

On the attitudinal consequences of being mindful:  
Links between mindfulness and attitudinal ambivalence

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### **Abstract**

A series of studies examined whether mindfulness is associated with the experience of attitudinal ambivalence. Studies 1A and 1B found that mindful individuals expressed greater comfort holding ambivalent views and reported feeling ambivalent less often. More mindful individuals also responded more positively to feelings of uncertainty (as assessed in Study 1B). Study 2 replicated these effects and demonstrated that mindful individuals had lower objective and subjective ambivalence across a range of attitude objects, but did not differ in attitude valence, extremity, positivity/negativity, strength, or the need to evaluate. Study 3 showed that the link between greater ambivalence and negative affect was buffered by mindfulness, such that there was no link between the amount of ambivalence and negative affect among more mindful individuals. The results are discussed with respect to the benefits of mindfulness in relation to ambivalence and affect.

**KEYWORDS: MINDFULNESS, ATTITUDES, AMBIVALENCE**

**On the attitudinal consequences of being mindful:  
Links between mindfulness and attitude ambivalence**

We routinely experience mixed reactions to objects in our environment. At a recent coffee shop visit, the lead author was presented with a free sample of cake. He was torn – while he likes cake, he knows that such an indulgence is unhealthy. He quietly deliberated before giving the cake to his friend. Of course, people frequently experience ambivalent reactions over more substantial objects, including their racial attitudes, their opinions about important social issues, and their own self-esteem (e.g., Haddock & Gebauer, 2011; van Harreveld, van der Plight, & de Liver, 2009b). Furthermore, the experience of ambivalence is usually associated with negative affect (DeMarree, Wheeler, Briñol, & Petty, 2014; Petty, Briñol, & Johnson, 2012; Rydell, McConnell, & Mackie, 2008). In this paper, we consider links between ambivalence and the construct of mindfulness. Specifically, we address whether individual differences in mindfulness are associated with individuals' comfort about holding ambivalent views, how frequently they report ambivalence, and whether mindfulness buffers the link between the experience of ambivalence and negative affect.

**Integrating Ambivalence and Mindfulness**

Ambivalence refers to the extent to which an individual has mixed views about an object. The experience of ambivalence is typically associated with negative affect that individuals are motivated to reduce (Petty et al., 2012; Rydell et al., 2008), similar to how dissonance is postulated to invoke arousal (Festinger, 1957). In one interesting study regarding the ambivalence-negative affect link, van Harreveld, Rutjens, Rotteveel, Nordgren, and vanderPligt (2009a) had participants read a message that contained either

univalent or ambivalent information. For ambivalence-induced participants, higher skin conductance was found when participants subsequently made a choice about the topic.

Mindfulness is defined as “paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally” (Kabat-Zinn, 1994, p.4). Brown and Ryan (2003, p.822) described mindfulness as “the state of being attentive to and aware of what is taking place in the present.” At its core, mindfulness reflects a conscious awareness of what is presently occurring, with less attention devoted to rumination about the past or anxieties about the future. Numerous streams of (primarily) clinical research have documented the psychological benefits associated with heightened mindfulness (see Brown, Cresswell, & Ryan, 2015; Ie, Ngnoumen, & Langer, 2014). Of particular relevance to the current research, mindfulness is linked with more positive affect and self-esteem (see Brown et al., 2015).

Some strands of research have explored links between mindfulness and attitude-relevant variables. For example, Chatzisarantis and Hagger (2007) found that increased mindfulness elicits a greater intention-behavior relation. Kiken and Shook (2011, 2014) found that heightened mindfulness reduces the negativity bias and elicits greater optimism. Koole, Govorun, Cheng, and Gallucci (2009) found that scores on implicit and explicit measures of self-esteem were significantly correlated among individuals who meditated, but not among individuals in a control condition.

Here, we take a different perspective and assess links between mindfulness and ambivalence. We believe that mindfulness is likely to be linked to how comfortable people feel when ambivalent and how frequently they feel ambivalent. As outlined in greater detail below, we propose that more mindful individuals should be more comfortable

experiencing ambivalence, while competing views suggest that more mindful individuals might be more *or* less likely to feel ambivalent. We also propose that if mindfulness increases comfort with ambivalence, it can help buffer the link between the experience of ambivalence and negative affect.

We tested these hypotheses in a series of studies. In Studies 1A and 1B, participants completed a measure of mindfulness in addition to questions about how comfortable they feel with ambivalence and how frequently they feel they are ambivalent. Based on the results of these studies, Study 2 assessed whether mindfulness is linked with *actual* levels of objective and subjective ambivalence and other properties such as attitude favorability, extremity, positivity/negativity, and strength. Finally, Study 3 addressed whether mindfulness buffers the link between ambivalence and negative affect.

### **Studies 1A and 1B**

The primary aim of Studies 1A and 1B was to assess whether dispositional mindfulness is correlated with meta-perceptions of *ambivalence comfort* and *ambivalence frequency*. Regarding ambivalence comfort, a core component of mindfulness is thinking about one's world in a non-judgmental and non-reactive way, with greater acceptance of one's thoughts (see e.g., Brown et al., 2015; Ie et al., 2014; Williams & Penman, 2011; see also Kabat-Zinn, 1994). Given the importance attached to non-evaluative experiencing within mindfulness, mindful individuals should be more comfortable holding ambivalent attitudes, as being mindful should allow less psychological resistance in response to competing beliefs. Further, as mindfulness has been linked with greater acceptance of uncertainty and decreases in negative, ruminative thoughts (Frewen, Evans, Miraj, Dozois,

& Partridge, 2008; Kiken & Shook, 2014; Langer, 1994), more mindful individuals should be less likely to experience the discomfort that is usually associated with ambivalence (see Luttrell, Briñol, & Petty, 2014). Taken together, these strands of work converge on the proposition that mindful individuals should be more likely to express comfort about holding ambivalent attitudes.

Regarding ambivalence frequency, different perspectives imply that mindfulness could be positively *or* negatively linked with how often people report feeling ambivalent. On one hand, mindful individuals might be more likely to report greater ambivalence, as they should be more open to competing perspectives. Indeed, as noted by Luttrell et al. (2014, p.262) “with its promotion of more diverse thinking, mindfulness could provoke more frequent attitudinal ambivalence.” On the other hand, mindful individuals might be less likely to experience ambivalence. Evidence has demonstrated that mindfulness training is associated with reduced self-discrepancies (Crane et al., 2008). As smaller actual-ideal discrepancies are associated with less ambivalence (DeMarree et al., 2014), mindfulness could be linked with feeling ambivalent less often. Similarly, if mindful individuals experience less negative affect in general (see Kiken & Shook, 2011), it is congruent with the notion that these individuals might report being ambivalent less often.

## STUDY 1A

### Method

**Participants.** 107 individuals (78 females;  $M_{\text{age}}=23.87$  years,  $SD=4.77$ ) from Heidelberg University participated for course credit or 4€.

**Materials.** Materials were presented in German. Here, we provide English translations of sample items.

***Mindful Attention Awareness Scale (MAAS).*** Participants responded to 15 items developed by Brown and Ryan (2003;  $\alpha=.82$ ). A sample item is “I could be experiencing some emotion and not be conscious of it until sometime later.” Participants responded using a six-point scale (1=almost always; 6=almost never). Higher scores represent greater mindfulness.

***Ambivalence comfort.*** Nine items assessed respondents’ comfort when holding ambivalent views ( $\alpha=.87$ ). The items’ development was guided by research examining individuals’ responses to dissonance (see Elliot & Devine, 1994). A sample item is “I don’t mind having an attitude toward a certain issue or person that is both positive and negative.” Participants responded using a seven-point scale (1=do not agree at all; 7=agree absolutely). Higher scores represent greater ambivalence comfort.

***Ambivalence frequency.*** Seven items assessed respondents’ meta-perceptions of how frequently they experience ambivalence ( $\alpha=.78$ ). The items’ development was guided by research examining individuals’ feelings of ambivalence (see Newby-Clark, McGregor, & Zanna, 2002). A sample item is “I often have mixed feelings about a certain issue or person.” Participants responded using a seven-point scale (1=does not apply at all; 7=applies completely). Higher scores represent greater ambivalence frequency.

**Procedure.** Participants took part in groups of one to six. After providing consent, participants completed the MAAS followed by the ambivalence measures. They then completed an independent study on memory before being debriefed.

## Results and Discussion

Table 1 presents correlations among mindfulness, ambivalence comfort, and ambivalence frequency. As expected, mindfulness was positively correlated with ambivalence comfort,  $r(107)=.27, p=.005$ ; more mindful individuals reported being more comfortable holding ambivalent attitudes. Mindfulness was negatively correlated with ambivalence frequency,  $r(107)=-.27, p=.005$ ; more mindful individuals reported holding ambivalent attitudes less often. There was a marginally significant negative correlation between the comfort and frequency measures,  $r(107)=-.19, p=.053$ ; greater ambivalence frequency was associated with less ambivalence comfort.

While these results offer a promising start in understanding links between mindfulness and ambivalence, we sought to replicate these results using an alternative measure of mindfulness. While the MAAS is a popular measure of mindfulness, it primarily assesses the extent to which individuals act with awareness (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). In Study 1B, we measured mindfulness via a brief version of the Five Facets Mindfulness Questionnaire (FFMQ; Baer et al., 2006), which allowed us to assess how different facets of mindfulness are linked with ambivalence. In particular, the components of non-judging of one's inner experiences and non-reactivity to one's inner experiences might be most relevant to ambivalence, as they are particularly relevant to evaluation. We also asked participants how positively they respond to uncertainty. Given the ambivalence comfort results of 1A, we hypothesized that mindful individuals would respond to uncertainty more positively. Finally, independent of the study's main aim, we tested relations among mindfulness, well-being, and thinking about future events.



## STUDY 1B

### Method

**Participants.** 80 individuals (30 females;  $M_{\text{age}}=19.78$  years,  $SD=1.62$ ) from Exeter University participated for £10.<sup>1</sup>

### Materials.

**FFMQ.** Participants completed a subset of items from the FFMQ (Baer et al., 2006). The FFMQ assesses facets of observing, describing, acting with awareness, non-judging of inner experience, and non-reactivity to inner experience. A sample item is “I make judgments about whether my thoughts are good or bad”. Participants responded using a seven-point scale (1=never; 7=always). We computed an overall FFMQ score ( $\alpha=.67$ ) as well as individual facet scores ( $\alpha$ s from .54-.73), with higher scores representing greater mindfulness

**Ambivalence comfort.** Participants were asked “How comfortable do you feel when you are (ambivalent/uncertain)?” Responses were provided on a seven-point scale (1=not at all comfortable; 7=extremely comfortable). Answers to the two questions were correlated ( $r(80)=.41$ ,  $p<.001$ ) and combined to form one score.

**Ambivalence frequency.** Participants were asked “How often do you feel (ambivalent/uncertain)?” Responses were provided on a seven-point scale (1=never;

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<sup>1</sup> Demographic information was missing for 21 participants. Participants completed the questionnaire after participating in an economics experiment completely unrelated to mindfulness and ambivalence.

7=always). Answers to the two questions were correlated ( $r(80)=.39, p<.001$ ) and combined to form one score.

**Reaction to uncertainty.** Participants were asked “How do you react when you are uncertain?” Responses were provided on a seven-point scale (1=extremely negatively; 7=extremely positively).

**Well-being.** Participants completed a brief version of the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS; Stewart-Brown et al., 2009). A sample item is “I’ve been feeling optimistic about the future.” Responses were provided on a seven-point scale (1=never; 7=always) with higher scores representing greater well-being ( $\alpha=.79$ ).

**Perceptions about future events.** Participants completed six items adapted from the Future Events Scale (Andersen, 1990). A sample item is “I will do well on an important class project.” Responses were provided on a seven-point scale (1=extremely unlikely; 7=extremely likely) with higher scores representing more positive perceptions ( $\alpha=.84$ ).

**Procedure.** Participants completed the questions in a laboratory setting.

## Results and Discussion

Table 2 presents correlations among mindfulness scores and the primary measures. As in Study 1A, overall mindfulness was positively correlated with ambivalence comfort,  $r(80)=.34, p=.002$ , and negatively correlated with ambivalence frequency,  $r(80)=-.60, p<.001$ . Ambivalence comfort and frequency were negatively correlated,  $r(80)=-.32,$

$p=.004$ . An examination of the individual FFMQ facets revealed that all facets (except for observe) were linked with either or both ambivalence comfort and ambivalence frequency. Overall FFMQ scores were positively correlated with how people reacted to uncertainty,  $r(80)=.33, p=.003$ , such that more mindful people feel that they respond more positively to uncertainty. This provides evidence regarding how mindfulness can be beneficial with respect to the experience of ambivalence. Finally, consistent with past research (see Brown et al., 2015), overall mindfulness was positively correlated with well-being ( $r(80)=.52, p<.001$ ) and more positive perceptions about the future,  $r(80)=.48, p<.001$ .

### **SUMMARY OF STUDIES 1A AND 1B**

Across two studies, mindfulness was linked with greater ambivalence comfort. These findings integrate with work that has linked mindfulness with an increased acceptance of uncertainty (Frewen et al., 2008; Langer, 1994; see Luttrell et al., 2014), as well as research showing that individuals from Eastern cultures (that are typically more aligned with mindfulness ideals) are more accepting of contradictory information compared to participants from Western cultures (Peng & Nisbett, 1999).

Regarding the link between mindfulness and ambivalence frequency, both studies found that more mindful individuals reported feeling ambivalent less frequently. This might be accountable to mindful individuals have reduced actual-ideal self-discrepancies, a construct that elicits lower levels of ambivalence (DeMarree et al, 2014). Of course, it might also be due to mindful people actually experiencing ambivalence less frequently, or mindfulness being linked with other attitudinal properties. We further address the link between mindfulness and ambivalence frequency in Study 2.

## STUDY 2

While the results of Studies 1A and 1B generated novel insights, they offer new questions to address. Specifically, we first sought to better understand the link between mindfulness and reduced perceptions of ambivalence frequency. Is it because more mindful people actually experience less subjective and objective ambivalence than less mindful individuals? In Studies 1A and 1B, we specifically asked people to report their meta-perceptions of how frequently they feel ambivalent – participants were not asked to directly consider their ambivalence toward specified attitude objects. In Study 2, we asked participants to report their actual levels of objective and subjective ambivalence toward a range of attitude objects (in addition to asking the comfort and frequency questions used in Studies 1A and 1B). Of course, the mindfulness-ambivalence frequency link might also be attributable to other attitudinal properties. Perhaps mindful individuals hold more favorable attitudes than less mindful individuals. When looking at the individual positive and negative components of these attitudes, are mindful individuals more or less positive or negative? This is potentially relevant given the core role of negativity in ambivalence (see Priester & Petty, 1996). We also considered whether dispositional mindfulness is linked with attitude extremity or perceptions of attitude strength. Finally, it is possible that the mindfulness-ambivalence frequency link is attributable to mindfulness being linked to individual differences in the need to make evaluations. Taken together, in Study 2 we tested whether the meta-perceptive ambivalence frequency results of Studies 1A and 1B extend to specific ambivalence individuals report for a set of attitude objects.

### Method

**Participants.** 112 individuals were recruited via Prolific Academic, an online research portal. 24 respondents failed an attention check, leaving 88 participants (39 females;  $M_{age}=29.35$  years;  $SD=8.35$ ) for analysis. Participants received £2.50 for their participation.

**Materials.**

**Mindfulness measures.** Participants completed the MAAS and a brief version of the FFMQ.

**Attention check.** Toward the beginning of the survey, participants read a paragraph of text which contained the following statement: "... to demonstrate that you have read the instructions, please do not select all your favourite activities, but instead select only the box marked basketball." After reading the text, participants were asked "Which of these activities do you engage in regularly? (Click on all that apply)". Basketball was one of 12 options.

**Attitudes.** Participants answered a series of questions regarding their views toward five objects: abortion, Barack Obama, blood donation, capital punishment, and scientists. For each object, participants answered the following questions (provided here for one object):

- (a) Attitude valence: "Overall, please indicate how positive or negative you feel about abortion" (1=very negative; 6=very positive).
- (b) Attitude positivity: "Considering only the positive qualities of abortion and ignoring its negative ones, please evaluate how positive its positive qualities are" (1=not at all positive; 5=extremely positive).

- (c) Attitude negativity: Considering only the negative qualities of abortion and ignoring its positive ones, please evaluate how negative its negative qualities are” (1=not at all negative; 5=extremely negative).
- (d) Attitude strength: “How strong is your view on abortion?” (0=not at all strong; 100=extremely strong).
- (e) Attitude certainty: “Please indicate how certain you feel about your view on abortion.” (1=extremely uncertain; 6=extremely certain).
- (f) Attitude comfort: “Please indicate how comfortable you feel with your view on abortion.” (1=extremely uncomfortable; 6=extremely comfortable).
- (g) Subjective ambivalence: “How mixed (or torn) is your view about abortion?” (1=not at all mixed; 5=extremely mixed).

These questions were used to create a set of scores that were combined across attitude objects. First, we created overall attitude valence and extremity scores by averaging responses to question (a). Responses to (b) and (c) were averaged across objects to compute indices of attitude positivity and negativity. For each item, (b) and (c) were used to assess objective ambivalence, using the Griffin formula (Thompson, Griffin, & Zanna, 1994). Responses to (d), (e), and (f) were used to compute an overall measure of attitude strength. Responses to (g) were combined across objects to derive an index of subjective ambivalence.

***Need to evaluate.*** This was measured using the Need to Evaluate Scale (NES; Jarvis & Petty, 1996;  $\alpha=.87$ ). An example item is “I form opinions about everything”. Responses were provided on a five-point scale (1=extremely unlike me; 5=extremely like me).

**Ambivalence comfort.** Participants were asked “When you feel (ambivalent/uncertain), how comfortable do you feel about this sensation?” Responses were provided on a six-point scale (1=very uncomfortable; 6=very comfortable). Once again, responses were combined ( $r(88)=.51, p<.001$ ).

**Ambivalence frequency.** Participants were asked “How often do you feel (ambivalent/uncertain)?” Responses were provided on a seven-point scale (1=never; 7=always). Once again, responses were combined ( $r(88)=.59, p<.001$ ).

**Reaction to uncertainty.** Participants were asked “How do you think when you are uncertain?” Responses were provided on a seven-point scale (1=extremely negatively; 7=extremely positively).

**Thinking about an attitude.** For exploratory purposes, participants picked which of the five objects they felt most ambivalent about and indicated their views about that object. They were then presented with 10 emotions (e.g., upset, irritable) and reported how much they experienced each emotion when reporting their views. Responses were provided on a five-point scale (1=very slightly or not at all; 5=extremely) and were combined to form a single score ( $\alpha=.90$ ).

**Mindfulness experience.** Also for exploratory purposes, we also assessed participants’ mindfulness experience. Participants reported how frequently they engaged in mindfulness practice, meditation, and yoga/taichi. Responses were provided on a seven-point scale (1=never; 7=always) and were combined to form a single score ( $\alpha=.71$ ).

**Procedure.** Respondents participated online. After providing consent, they completed the items in the order presented above (along with items not directly related to

our hypotheses, see supplemental online materials). After completion, participants were debriefed.

## Results.

Correlations between the mindfulness measures and key variables are presented in Table 3. For parsimony, we discuss individual research questions in turn.

***Mindfulness, ambivalence comfort, ambivalence frequency, and reaction to uncertainty.*** Replicating Study 1A, higher MAAS scores were associated with greater ambivalence comfort ( $r(88)=.22$ ;  $p=.040$ ) and lower ambivalence frequency ( $r(88)=-.48$ ;  $p<.001$ ). Replicating Study 1B, higher overall FFMQ scores were associated with greater ambivalence comfort ( $r(88)=.26$ ;  $p=.016$ ) and lower ambivalence frequency ( $r(88)=-.53$ ;  $p<.001$ ). There was a non-significant negative correlation between ambivalence comfort and frequency,  $r(88)=-.17$ ;  $p=.113$ . Similar to Study 1B, mindfulness was linked with more positive reactions toward uncertainty, though the effects were weaker ( $r_{MAAS}(88)=.18$ ;  $p=.086$ ;  $r_{FFMQ}(88)=.19$ ,  $p=.084$ ).<sup>2</sup>

***Is mindfulness linked with actual objective and subjective ambivalence?*** So far, three separate studies have found that higher mindfulness is associated with greater ambivalence comfort and lower ambivalence frequency. In this study, we can determine whether these latter perceptions –in which participants report how often they feel ambivalent - are linked with *actual* levels of ambivalence.

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<sup>2</sup> Mindfulness experience was correlated with both the MAAS ( $r(88)=.23$ ;  $p=.035$ ) and overall FFMQ ( $r(88)=.34$ ;  $p=.001$ ). It was marginally linked with ambivalence frequency,  $r(88)=-.20$ ;  $p=.057$ .



Starting with objective ambivalence, we found that MAAS scores were negatively correlated with objective ambivalence,  $r(88)=-.21$ ;  $p=.052$ . Overall FFMQ scores were not correlated with objective ambivalence, though the correlation was in the same direction,  $r(88)=-.13$ ;  $p=.222$ . Overall, this suggests that more mindful individuals expressed less objective ambivalence across attitude objects. Subjective ambivalence scores revealed a similar but stronger pattern - mindfulness was negatively correlated with subjective ambivalence, on both the MAAS ( $r(88)=-.28$ ;  $p=.008$ ) and the overall FFMQ ( $r(88)=-.24$ ;  $p=.024$ ; see Table 3 for FFMQ facets). Further, ambivalence frequency (as assessed by the meta-perceptive measure) was positively correlated with both objective ambivalence ( $r(88)=.21$ ;  $p=.047$ ) and subjective ambivalence ( $r(88)=.43$ ;  $p<.001$ ). Taken together, these results show that mindful individuals' perceptions regarding ambivalence frequency converge with their actual levels of ambivalence.

***Is mindfulness associated with attitude valence, extremity, positivity, negativity, and strength?*** Mindfulness (as assessed by the MAAS and FFMQ) was not correlated with overall attitude favorability ( $rs<|.10|$ ), extremity ( $rs<|.16|$ ), positivity ( $rs<|.11|$ ), negativity ( $rs<|.12|$ ), or strength ( $rs<|.05|$ ). Further, there were no significant correlations for any of the FFMQ facets. More mindful individuals did not report attitudes that were more/less favorable, extreme, positive, negative, or strong.

***Is mindfulness associated with the need to evaluate?*** NES scores were not significantly correlated with the MAAS ( $r(88)=.05$ ;  $p=.636$ ) nor the overall FFMQ ( $r(88)=.18$ ;  $p=.090$ ). Of the FFMQ facets, only the non-judgmental facet was correlated with NES scores,  $r(88)=.24$ ;  $p=.024$ .

***Is mindfulness linked with individuals' thinking about an attitude?*** There were no significant relations between the MAAS and overall FFMQ scores and whether respondents selected and wrote about the object for which they were most subjectively or objectively ambivalent (all  $r_{pb} \leq .15$ ). Of the FFMQ facets, the non-judgment ( $r_{pb}(80) = .24$ ;  $p = .032$ ) and non-reactive ( $r_{pb}(80) = .19$ ;  $p = .101$ ) facets were somewhat linked with selecting the object for which individuals were most subjectively ambivalent. Overall, there were no significant links between mindfulness and the amount participants wrote or experienced emotions as a result of their writing ( $r_s < |.15|$ ).

## **Discussion**

In addition to replicating in a public sample the relation between mindfulness and ambivalence comfort and ambivalence frequency, Study 2 focused on offering a better understanding of the link between mindfulness and ambivalence frequency. We tested whether more mindful people actually experience less objective and subjective ambivalence than less mindful individuals, whether they differ in the valence, extremity, positivity, negativity, and strength of their attitudes, as well as whether mindfulness is associated with individual differences in the need to evaluate.

The results revealed a number of interesting findings. First, mindfulness was again associated with ambivalence comfort and frequency, as well as how positively people react to uncertainty. Regarding individual FFMQ facets, there was consistency across Studies 1B and 2 regarding how the FFMQ facets are linked with ambivalence comfort, frequency, and reactions to uncertainty. In thinking about the link between mindfulness and ambivalence frequency, we found that mindfulness was negatively correlated with actual levels of both

objective and subjective ambivalence. This suggests that the meta-perceptions of ambivalence frequency are associated with actual levels of objective and subjective ambivalence (with stronger effects on the latter). There were no significant links between mindfulness and indices of attitude valence, extremity, positivity, negativity and strength, as well as the amount people wrote about an attitude object, implying that links between mindfulness and ambivalence are not attributable to these variables. Interestingly, the results on negativity diverge from work by Kiken and Shook (2011, 2014) regarding links between mindfulness and valenced-thoughts. However, the domains used - attitudes in the current context, individual differences optimism/pessimism and rumination in Kiken & Shook's work - are different. We also considered whether mindful individuals might feel a reduced need to evaluate. The findings of Study 2 revealed no consistent relation between these constructs.

### STUDY 3

Given the findings of Studies 1 and 2, we next considered potential *implications* of the observed links between mindfulness and ambivalence, with a focus on ambivalence comfort. Specifically, in Study 3 we tested whether mindfulness attenuates the link between ambivalence and negative affect resulting from the experience of ambivalence. To the extent that mindfulness is associated with greater ambivalence comfort, we hypothesized that mindfulness would buffer the link between the experience of ambivalence and subsequent negative affect. This line of reasoning bares consistency with the MAID Model of ambivalence (van Harreveld et al., 2009b), which suggests that ambivalence is particularly uncomfortable when people need to resolve the ambivalence.

To the extent that more mindful individuals feel less of a need to resolve ambivalence (as it elicits less discomfort), higher levels of ambivalence should not elicit more negative affect among highly mindful individuals.

We tested this hypothesis in the context of explicit-implicit sexual orientation (SO) ambivalence, defined as the conflict that occurs between individuals' responses on explicit and implicit measures of sexual orientation. Research has demonstrated that explicit-implicit ambivalence can have negative psychological consequences (see Briñol, Petty, & Wheeler, 2006; Rydell et al., 2008; Schröder-Abé, Rudolph, & Schütz, 2007), and that explicit-implicit ambivalence can elicit an internal state of discomfort individuals use to interpret their well-being (Rydell et al., 2008; Rydell & Durso, 2012). We selected the domain of SO ambivalence based on previous research which has found that explicit-implicit SO ambivalence is associated with greater processing of ambivalence-relevant information (Windsor-Shellard & Haddock, 2014). The data in this study were collected as part of a larger session assessing the prevalence and correlates of explicit-implicit SO ambivalence among a sample of self-reported gay individuals. Our primary hypothesis was tested by assessing whether individual differences in mindfulness moderated the link between SO ambivalence and (a) general affect and (b) components of identity associated with one's sexual orientation. For the latter measure, we tested whether greater SO ambivalence is linked with the affect participants associated with sexual orientation, the depth of their social ties with other gay individuals, and the centrality of their sexual orientation in their sense of self (Cameron, 2004). We expected these measures to show comparable patterns to that predicted on the measure of general affect.

Finally, because the data were collected as part of a larger session, we also assessed the extent to which individual differences in mindfulness were associated with constructs such as the need for affect (Maio & Esses, 2001), the need for cognition (Cacioppo & Petty, 1982), the Big Five measures of personality (Gosling, Rentfrow, & Swann, 2003), perfectionism (Frost, Marten, Lahart, & Rosenblate, 1990), and self-discrepancies (Pelham & Swann, 1989).

### **Methods and Materials.**

**Participants.** Thirty-nine self-identified gay individuals (9 females;  $M_{\text{age}}=37.97$  years,  $SD=11.94$ ) participated for £5. Participants were recruited via LGBT groups and staff networks in the city where the study was conducted, as well as through snowballing.

**Mindfulness measures.** Participants completed the MAAS and a short version of the FFMQ. Missing data on the FFMQ resulted in complete responses from only 30 participants.

**Measures of Sexual Orientation.** The explicit and implicit measures of sexual orientation were taken from research by Windsor-Shellard and Haddock (2014).

**Explicit measure of sexual orientation.** Ten items directly assessed respondents' sexual orientation ( $\alpha=.66$ ). Five items referred to same-sex attraction (I have sex with men), and five items assessed opposite-sex attraction (I have sex with women). Responses were provided on a nine-point scale (1=definitely not reflective of me; 9=definitely reflective of me). Responses to opposite-sex items were reverse-scored; higher scores represented a stronger explicit endorsement of reporting a gay sexual orientation.

**Implicit measure of sexual orientation.** The implicit measure of sexual orientation was a personalized IAT (see Han, Olson, & Fazio, 2006). This measure assessed the

strength of the association between an individual, their sexual orientation, and comparison categories (another person, not the participant's sexual orientation). Research has demonstrated that this measure has good reliability (Windsor-Shellard & Haddock, 2014).

In Stage One (10 trials), using two response keys (*Me* (key E) and *Not me* (key I)), participants categorized words that were representative of themselves or a fictitious individual. Representative words corresponded to personal information (e.g., first name, place of birth) specified by the participant at the beginning of the study.

In Stage Two (10 trials), using two response keys (Gay (E) and Straight (I)) participants classified pictures of gay couples and straight couples. The images were taken from publicly available sources.

Stage Three (20 trials) contained the first set of critical trials. One response key (*Gay or Me*; (E)) was used to categorize words that were representative of the participant *or* pictures of gay couples. The other response key (*Straight or Not me*; (I)) was used to categorize words that were not representative of the participant *or* pictures of straight couples.

In Stage Four (10 trials), participants repeated stage one with the response keys switched.

Finally, Stage Five contained the second set of (20) critical trials. One response key (*Gay or Not me*; (E)) was used to categorize words that were *not* representative of the participant *or* pictures of gay couples. The other response key (*Straight or Me*; (I)) was used to categorize words that were representative of the participant *or* pictures of straight couples.

*Computation of IAT effect.* An IAT effect was computed on the basis of a D' score (Greenwald, Nosek, & Banaji, 2003). Response times greater than 10,000ms were deleted.

*Calculation of explicit-implicit SO ambivalence.* The amount of explicit-implicit SO ambivalence was calculated by computing the absolute difference between standardized scores on the explicit and implicit measures of sexual orientation, such that the greater the value from zero, the greater the discrepancy between the explicit and implicit measure scores. This approach has been used in a number of studies assessing explicit-implicit ambivalence (see e.g., Briñol et al., 2006; Windsor-Shellard & Haddock, 2014).

### **Well-being measures.**

*Positive and negative affect scales (PANAS).* Participants were presented with 17 feelings/emotions (Watson, Clark, & Tellegen, 1988;  $\alpha=.90$ ).<sup>3</sup> Nine correspond to negative affect (e.g., jittery, afraid; reverse scored), whereas eight correspond to positive affect (e.g., excited, active). Participants indicated the extent to which they *generally* felt each emotion (1=very slightly or not at all; 5=extremely). A higher score represents more positive affect.

*Identity with One's Sexual Orientation.* Respondents' identity with their sexual orientation was assessed using Cameron's (2004) three-factor measure. The factors represent affect, ties, and centrality. This measure is applicable to a wide-variety of group memberships and is psychometrically sound (see Cameron, 2004). Responses were provided on a nine-point scale (1=strongly disagree; 9=strongly agree).

*SO Affect.* Five items measured respondents' affect associated with their sexual orientation ( $\alpha=.86$ ). A sample item is "In general, I am glad to be gay."

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<sup>3</sup> A technical problem meant that three emotions were missed out from the presentation (2 positive, 1 negative).

*SO Ties.* Six items measured respondents' level of connection with other gay individuals ( $\alpha=.81$ ). A sample item is "I have a lot in common with other gay people."

*SO Centrality.* Seven items measured how central group membership is to the self ( $\alpha=.85$ ). A sample item is "I often think about the fact that I am gay."

***Self-esteem.*** Two items assessed self-esteem. One was the Single Item Self-Esteem measure (Robins, Hedin, & Trzesniewski, 2001), where participants responded to the statement "I have high self-esteem" (1=does not apply at all; 9=applies completely). The second measure was the Single Item Name-Liking measure (Gebauer, Riketta, Brömer, & Maio, 2008), where participants responded to the statement "How much do you like your name, in total?" (1=not at all; 9=very much). Both items have high good psychometric properties. Given their correlation,  $r(38)=.31, p=.057$ , they were combined into a single index.

**Supplemental measures.** A series of supplemental measures were included within the study. While they are not germane to the main hypothesis, we were able to ascertain their relation to mindfulness within our sample.

***Need for affect (NFA).*** The NFA concerns individual differences in the motivation to seek out and avoid emotional experiences. It was assessed using Maio and Esses' (2001) NFA scale ( $\alpha=.84$ ). A sample item is "I like to dwell on my emotions." Responses were provided on a seven-point scale (-3=strongly disagree; +3=strongly agree).

***Need for cognition (NFC).*** The NFC concerns individual differences in the tendency to engage in and enjoy thinking. It was assessed using Cacioppo, Petty, and Kao's (1984)



NFC scale ( $\alpha=.84$ ). A sample item is “I would prefer complex to simple problems.”

Responses were provided on a five-point scale (1=strongly disagree; 5=strongly agree).

***Big-five personality constructs.*** Participants indicated their standing on extraversion (I see myself as extraverted/enthusiastic), agreeableness (I see myself as sympathetic/warm), conscientiousness (I see myself as dependable/self-disciplined), emotional stability (I see myself as calm/emotionally stable), and openness to experiences (I see myself as open to new experiences/complex; see Gosling et al., 2003). Responses were provided on a nine-point scale (1=I strongly disagree; 9=I strongly agree).

***Multidimensional perfectionism scale.*** This measure assesses adaptive and maladaptive perfectionism (see Frost et al., 1990). Adaptive perfectionism items ( $\alpha = .86$ ) address personal standards and organization, whereas maladaptive perfectionism items ( $\alpha = .94$ ) address concern over mistakes, parental criticism, parental expectations, and doubts over actions. Responses were provided on a nine-point scale (1=I strongly disagree; 9=I strongly agree).

***Self-discrepancy.*** Following work by Pelham and Swann (1989), participants rated their *current* standing on 10 positive attributes (e.g., intellectual ability, social skills/competence). Participants responded using a nine-point scale (1=not at all certain; 9=extremely certain). Subsequently, participants rated their *ideal* standing for the same attributes (1=not reflective of ideal self; 9=very reflective of ideal self). Current-ideal discrepancy was calculated by subtracting current-self score (averaged across attributes) from ideal-self score (averaged across attributes).

**Physical health.** Participants indicated how many days in the last year in which they were ill enough to stay in bed, felt unwell, and experienced a bad mood (see Schröder-Abé et al., 2007). These items were combined into a single index ( $\alpha=.71$ ).

**Procedure.** The study was conducted using DirectRT (Jarvis, 2008) and Qualtrics (2013). Participants first completed the explicit measure of SO prior to the implicit measures of SO and evaluation (via Direct RT). Participants then completed the measures of identity, well-being, mindfulness, and perfectionism measures, plus a measure not relevant to the current paper (assessing group prejudice).

## Results

**Does mindfulness buffer the relation between SO ambivalence and (a) levels of general affect and (b) the strength of identity linked with sexual orientation?** To test these questions, we conducted regression analyses where the predictor variables were mindfulness scores, the amount of SO ambivalence, and the interaction between mindfulness scores and ambivalence (all standardized). Because there were large amounts of missing data from the FFMQ (and resulting problems of a low ratio to participants to predictor variables with this measure), the regression analyses used MAAS scores as a measure of mindfulness. The dependent variables were levels of general affect and the individual components of SO identity. All analyses controlled for self-esteem, given the association between self-esteem and affect (Robins et al., 2001).

**Levels of general affect (PANAS).** The analysis revealed a significant main effect of self-esteem ( $\beta=.66$ ,  $t(35)=6.08$ ,  $p<.001$ , 95% CI [.44, .88]), such that higher self-esteem was linked with more positive general affect. Independent of this effect, there was a significant

main effect of mindfulness ( $\beta=.33$ ,  $t(35)=3.28$ ,  $p=.002$ , 95% CI [.13, .54]), such that more mindful individuals experienced more positive general affect. There was also a significant main effect of SO ambivalence ( $\beta=-.32$ ,  $t(35)=-3.35$ ,  $p=.002$ , 95% CI [-.52, -.13]), such that greater ambivalence was associated with more negative general affect. This is consistent with the idea that ambivalence elicits negative affect. However, as expected, these main effects were qualified by a significant interaction,  $\beta=.41$ ,  $t(35)=3.96$ ,  $p<.001$ , 95% CI [.22, .67]. As shown in Figure 1, among less mindful participants, greater ambivalence was associated with more negative general affect,  $\beta=-.73$ ,  $t(35)=-4.46$ ,  $p<.001$ . However, among more mindful individuals there was no association between ambivalence and affect,  $\beta=.09$ ,  $t(35)=.73$ ,  $p=.472$ . This suggests that mindfulness buffered the relation between the amount of SO ambivalence and general affect.

**SO affect.** The analysis revealed a significant main effect of mindfulness ( $\beta=.51$ ,  $t(35)=3.48$ ,  $p=.001$ , 95% CI [.21, .80]), such that more mindful individuals experienced more positive affect about their sexual orientation. There was also a significant main effect of the amount of SO ambivalence ( $\beta=-.38$ ,  $t(35)=-2.75$ ,  $p=.009$ , 95% CI [-.66, -.10]), such that greater ambivalence was associated with more negative SO affect. However, these main effects were qualified by a significant interaction,  $\beta=.41$ ,  $t(35)=2.76$ ,  $p=.009$ , 95% CI [.12, .76]. Among less mindful individuals, greater ambivalence was associated with more negative SO affect,  $\beta=-.82$ ,  $t(35)=-3.38$ ,  $p=.002$ . However, among highly mindful individuals there was no association between ambivalence and SO affect,  $\beta=.06$ ,  $t(35)=.34$ ,  $p=.736$ . This suggests that mindfulness buffered the relation between the amount of SO ambivalence and the affect participants associated with their SO.

**SO ties.** The analysis revealed a significant main effect of self-esteem ( $\beta=.63$ ,  $t(35)=3.78$ ,  $p=.001$ , 95% CI [.29, .97]), such that higher self-esteem was linked with greater ties with other gay individuals. While there were no main effects of mindfulness or ambivalence (both  $p>.130$ ), there was a marginally significant interaction,  $\beta=.32$ ,  $t(35)=2.01$ ,  $p=.052$ , 95% CI [.00, .69]. The pattern was similar to that found on the measures discussed above. Among less mindful individuals, greater ambivalence was associated with reduced ties with other gay individuals,  $\beta=-.57$ ,  $t(35)=-2.21$ ,  $p=.034$ . However, among highly mindful individuals there was no association between ambivalence and SO ties,  $\beta=.12$ ,  $t(35)=.63$ ,  $p=.536$ . This suggests that mindfulness buffered the relation between the amount of SO ambivalence and how connected participants felt with other gay individuals.

**SO centrality.** There were no significant effects of mindfulness or the amount of ambivalence (both  $p>.210$ ). The interaction was not significant ( $p=.250$ ), although the pattern was similar to those on the measures described above.

### Supplemental analyses

As noted above, we were able to compute correlations between mindfulness scores and other measures of potential interest. Because of the amount of missing data on the FFMQ, we created an aggregate index (this was not done for the regression analyses as the sample size would have been too small). The correlations between the mindfulness score and the other variables are presented in Table 4. These analyses revealed that mindfulness was negatively correlated with need for affect scores ( $r(30)=-.48$ ,  $p=.007$ ) and positively correlated with need for cognition scores ( $r(30)=.39$ ,  $p=.044$ ). Mindfulness was also

associated with the Big Five components of conscientiousness ( $r(30)=.32, p=.084$ ) and emotional stability ( $r(30)=.64, p<.001$ ). Mindfulness was also associated with less maladaptive perfectionism ( $r(30)=-.48, p=.007$ ), smaller actual-ideal self discrepancies ( $r(30)=-.39, p=.034$ ), and more positive perceptions of physical health ( $r(21)=-.40, p=.075$ ).<sup>4</sup>

## Discussion

Building upon the results of Studies 1 and 2, the primary aim of Study 3 was to investigate whether mindfulness buffers the link between ambivalence and negative affect. A supplemental aim was to assess the extent to which mindfulness was associated with a series of other individual difference constructs of potential interest. We deal with each of these aims in turn.

Regarding the study's primary aim, we found that mindfulness moderated the link between explicit-implicit SO ambivalence and negative affect (both general affect and affect linked with sexual orientation). Highly mindful individuals showed equally positive levels of affect independent of their degree of ambivalence, whereas greater ambivalence was associated with negative affective identity outcomes among less mindful individuals. The same interaction pattern was also found on respondents' strength of identity derived from their sexual orientation. Taken together, these results suggest that mindfulness offers resilience in the face of feeling torn about important aspects of one's self. This resilience is consistent with other research regarding the benefits of mindfulness in the face of intra-personal conflict (e.g., Long & Christian, 2015) and speaks to the important role of

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<sup>4</sup> The smaller sample size reflects missing data on the health measure.

mindfulness in helping individuals maintain a positive self of sense in the face of conflicting self-evaluations.

A supplemental aim of Study 3 was to address links between mindfulness and potentially relevant individual difference constructs. Among our sample of self-reported gay participants, mindfulness was negatively correlated with scores on the NFA scale and positively correlated with scores on the NFC scale. To our knowledge, this represents the first data exploring the relation between mindfulness and NFA. This negative relation implies that higher levels of mindfulness are associated with a lower motivation to seek out affective experiences. The positive correlation between mindfulness and NFC corresponds with previous research (Brown & Ryan, 2003), and supports the notion that mindfulness is associated with an enjoyment of effortful cognitive thinking. Further, mindfulness was positively correlated with the Big Five dimensions of conscientiousness and emotional stability. These findings are consistent with the results of a meta-analysis by Giluk (2009). However, Giluk also found significant relations between mindfulness and the other Big Five dimensions. It was unclear why these effects were not found in this sample (note the reduced sample size in the current study). Finally, mindfulness was associated with more positive perceptions of physical health, lower actual-ideal discrepancies, and lower levels of maladaptive perfectionism. These findings are consistent with results on the adaptiveness of mindfulness in helping maintain mental and physical health (see Brown et al., 2015 for an overview). The negative correlation between mindfulness and actual-ideal discrepancies is also relevant to the link between mindfulness and ambivalence frequency (see DeMarree et al., 2014).

## General Discussion

A large volume of research has provided compelling evidence on the benefits of mindfulness on a range of clinical and health outcomes (see Brown et al., 2015; Ie et al., 2014). There is growing interest in examining how mindfulness impacts social psychological constructs, and the present research integrated mindfulness with attitude ambivalence. The primary aims of these current studies were to determine (a) whether mindfulness is associated with ambivalence comfort and ambivalence frequency and (b) whether mindfulness buffers the link between high levels of ambivalence and subsequent negative affect. Consistent with our expectations, Studies 1A, 1B, and 2 revealed that more mindful individuals expressed significantly greater comfort holding ambivalent views. Regarding ambivalence frequency, Studies 1A, 1B, and 2 found that more mindful individuals reported feeling ambivalent less often. Study 2 assessed links between mindfulness and properties such as objective and subjective ambivalence, attitude valence, extremity, positivity/negativity, and strength. The data showed that dispositional mindfulness was negatively linked with participants' objective and subjective levels of ambivalence toward a set of attitude objects. Building upon the results of Studies 1A, 1B, and 2, Study 3 found that mindfulness moderated the link between explicit-implicit SO ambivalence and negative affect. Highly mindful individuals showed equally positive levels of affect independent of their amount of ambivalence, whereas less mindful individuals reported more negative affect under conditions of high (versus low) ambivalence. This pattern of findings implies that mindfulness offers resilience in the face of feeling torn about important aspects of one's self, and converges with other research exploring the

psychological benefits of mindfulness in relation to intra-personal conflict and divergent self-evaluations.

The results of these studies are important in a number of ways. At an overarching level, they integrate the study of mindfulness, attitudes, and ambivalence in a theoretically novel manner, and produce new implications for our understanding across different domains of research. Regarding mindfulness, the current studies add to the range of non-clinical benefits associated with heightened mindfulness. The primary results are consistent with basic tenets of mindfulness. That mindful individuals are more comfortable holding ambivalent views and are buffered from the consequences of high ambivalence both fit with the tenet that mindfulness is associated with less rumination (Brown & Ryan, 2003). In addition, the findings generate new questions about other ways in which mindfulness and attitudes can be integrated. For example, to the extent that mindful individuals are more comfortable holding ambivalent attitudes, are they also more receptive to receiving information that counters their attitudes?

From an attitudinal perspective, the studies further inform research on ambivalence. Past research has been interested in understanding for whom ambivalence is particularly aversive (Newby-Clark et al., 2002). The present studies build upon these lines of work by addressing how mindfulness attenuates the link between ambivalence and negative affect. There are further implications relevant to our understanding of explicit-implicit ambivalence. Whilst research has examined implications of such ambivalence on outcomes related to information processing (Briñol et al., 2006; Rydell et al., 2008), to our



knowledge this is the first research demonstrating how the affective consequences of explicit-implicit ambivalence can be buffered.

Study 3 tested the buffering effects of mindfulness in the context of SO ambivalence. We used this domain in light of recent findings regarding the importance of explicit-implicit SO ambivalence (see Weinstein et al., 2012; Windsor-Shellard & Haddock, 2014). The current findings demonstrate that high levels of SO ambivalence do not necessarily invoke negative affect. Given that past research has found ambivalence to result in physiological arousal and feelings of dissonance (Rydell et al., 2008; van Harreveld et al., 2009a, 2009b), future work might seek to address whether mindfulness mitigates other negative effects of ambivalence.

In addition to the areas for future research considered above, many other questions are also worthy of investigation. First, this research examined how mindfulness offers resilience in the face of ambivalence. Future research might investigate how other processes relevant to the experience of ambivalence are influenced by mindfulness. For example, a large body of research has examined the positive consequences of inducing hypocrisy on attitude and behavior change (see Stone, 2012). In hypocrisy research, participants publicly commit to position X (e.g., the importance of safe sex) before being reminded of instances when they engaged in the opposite behavior (e.g., having unsafe sex). Hypocrisy is effective in eliciting behavior change, as individuals are motivated to reduce the inconsistency evoked by “saying one thing and doing another”. To the extent that mindfulness buffers the impact of ambivalence, future research might address whether

mindfulness buffers against the effects of hypocrisy, possibly because mindfulness reduces the negative affect associated with feeling hypocritical.

Based on the supplemental analyses in Study 3, future research might address whether different forms of persuasive appeals are more or less effective among individuals differing in mindfulness. Our findings indicated that mindfulness was negatively correlated with NFA and positively correlated with NFC. Other research has found that individual differences in NFA and NFC are associated with the impact of affect- and cognition-based appeals (Haddock, Maio, Arnold, & Huskinson, 2008). Specifically, individual differences in NFA have been linked to increased receptivity to affect-based persuasive appeals (e.g., appeals highlighting emotional information), whereas individual differences in NFC have been linked to increased receptivity to cognition-based persuasive appeals (e.g., appeals highlighting factual information). In the current context, future research might consider whether highly mindful individuals devote greater attention to (and are more persuaded by) cogent information in a cognition-based message, whereas less mindful individuals devote greater attention to (and are more persuaded by) cogent information in an affect-based message.

At a more general level, an interesting question for future research to consider is the different stages of processing at which mindfulness may be relevant in attitude-relevant processing. Brown, Goodman, and Inzlicht (2013) suggest that dispositional mindfulness plays a role in moderating early affective processing. In Study 3 we found a positive correlation between mindfulness and NFC and a negative correlation between mindfulness and NFA. An important next step will thus be to understand how mindfulness can affect

how people deal with both the affective and cognitive components of complexity that ambivalent situations often provide. Might it be that mindful individuals report a lower need for affect because they initially deal with the cognitive aspects of complexity more efficiently? Or might it be that mindful individuals report a lower need for affect because they are less strongly affected by the dissonance that usually accompanies ambivalent situations? The extant data here suggest it is highly plausible that mindfulness plays a role in both processes. However, a comprehensive empirical consideration of these questions is well beyond the scope of this paper.

### **Conclusion**

The research had a primary aim of integrating mindfulness and attitudinal ambivalence. The results of the research revealed that mindfulness is associated with greater comfort with ambivalence and reduced ambivalence frequency. In addition, results showed that mindfulness buffered the link between explicit-implicit ambivalence and (a) negative affect, and (b) identity; such that high ambivalence did not result in more negative affect or reduced identity among more mindful individuals. The results speak to the strong potential of mindfulness in relation to how individuals evaluate stimuli in their social world.

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**Table 1:** Correlations among mindfulness, ambivalence comfort, and ambivalence frequency (Study 1A)

| Variables   | Mindfulness | Ambivalence Comfort | Ambivalence Frequency |
|-------------|-------------|---------------------|-----------------------|
| Mindfulness | –           | .27*                | -.27*                 |
| Comfort     |             | -                   | -.18                  |
| Frequency   |             |                     | -                     |

**Note:** \* $p < .05$

**Table 2:** Correlations between mindfulness and mindfulness facets with (a) ambivalence comfort, (b) ambivalence frequency, and (c) reactions to uncertainty (Study 1B)

| Variables          | Ambivalence Comfort | Ambivalence Frequency | Reaction to Uncertainty | Well-being | Perceptions of Future Events |
|--------------------|---------------------|-----------------------|-------------------------|------------|------------------------------|
| Overall FFMQ       | .34*                | -.60*                 | .33*                    | .52*       | .48*                         |
| Observe            | -.08                | -.10                  | .03                     | .17        | .11                          |
| Describe           | .29*                | -.35*                 | .08                     | .22        | .31*                         |
| Act with awareness | .17                 | -.47*                 | .19                     | .25*       | .43*                         |
| Non-judging        | .30*                | -.39*                 | .20                     | .21        | .09                          |
| Non-reactivity     | .35*                | -.43*                 | .41*                    | .59*       | .35*                         |

Note: \* $p < .05$

**Table 3:** Correlations between mindfulness and mindfulness facets with ambivalence-relevant measures (Study 2)

| Variables          | Ambivalence Comfort | Ambivalence Frequency | Reaction to Uncertainty | Objective Ambivalence | Subjective Ambivalence |
|--------------------|---------------------|-----------------------|-------------------------|-----------------------|------------------------|
| MAAS               | .22*                | -.48*                 | .18                     | -.21                  | -.28*                  |
| Overall FFMQ       | .26*                | -.53*                 | .19                     | -.13                  | -.24*                  |
| Observe            | .09                 | -.02                  | .03                     | .00                   | .06                    |
| Describe           | .23*                | -.40*                 | .23*                    | -.12                  | -.23*                  |
| Act with awareness | .12                 | -.53*                 | .07                     | -.23*                 | -.27*                  |
| Non-judging        | .18                 | -.23*                 | .10                     | -.09                  | -.12                   |
| Non-reactivity     | .17                 | -.40*                 | .13                     | .08                   | -.03                   |

**Note:** \* $p < .05$

**Table 4** – Correlations between mindfulness and individual difference measures (Study 3)

|                             | <b>Mindfulness</b> |
|-----------------------------|--------------------|
| Need for Affect             | -.48*              |
| Need for Cognition          | .37*               |
| Big 5 – Extraversion        | -.04               |
| Big 5 – Agreeableness       | .10                |
| Big 5 – Conscientiousness   | .32                |
| Big 5 – Emotional stability | .64*               |
| Big 5 – Openness            | .04                |
| Maladaptive Perfectionism   | -.48*              |
| Adaptive Perfectionism      | -.22               |
| Physical Health             | .40                |
| Actual-Ideal discrepancy    | -.39*              |

**Note:** \* $p < .05$

**Figure 1.** The impact of mindfulness and SO ambivalence on PANAS scores ( $\pm$  1SD on ambivalence and mindfulness)

