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Incremental Validity of Mindfulness Skills in relation to Emotional Dysregulation among a Young Adult Community Sample

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Abstract

The present investigation examined the incremental predictive validity of mindfulness skills, as measured by the Kentucky Inventory of Mindfulness Skills (KIMS), in relation to multiple facets of emotional dysregulation, as indexed by the Difficulties in Emotion Regulation Scale (DERS), above and beyond variance explained by negative affectivity, anxiety sensitivity, and distress tolerance. Participants were a non-clinical community sample of 193 young adults (106 women; $M_{age} = 23.91$). The KIMS - Accepting without Judgment subscale was incrementally negatively predictive of all facets of emotional dysregulation, as measured by the DERS. Furthermore, KIMS - Acting with Awareness was incrementally negatively related to Difficulties Engaging in Goal-Directed Behavior. Additionally, both Observing and Describing mindfulness skills were incrementally negatively related to Lack of Emotional Awareness, and Describing skills also were incrementally negatively related to a Lack of Emotional Clarity. Findings are discussed in relation to advancing scientific understanding of emotional dysregulation, from a mindfulness skills-based framework.

Keywords

mindfulness; emotional dysregulation; KIMS; DERS; incremental validity

There has been an increased level of scholarly and clinical attention focused on what are often referred to as ‘acceptance and mindfulness-based behavioral interventions’ in the study and treatment of psychopathology (Bishop et al., 2004; Orsillo & Roemer, 2005). These approaches have offered novel insights and promising solutions to historically difficult-to-treat problems (e.g., substance use relapse, deficits in life satisfaction; Eifert & Forsyth, 2005; Hayes, Strosahl, & Wilson, 1999; Linehan, 1993a). In terms of emotional psychopathology, a common theme of these approaches is the view of emotional experiences from an adaptive framework (Eifert & Forsyth, 2005). That is, emotional states are conceptualized as adaptive aspects of human

experience that help to guide individuals through challenges or situational demands (Bishop et al., 2004). This approach differs slightly from many traditional cognitive-behavioral approaches (Greenberg & Safran, 1987) in its focus on awareness and non-judgmental *acceptance* (cf. cognitive-affective change strategies; e.g., cognitive restructuring), particularly as related to negative affective states. Although extant work is promising, basic research linking acceptance or mindfulness processes to aspects of emotional dysregulation is lacking.

One promising conceptualization of mindfulness has been offered by Baer, Smith, and Allen (2004, p. 193), reflecting the “general tendency to be mindful in daily life” across a number of different domains; this conceptualization is distinct from other mindfulness constructs (e.g., Brown & Ryan, 2003; Conte, Ratto, & Karasu, 1996; Hayes & Feldman, 2004). As measured by the self-report Kentucky Inventory of Mindfulness Skills (KIMS; Baer et al., 2004), mindfulness skills are conceptualized as both potential risk (lower levels mindfulness) and protective (higher levels of mindfulness) factors. The KIMS has been found to index four internally consistent factors (Baer et al., 2004): (1) the ability to observe cognitions, emotions and sensations, and external phenomena such as sounds and smells (Observing factor); (2) the ability to apply words to observed phenomena (Describing factor); (3) the ability to limit attention to the current activity or present moment (Acting with Awareness factor); and (4) the ability to experience the present state without evaluating or judging its content (Accepting without Judgment factor).¹ Initial work supports the convergent and discriminant validity of the KIMS with symptom measures of negative affect (Dekeyser, Raes, Leijssen, Leysen, & Dewulf, 2008; McKee, Zvolensky, Solomon, Bernstein, & Leen-Feldner, 2007).

A chief gap in the existing literature centers on how mindfulness processes relate to emotional dysregulation (Gross & Muñoz, 1995; Zvolensky, Feldner, Leen-Feldner, & Yartz, 2005). Emotional dysregulation is purported to be an integrative construct of dysfunction that can be characterized by such processes as heightened emotional states, limited understanding of emotions, reactivity to -- or sensitivity about -- specific emotional states, and maladaptive management tactics for emotional episodes (Mennin, Heimberg, Turk, & Fresco, 2002; Wupperman, Neumann, & Axelrod, 2008). Thus, emotional dysregulation may be apparent, to vary degrees, across psychopathology phenotypes, and also understood as a core explanatory process in psychological adaptation, more generally (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Gratz & Roemer, 2004; Roemer et al., in press). Yet, it is presently unclear how mindfulness processes, according to the model set forth by Baer and colleagues (2004), relate to specific aspects of emotional dysregulation.

The broad-based aim of the current study was to evaluate whether mindfulness skills, as based on the Baer and colleagues' (2004) model, might serve a theoretically protective function by contributing to adaptive emotion regulation beyond the benefits of distress tolerance abilities and after accounting for the effects of negative affectivity and anxiety sensitivity. Emotional dysregulation was operationalized according to the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). The DERS assesses difficulties in regulating emotion, as defined by six dimensions, or facets, of emotional dysregulation: (1) Lack of Emotional Clarity, (2) Lack of Emotional Awareness, (3) Nonacceptance of Emotional Responses, (4) Impulse Control Difficulties, (5) Difficulties Engaging in Goal-Directed Behavior, and (6) Limited Access to Emotion Regulation Strategies. If mindfulness processes are to offer unique

¹Baer, Smith, Hopkins, Krietemeyer, & Toney (2006) recently developed another self-report measure of mindfulness skills entitled the Five Factor Mindfulness Questionnaire (FFMQ). The FFMQ consists of the four mindfulness factors indexed by the KIMS in addition to a fifth factor entitled Nonreactivity to Inner Experience. Yet, Baer et al. (2006) caution that the FFMQ “requires extensive additional validation in a range of samples” (p. 43), and they continue to promote the utility of the KIMS in measuring four of the five identified mindfulness facets at the present stage of research. At the time of the conduct of the present study, only the original four-factor KIMS measure was available.

explanatory value in terms of emotional dysregulation, such processes should account for variance in aspects of emotional dysregulation not better explained by negative affectivity (Vujanovic, Zvolensky, & Bernstein, 2008), anxiety sensitivity (Tull, 2006; Vujanovic et al., 2008), and distress tolerance (i.e., ability to withstand experiential discomfort; Brown, Lejuez, Kahler, Strong, & Zvolensky, 2005; Gratz, Rosenthal, Tull, Lejuez, & Gunderson, 2006). Each of these variables is related to greater degrees of emotional vulnerability, avoidant-oriented affect regulation processes, and impairment in life functioning (Zvolensky & Otto, 2007); and therefore, these factors may serve as competing explanatory factors for emotional dysregulation.

Together, the aim of the present investigation was to concurrently explore the unique explanatory value of specific mindfulness skills in relation to multiple facets of emotional dysregulation. A nonclinical community sample was used at this stage of research to examine the incremental validity of mindfulness skills in relation to emotional dysregulation without the potential confounds (e.g., cognitive and affective symptoms of psychopathology) inherent in clinical samples. It was hypothesized that higher levels of the KIMS-measured Acting with Awareness and Accepting without Judgment factors would be incrementally predictive of lower levels of each of the DERS subscales, including (1) Lack of Emotional Clarity, (2) Lack of Emotional Awareness, (3) Nonacceptance of Emotional Responses, (4) Impulse Control Difficulties, (5) Difficulties Engaging in Goal-Directed Behavior, and (6) Limited Access to Emotion Regulation Strategies. These hypotheses were driven by dialectical behavior therapy (DBT) theory (Linehan, 1993a), which offers the most comprehensive theoretical premise to date for understanding associations between mindfulness skills and emotional dysregulation. Acting with Awareness and Accepting without Judgment mindfulness skills, as opposed to the Observing or Describing skills, have been found to relate to negative affectivity and anxiety sensitivity (McKee et al., 2007), relevant emotional vulnerability factors. Generally, these skills correspond to DBT's core 'how' mindfulness skills, which require taking a nonjudgmental stance and focusing awareness on activities of the present moment (Linehan, 1993b). Therefore, Acting with Awareness and Accepting without Judgment skills were expected to be related to lower levels of emotional dysregulation (Linehan, 1993a, 1993b), specifically.

Method

Participants

A total of 193 young adults (106 women; $M_{\text{age}} = 23.91$ years, $SD = 9.45$) were recruited through the general community in Vermont for participation in a study on emotion that involved the completion of a battery of theoretically-relevant measures as the first part of a larger laboratory investigation. The present data have not been previously reported and differ from previous mindfulness work (on separate samples) by our team (McKee et al., 2007; Vujanovic, et al., 2008; Vujanovic, Zvolensky, Bernstein, Feldner, & McLeish, 2007). The racial composition generally reflected that of the local population (State of Vermont Department of Health, 2007): approximately 93.3% of participants identified as Caucasian, 3.6% as African-American, 1.0% as Asian, 1.0% as Hispanic, and 1.0% as other. Participants were excluded on the basis of (1) limited mental competency or the inability to provide informed, written consent, (2) current suicidal ideation, (3) current or past history of psychotic-spectrum symptoms, and (4) current axis I psychopathology, as assessed by the Structured Clinical Interview for DSM-IV, Non-Patient Version (SCID-NP; First, Spitzer, Gibbon, & Williams, 1995). These exclusionary criteria helped to ensure that any of the observed findings could not simply be attributed to pre-existing psychological conditions (Forsyth & Zvolensky, 2002).

Measures

Structured Clinical Interview-Non-Patient Version for DSM-IV (SCID-NP)—

Assessment and screening of axis I psychopathology was determined using the SCID-NP (First et al., 1995); participants were excluded if they met criteria for any axis I disorder. The SCID-NP was used as study participants were not identified as being a clinical population per se (i.e., recruited through the community).

Positive Affect Negative Affect Scale (PANAS)—The PANAS is a 20-item measure on which respondents indicate, using a 5-point Likert-type scale (1 = *very slightly or not at all* to 5 = *extremely*), the extent to which they generally experience emotions (e.g., “Hostile”). The PANAS is a well-established affective measure (Watson, Clark, & Tellegen, 1988). A large body of literature supports the psychometric properties of the PANAS (see Watson, 2000). For the purposes of this study, only the negative affectivity subscale (PANAS-NA) was used to assess the trait-like tendency to experience negative affect states.

Anxiety Sensitivity Index (ASI)—The ASI (Reiss, Peterson, Gursky, & McNally, 1986) is a 16-item measure on which respondents indicate, using a 5-point Likert-type scale (0 = *very little* to 4 = *very much*), the degree to which they fear the potential negative consequences of anxiety-related symptoms and sensations. The ASI consists of one higher-order factor (ASI Total Score) and three lower-order factors: Physical, Psychological, and Social Concerns (Zinbarg, Barlow, & Brown, 1997). In the present investigation, we utilized the total ASI score, as it represents the global AS factor and therefore reflects the different types of lower-order fears.

Distress Tolerance Scale (DTS)—The DTS (Simons & Gaher, 2005) is a self-report measure on which respondents indicate, using a 5-point Likert-style scale (1 = *strongly agree* to 5 = *strongly disagree*), their perceived ability to tolerate emotional distress. The DTS has four first-order factors—(1) tolerance, (2) appraisal, (3) absorption, and (4) regulation—and one higher order, general distress tolerance factor, and good psychometric properties (Simons & Gaher, 2005). In the present study, we administered a 14-item version of the DTS ($\alpha = .81$).

Kentucky Inventory of Mindfulness Skills (KIMS)—The KIMS is a 39-item questionnaire on which respondents indicate, using a 5 point Likert-type scale (1 = *never or very rarely true* to 5 = *almost always or always true*), the general tendency to be mindful in daily life (Baer et al., 2004). Factor analysis of the measure indicates that it has four factors entitled Observing (e.g. “I pay attention to how my emotions affect my thoughts and behavior”), Describing (e.g. “I’m good at finding the words to describe my feelings”), Acting With Awareness (e.g. “When I’m doing something, I’m only focused on what I’m doing, nothing else”), and Accepting Without Judgment (e.g. “I criticize myself for having irrational or inappropriate emotions”- reverse scored). The KIMS appears to have good internal consistency, with alpha coefficients calculated from an undergraduate sample for Observing, Describing, Acting With Awareness, and Accepting Without Judgment of .91, .84, .83, and .87, respectively (Baer et al., 2004).

Difficulties in Emotion Regulation Scale (DERS)—The DERS is a 36-item self-report measure on which respondents indicate, using a 5-point Likert-style scale (1 = *almost never* to 5 = *almost always*), how often each item applies to them (Gratz & Roemer, 2004). The DERS is multidimensional in that it is comprised of 6 factors in addition to a total score. These factors include: (1) Non-acceptance of Emotional Responses, (2) Difficulties Engaging in Goal-Directed Behavior, (3) Impulse Control Difficulties, (4) Lack of Emotional Awareness, (5) Limited Access to Emotion Regulation Strategies, and (6) Lack of Emotional Clarity. The

DERS has high levels of internal inconsistency ($\alpha = .93$; Gratz & Roemer, 2004) and adequate test-retest reliability over a 4–8 week period ($\rho = .88$; Gratz & Roemer, 2004).

Procedure

Participants responding to community-based advertisements for the study were scheduled for an individual appointment by a trained research assistant. At this appointment, upon receiving a description of the study, participants provided verbal and written consent and then were assessed for current axis I psychopathology, using the SCID-NP. Ineligible participants were discontinued. All eligible participants completed a self-report battery of measures related to emotional vulnerability. Upon completion of the study, participants were debriefed regarding the aims of the study and monetarily compensated for their efforts.

Results

Please see Table 1 for a summary of all zero-order correlations. Criterion variables included each of the six factors of the DERS: (1) Lack of Emotional Clarity, (2) Lack of Emotional Awareness, (3) Non-acceptance of Emotional Responses, (4) Impulse Control Difficulties, (5) Difficulties Engaging in Goal-Directed Behavior, and (6) Limited Access to Emotion Regulation Strategies. The main effects of negative affectivity (PANAS-NA), anxiety sensitivity (ASI-Total), and distress tolerance (DTS - Total) were entered simultaneously at step one of the model. The main effects for the four factors of the KIMS: (1) Observing, (2) Describing, (3) Acting with Awareness, and (4) Accepting (or allowing) without Judgment, were entered simultaneously at step two of the model. Please see Table 2 for a summary of the hierarchical regression analyses. Alpha correction was not used for these analyses in order to minimize the risk of Type II error (Keppel & Wickens, 2004). According to Keppel and Wickens (2004), alpha correction is more appropriate when examining *post hoc* differences between groups; in the case of *a priori*, theoretically specified, planned comparisons, the risk of type I error ($p < .05$) is considered acceptable.

In terms of DERS - Lack of Emotional Clarity, step one of the model accounted for 26.3% of the variance, and both negative affectivity ($\beta = .24$; $p < .05$) and anxiety sensitivity ($\beta = .24$; $p < .05$) were significant univariate predictors. The second step of the model accounted for an additional and significant 19.9% of unique variance in predicting Lack of Emotional Clarity above and beyond the variance accounted for by the main effects at step one. The Describing ($\beta = -.30$; $p < .01$) and Accepting without Judgment ($\beta = -.25$; $p < .01$) subscales of the KIMS were unique predictors (see Table 2).

For the DERS - Lack of Emotional Awareness, step one of the model accounted for 4.3% of the variance, with distress tolerance ($\beta = -.23$; $p < .05$) as the only significant predictor. The second step of the model accounted for an additional and significant 26.5% of unique variance in predicting Lack of Emotional Awareness above and beyond the variance accounted for by the main effects at step one. The Observing ($\beta = -.22$; $p < .01$), Describing ($\beta = -.32$; $p < .01$), and Accepting without Judgment ($\beta = -.22$; $p < .05$) subscales of the KIMS each were unique predictors (see Table 2).

In regard to the DERS - Non-acceptance of Emotional Responses, step one of the model accounted for 34.9% of the variance, with negative affectivity ($\beta = .38$; $p < .01$), anxiety sensitivity ($\beta = .18$; $p < .05$), and distress tolerance ($\beta = -.16$; $p < .05$) as significant predictors. The second step of the model accounted for an additional and significant 20.7% of unique variance in predicting Non-acceptance of Emotional Responses above and beyond the variance accounted for by the main effects at step one. Again, only the Accepting without Judgment ($\beta = -.49$; $p < .01$) subscale of the KIMS was a unique predictor (see Table 2).

In terms of DERS - Impulse Control Difficulties, step one of the model accounted for 35.8% of the variance, and both negative affectivity ($\beta = .36; p < .01$) and anxiety sensitivity ($\beta = .22; p < .05$) were significant predictors. The second step of the model accounted for an additional 3.8% of unique variance in predicting Impulse Control Difficulties above and beyond the variance accounted for by the main effects at step one. Only the Accepting without Judgment ($\beta = -.20; p < .05$) subscale of the KIMS was a unique predictor (see Table 2).

For the DERS - Difficulties Engaging in Goal-Directed Behavior, step one of the model accounted for 28.6% of the variance, and both negative affectivity ($\beta = .31; p < .01$) and distress tolerance ($\beta = -.18; p < .05$) were significant predictors. The second step of the model accounted for an additional and significant 7.3% of unique variance in predicting Difficulties Engaging in Goal-Directed Behavior above and beyond the variance accounted for by the main effects at step one. The Acting with Awareness ($\beta = -.26; p < .01$) and Accepting without Judgment ($\beta = -.21; p < .05$) subscales of the KIMS were unique predictors (see Table 2).

Finally, in terms of DERS - Limited Access to Emotion Regulation Strategies, step one of the model accounted for 61.1% of the variance, with negative affectivity ($\beta = .49; p < .01$), anxiety sensitivity ($\beta = .23; p < .01$), and distress tolerance ($\beta = -.23; p < .01$) as significant predictors. The second step of the model accounted for an additional and significant 3.4% of unique variance in predicting Limited Access to Emotion Regulation Strategies above and beyond the variance accounted for by the main effects at step one. As before, only the Accepting without Judgment ($\beta = -.16; p < .05$) subscale of the KIMS was a unique predictor (see Table 2).

Discussion

Three core findings emerged from the investigation. First, Accepting without Judgment was the most robust and consistent mindfulness skill with regard to demonstrating incremental associations with (lower levels of) multiple emotional regulation difficulties. Indeed, findings indicated that higher levels of Accepting without Judgment were a significant incremental predictor of lower levels of all DERS criterion variables, after controlling for negative affectivity, anxiety sensitivity, and distress tolerance. The size of the observed incremental effects (at step two of the respective models) ranged from 4% to 27% of the variance. These results, which are generally in accord with acceptance-oriented perspectives on psychopathology (Eifert & Forsyth, 2005; Hayes, Strosahl, & Wilson, 1999; Linehan, 1993a; Wupperman et al., 2008), provide novel, descriptive evidence of the concurrent association between higher levels of acceptance and lower facets of emotional dysregulation. The most robust incremental effect ($\beta = -.49$) was apparent for the KIMS-Accepting without Judgment subscale and the DERS Non-Acceptance of Emotion Responses subscale. Although acceptance is included in the operationalization of both scales, they theoretically measure different constructs. For example, while the KIMS-Accepting without Judgment subscale measures “accepting, allowing, or being nonjudgmental or nonevaluative about present-moment experience” (Baer et al., 2004, p. 194), the DERS-Non-acceptance of Emotional Responses assesses a “tendency to have negative secondary emotional responses to one’s negative emotions, or nonaccepting reactions to one’s distress” (Gratz & Roemer, 2004, p. 47). Also, at the zero-order-level, the two scales were only moderately correlated ($r = -.43$), suggesting they are related, but not fully overlapping factors. Overall, these findings suggest that higher levels of mindfulness-based acceptance are concurrently associated with a decreased propensity toward emotional dysregulation. Such results are consistent with the possibility that mindfulness skills may serve a protective role with regard to psychological functioning.

A second observation was that higher levels of KIMS-Acting with Awareness skills were significant incremental predictors of *only* the DERS-Difficulties Engaging in Goal-Directed Behavior subscale; inconsistent with prediction, this KIMS subscale was not associated with

Lack of Emotional Clarity, Lack of Emotional Awareness, Nonacceptance of Emotional Responses, Impulse Control Difficulties, or Limited Access to Emotion Regulation Strategies. The specific (negative) incremental association of Acting with Awareness, or “engaging fully in one’s current activity with undivided attention” (Baer et al., 2004, p. 193) and Difficulties Engaging in Goal-Directed Behavior might be related to the emphasis of this DERS-subscale on “difficulties concentrating and accomplishing tasks when experiencing negative emotions” (Gratz & Roemer, 2004, p. 47). This association may be representative of construct overlap. However, these variables were only moderately correlated ($r = -.37$) at the zero-order level, and their incremental association was only moderately strong ($\beta = -.26$). This significant association between Acting with Awareness and Difficulties Engaging in Goal-Directed Behavior may be the result of construct overlap, shared method variance, or both; and this Acting with Awareness skill offers only limited unique explanatory value in terms of affect regulation, once the variance accounted for by negative affectivity, anxiety sensitivity, and distress tolerance is considered. Acting with Awareness skills were considerably less potent in terms of their incremental associations with emotional dysregulation. This finding may indicate that being able to limit one’s attention to the present moment (Acting with Awareness) may not be strongly associated with emotion regulatory difficulties, while the ability to accept one’s experiences in the present moment may be of more clinically significant emotion regulatory utility (Hayes et al., 1999; Linehan, 1993a, 1993b). Alternatively, if awareness is arguably a process necessary for the manifestation of more sophisticated mindfulness skills, such as mindful-based acceptance, then when awareness and acceptance are entered into a regression model together, awareness may not demonstrate any unique, incremental effect beyond acceptance. The lack of an incremental effect for awareness may not necessarily indicate its lack of importance in mindfulness-related protective processes, but rather highlight its protective effects via its foundational relations with theoretically more sophisticated mindfulness skills such as mindful-acceptance. Together, acute awareness of internal and external cues may not necessarily yield lower levels of emotional dysregulation in and of itself.

A third observation was that Observing skills were incrementally related to lower levels of Lack of Emotional Awareness, and Describing skills were incrementally related to lower levels of Lack of Emotional Clarity and Lack of Emotional Awareness. Although these findings were not expected on an *a priori* basis, due to the conceptualization of these skills as only facets of more sophisticated mindfulness-based processes—namely, Acting with Awareness and Accepting without Judgment—these findings are perhaps consistent with skills-based mindfulness treatments (e.g., Linehan, 1993a). It could be expected that greater levels of Observing skills would be related to greater levels of emotion-relevant awareness, and by extension, that Describing skills would be related to greater emotional clarity and emotional awareness. For instance, if an individual is able to observe her internal cues in the present moment (e.g., noticing location, intensity, or duration of sensations), then she is likely to be more attentive to, and acknowledging of, her affective experience (Emotional Awareness). If this same individual is able to describe her present experience, by labeling or noting observed phenomena (e.g., “here is sadness”), then she might not only be more aware of the present moment, but her emotional experience also may be more clear (Emotional Clarity) given her ability to verbalize her internal experience (e.g., Linehan, 1993a, 1993b). In contrast to these relations, due to the somewhat basic nature of the Observing and Describing skills, it is consistent with theory (Linehan, 1993a, 1993b) that such skills would not be associated with higher-order affect regulatory phenomena (i.e., acceptance, impulse control, goal-directed behavior, emotion regulatory strategies).

There are a number of interpretative caveats of the present study. First, the current findings were based on a community sample of relatively homogeneous young adult participants. It may be important for future work to examine the associations of mindfulness and emotional regulation among clinical participants as well as among ethnically and more developmentally

diverse individuals. Second, due to the cross-sectional and correlational nature of the present research design, it is not possible to make definitive, causal statements concerning the relations between the studied variables. For example, although we oriented the study on mindfulness processes impacting emotional dysregulation, the opposite relation is possible (e.g., emotional dysregulation impacting mindfulness processes; Wupperman et al., 2008). One important next step in this line of inquiry would be to use prospective research methodologies and evaluate the consistency of the present findings over time. Another approach would be to experimentally manipulate emotion dysregulation in the laboratory and then test the effects of specific mindfulness-based processes on physiological and emotional down-regulation (e.g., Arch & Craske, 2006). Third, the emotional dysregulation subscales are interrelated with one another (see Table 1). Future research could perhaps benefit by controlling for all other aspects of emotional dysregulation in efforts to parcel out shared variance with particular emotional dysregulation processes. Finally, the KIMS and DERS were utilized in the present investigation, as they represent two of the most theoretically promising self-report measures of mindfulness skills and emotional dysregulation. Yet, these tools naturally represent only one set of measurement devices. Future work could therefore benefit by replicating and extending this research using alternative measurement indices developed from distinct conceptual bases.

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Table 1
Descriptive Data and Zero-Order Relations among Theoretically-Relevant Variables

Variable Name	1	2	3	4	5	6	7	8	9	10	11	12	13	M (SD)
1. Negative Affectivity	-	-.40**	.67**	.15	-.18*	-.28**	-.44**	.45**	-.02	.53**	.53**	.49**	.71**	19.80 (7.79)
2. ASI - Total	-	-	-.41**	.12	-.14	-.34**	-.43**	.44**	-.01	.46**	.47**	.44**	.61**	20.49 (13.45)
3. DTS - Total	-	-	-	-.01	.18*	.15	.41**	-.33**	-.16*	-.36**	-.36**	-.36**	-.50**	3.61 (0.83)
4. KIMS - Observing	-	-	-	-	.38**	.08	-.17*	-.12	-.38**	.02	.04	.10	.04	36.64 (9.07)
5. KIMS - Describing	-	-	-	-	-	.32**	.32**	-.51**	-.48**	-.23**	-.32**	-.15	-.29**	27.21 (6.70)
6. KIMS - Awareness	-	-	-	-	-	-	.34**	-.33**	-.20**	-.28**	-.31**	-.37**	-.32**	29.02 (5.78)
7. KIMS - Accepting	-	-	-	-	-	-	-	-.50**	-.18*	-.43**	-.62**	-.21**	-.51**	33.20 (8.06)
8. DERS - Clarity	-	-	-	-	-	-	-	-	.47**	.51**	.59**	.30**	.56**	10.80 (3.65)
9. DERS - Awareness	-	-	-	-	-	-	-	-	-	.20**	.31**	-.08	.14	15.79 (5.25)
10. DERS - Non-acceptance	-	-	-	-	-	-	-	-	-	-	.44**	.32**	.60**	11.54 (5.57)
11. DERS - Impulse	-	-	-	-	-	-	-	-	-	-	-	.43**	.66**	10.97 (4.10)
12. DERS - Goals	-	-	-	-	-	-	-	-	-	-	-	-	.57**	14.22 (4.85)
13. DERS - Strategies	-	-	-	-	-	-	-	-	-	-	-	-	-	15.78 (6.64)

* p < .05

** p < .01

¹ Negative Affectivity Subscale, Positive Affect Negative Affect Scale

² Anxiety Sensitivity Index - Total Score

³ Distress Tolerance Scale - Total Score

- ⁴ Observing subscale, Kentucky Inventory of Mindfulness Skills
- ⁵ Describing subscale, Kentucky Inventory of Mindfulness Skills
- ⁶ Acting with Awareness subscale, Kentucky Inventory of Mindfulness Skills
- ⁷ Accepting without Judgment subscale, Kentucky Inventory of Mindfulness Skills
- ⁸ Lack of Emotional Clarity subscale - Difficulties in Emotion Regulation Scale
- ⁹ Lack of Emotional Awareness subscale - Difficulties in Emotion Regulation Scale
- ¹⁰ Nonacceptance of Emotional Responses subscale - Difficulties in Emotion Regulation Scale
- ¹¹ Impulse Control Difficulties subscale - Difficulties in Emotion Regulation Scale
- ¹² Difficulties Engaging in Goal-Directed Behavior subscale - Difficulties in Emotion Regulation Scale
- ¹³ Limited Access to Emotion Regulation Strategies subscale - Difficulties in Emotion Regulation Scale.

Table 2

Mindfulness Predicts Emotion Dysregulation

	ΔR^2	<i>t</i>	β	sr^2	<i>p</i>
Criterion Variable: DERS - Clarity ⁸					
<i>Step 1</i>	.26				< .01
Negative Affectivity ¹		2.54	.24	.05	< .05
ASI - Total ²		2.51	.24	.04	< .05
DTS - Total ³		-1.86	-.15	.02	ns
<i>Step 2</i>	.20				< .01
KIMS - Observing ⁴		-1.31	-.10	.01	ns
KIMS - Describing ⁵		-3.88	-.30	.10	< .01
KIMS - Awareness ⁶		-0.59	-.04	.00	ns
KIMS - Accepting ⁷		-3.06	-.25	.07	< .01
Criterion Variable: DERS - Awareness ⁹					
<i>Step 1</i>	.04				ns
Negative Affectivity ¹		-.83	-.09	.01	ns
ASI - Total ²		-.14	-.01	.00	ns
DTS - Total ³		-2.43	-.23	.04	< .05
<i>Step 2</i>	.27				< .01
KIMS - Observing ⁴		-2.72	-.22	.05	< .01
KIMS - Describing ⁵		-3.68	-.32	.09	< .01
KIMS - Awareness ⁶		-0.46	-.04	.00	ns
KIMS - Accepting ⁷		-2.39	-.22	.04	< .05
Criterion Variable: DERS - Nonacceptance ¹⁰					
<i>Step 1</i>	.35				< .01
Negative Affectivity ¹		4.29	.38	.12	< .01
ASI - Total ²		1.99	.18	.03	< .05
DTS - Total ³		-2.00	-.16	.03	< .05

	ΔR^2	t (each predictor)	β	st^2	p
<i>Step 2</i>					
	.21				< .01
KIMS - Observing ⁴		-0.43	-.03	.00	ns
KIMS - Describing ⁵		-1.43	-.10	.02	ns
KIMS - Awareness ⁶		0.14	.01	.00	ns
KIMS - Accepting ⁷		-6.66	-.49	.25	< .01
Criterion Variable: DERS - Impulse /1					
<i>Step 1</i>	.36				< .01
Negative Affectivity ¹		4.07	.36	.11	< .01
ASI - Total ²		2.43	.22	.04	< .05
DTS - Total ³		-1.85	-.14	.02	ns
<i>Step 2</i>	.04				ns
KIMS - Observing ⁴		-0.72	-.06	.00	ns
KIMS - Describing ⁵		0.34	.03	.00	ns
KIMS - Awareness ⁶		-0.96	-.07	.01	ns
KIMS - Accepting ⁷		-2.37	-.20	.04	< .05
Criterion Variable: DERS - Goals /2					
<i>Step 1</i>	.29				< .01
Negative Affectivity ¹		3.35	.31	.08	< .01
ASI - Total ²		1.77	.16	.02	ns
DTS - Total ³		-2.22	-.18	.03	< .05
<i>Step 2</i>	.07				< .01
KIMS - Observing ⁴		1.12	.09	.01	ns
KIMS - Describing ⁵		-0.38	-.03	.00	ns
KIMS - Awareness ⁶		-3.31	-.26	.08	< .01
KIMS - Accepting ⁷		-2.42	-.21	.04	< .05
Criterion Variable: DERS - Strategies /3					
<i>Step 1</i>	.61				< .01

	ΔR^2	<i>t</i> (each predictor)	β	sr^2	<i>p</i>
Negative Affectivity ¹		7.07	.49	.27	< .01
ASI - Total ²		3.35	.23	.08	< .01
DTS - Total ³		-3.76	-.23	.10	< .01
<i>Step 2</i>	.03				< .05
KIMS - Observing ⁴		-0.45	-.03	.00	ns
KIMS - Describing ⁵		-0.60	-.04	.00	ns
KIMS - Awareness ⁶		-1.22	-.07	.01	ns
KIMS - Accepting ⁷		-2.45	-.16	.04	< .05

Note: β = standardized beta weight; sr^2 = Squared semi-partial correlation

¹ Negative Affectivity subscale, Positive Affect Negative Affect Scale

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¹² Difficulties Engaging in Goal-Directed Behavior subscale - Difficulties in Emotion Regulation Scale

¹³ Limited Access to Emotion Regulation Strategies subscale - Difficulties in Emotion Regulation Scale.