constructs of psychological inflexibility and mindfulness within the generally-accepted Big Five model of personality. Results suggest that although psychological inflexibility and mindfulness are indeed two related constructs, they appear to have distinct associations with Big Five personality. Taken together, results of the current study help to widen the nomological net within which psychological inflexibility and mindfulness fall by beginning to integrate two historically disparate literatures both focused on studying individual difference dimensions associated with mental health and adaptive functioning. Future research should examine the ways in which these various constructs contribute uniquely and interactively in the prediction of psychological and physical health outcomes.

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