Article

Individual Differences in the Contents and Form of Present-Moment Awareness: The Multidimensional Awareness Scale

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Abstract

Decentering, a detached, observer perspective on one's mental activity, is an important concept for understanding mental health. Meta-awareness, people's awareness of their own current mental activity, is thought to facilitate decentering. However, trait measures of these concepts are not available or have validity concerns. We sought to create a theoretically derived measure of meta-awareness and decentering that allowed an exploration of questions in the literature regarding whether there are multiple forms of decentered awareness and whether meta-awareness and external awareness are distinct. Across six samples and 2,480 participants, we developed the 25-item Multidimensional Awareness Scale, with subscales assessing meta-awareness (present moment awareness of mental activity), decentered awareness (meta-awareness from a psychologically distant perspective), and external awareness (present moment awareness of the world outside of oneself). The scales demonstrated acceptable reliability and validity. Results are discussed in terms of the conceptual implications of the scale structure and its potential uses.

Keywords

meta-awareness, decentering, external awareness, mindfulness, scale development

Decentering, a present-moment, detached, observer perspective on one's mental activity (e.g., Bernstein et al., 2015; Naragon-Gainey & DeMarree, 2017b), has been implicated in improvements in mental health across a range of psychopathology (Bernstein et al., 2015). Decentering is explicitly targeted by multiple forms of psychotherapy such as mindfulness-based cognitive therapy (MBCT; Segal et al., 2013) and acceptance and commitment therapy (ACT; S. C. Hayes et al., 2012)[1], and changes in decentering are one mediator of treatment outcomes for a variety of psychological disorders (e.g., Arch et al., 2012; Bieling et al., 2012; O'Toole et al., 2019). Initial work examining mechanisms has linked decentering to reduced distress in response to potentially aversive experiences (DeMarree et al., 2019; Naragon-Gainey & DeMarree, 2017a) and reduced responses to typically evocative stimuli (Papies et al., 2015).

Although decentering appears to predict many adaptive psychological responses and associated outcomes, there are a number of issues with how decentering has been measured to date. Below we describe these issues and the development of a new scale assessing decentering-related concepts: the Multidimensional Awareness Scale (MAS). Our initial measurement efforts were shaped by the metacognitive process model (MPM) of decentering (Bernstein et al., 2015), although the scale development process resulted in an instrument that ultimately did not overlap fully with the concepts postulated by this model. To foreshadow the contents of the final instrument, the measure assesses three distinct aspects of present-moment awareness that differ in the contents or form of awareness: awareness of internal experience (i.e., meta-awareness), awareness of the external world, and decentered awareness.

Measurement of Concepts Postulated by the MPM

The MPM of decentering (Bernstein et al., 2015) posits three distinct decentering-related concepts: meta-awareness, disidentification from internal experiences, and reduced reactivity to thought content. According to the MPM, meta-awareness, people's explicit awareness of their mental activity, is a necessary precondition or instigating factor of the decentering processes that promote adaptive responses. Disidentification from internal experiences (experiencing one's self as separate

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from one's internal states; we use the term "disidentification" to simplify references to this concept) and reduced reactivity to thought content (reduced impact of thoughts on subsequent mental processes; referred to here as "reduced reactivity") are hypothesized to reduce maladaptive responses to a variety of potentially distressing internal and external experiences (Bernstein et al., 2015). The processes are thought to reinforce each other and promote adaptive responding by allowing people to step outside of, identify less with, and respond more intentionally to their ongoing mental activity. Although postulated to occur in the present moment, the repeated use of these processes likely results in meaningful individual differences. Empirical support for the MPM has been constrained by measurement concerns, as measures of meta-awareness are limited and measures of decentering were not designed to target the processes proposed in the MPM (Bernstein et al., 2019). Furthermore, there is no existing measure of all components of the model.[2]

Meta-Awareness Conceptualization and Measurement

When a person directs conscious attention to and is aware of mental activities *as they occur*, these mental activities occur with meta-awareness (Dehaene et al., 2006; Schooler, 2002). Meta-awareness has been of interest in third wave therapeutic approaches, such as in MBCT (Segal et al., 2013) and ACT (S. C. Hayes et al., 2012), which hold that meta-awareness of one's mental activities is an important step in reducing maladaptive responses, such as excessive engagement in, inflexible responding to, or reification of them. Meta-awareness is viewed as a skill that can be learned, often through meditation practices (Dahl et al., 2015). The MPM concurs, and argues that meta-awareness precedes disidentification and reduced reactivity, which in turn support mental health (Bernstein et al., 2015).

Existing work has studied momentary meta-awareness, including awareness of mind wandering (e.g., Smallwood et al., 2007) and attentional biases (Ruimi et al., 2018). Third wave approaches assume that the tendency to be meta-aware varies across people and can learned. To date, little research has examined dispositional meta-awareness, and we are not aware of any self-report measures designed to assess the concept, though measures of present moment awareness may be the closest available. The "Present Moment Awareness" subscale of the Multidimensional Psychological Flexibility Inventory (MPFI; Rolffs et al., 2018) is highly similar to meta-awareness, as all of the items on this subscale reflect awareness of *internal* states (e.g., "I was attentive and aware of my emotions").[3] This measure is new, so little is known about its validity, and participants rate items in reference to the past 2 weeks, which may not adequately reflect dispositional tendencies. The Observe subscale of the Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006) and the Awareness subscale of the Philadelphia Mindfulness Scale (PMS; Cardaciotto et al., 2008) also target people's general present-moment awareness. However, although some items in these scales assess meta-awareness, other items focus on awareness of external stimuli or one's body.

Awareness subscales with items reflecting awareness of one's mind *and* the outside world are not problematic if there is a general tendency to be aware of all aspects of the present moment. But, if they are different psychological constructs, then the inclusion of items reflecting both may undermine scale validity and create uncertainty about the size and interpretation of relationships with criteria. Although speculative, it is easy to imagine that the tendencies to be aware of the internal and external world would be dissociable. Notably, activity in the external world is experienced by others, and people's awareness and perceptions of it can be refined via social interaction. Such opportunities do not exist for awareness of a person's own mind because they alone have access to its activities; thus, meta-awareness may develop through different processes than external awareness. In addition to potential distinct antecedents, meta-awareness and external awareness might have different effects. We might expect low meta-awareness, but not low external awareness, to be associated with emotional problems such as depression and anxiety. In developing the MAS, one goal was to examine whether meta-awareness and external awareness are distinct concepts, and if so, to characterize the differences.

Quality of Awareness: Disidentification and Reduced Reactivity

Though meta-awareness is present-moment focused, it does not entail that the awareness is of a particular quality. Decentering, in contrast, refers to a particular kind of meta-awareness: meta-awareness marked by psychological distance. The two MPM concepts related to decentering are disidentification from internal experiences and reduced reactivity to thought content. The former maps closely onto most definitions of decentering, whereas the latter is included in some definitions of decentering or could instead be seen as a consequence of decentering (Bernstein et al., 2015; Naragon-Gainey & DeMarree, 2017b).

There is some support for the separability of individual differences in disidentification from internal experiences and reduced reactivity to thought content based on research analyzing existing measures of decentering (e.g., Experiences Questionnaire [EQ; Fresco et al., 2007], Cognitive Fusion Questionnaire [CFQ; Gillanders et al., 2014]). Hadash et al. (2017) and Naragon-Gainey and DeMarree (2017b) examined different subsets of decentering measures, used different statistical approaches, and studied participants from different cultures, yet they found remarkable convergence in this two-factor structure.

Although these papers offered potential support for two of the MPM constructs, other interpretations are possible (Naragon-Gainey & DeMarree, 2017b). Notably, all items that loaded on the disidentification factor were forward coded (i.e., agreement = more decentering), whereas all items that loaded on the reduced reactivity factor were reverse coded (i.e., agreement = less decentering). Furthermore, all reduced reactivity items referred to *negative* mental contents or *negative* reactions to mental contents, whereas disidentification items included both negative and valence-agnostic items. Thus, scores on these decentering measures are confounded with response styles and the presence of negative thoughts and feelings, and may not apply to decentering from positive experiences. One goal of the present work was to create a self-report decentering scale with relatively balanced item coding and neutral valence of referent experiences, and to examine the resulting structure.

The Present Work

Taken together, the present research has several goals, all related to the measurement and structure of decentering-related concepts. First, we sought to develop a trait measure of meta-awareness that captures the tendency to be aware of one's mental activity as it occurs, as this general tendency is likely to be of interest in many clinical and research contexts. Second, we sought to determine whether the tendency to be meta-aware is the same as or distinct from the tendency to be aware of the external world, and if they are distinct, to test whether they are differentially related to relevant criteria. Third, we sought to develop a measure of the tendency to engage in decentering—encompassing both disidentification and reduced reactivity— that did not assume the presence of negative mental contents and that contained both forward and reverse coded items and to determine whether is a unidimensional or multidimensional concept. Finally, we sought to characterize the resultant measures by examining their unique relationships with validity criteria.

In this work, we aimed to identify a replicable factor structure and examine construct validity through the iterative use of large samples from different target populations. We focus on consistent patterns across data sets to increase confidence in the robustness and generalizability of results. Study materials and data for all samples described below, except for Sample 5, are available at https://osf.io/3dqgr/. Sample 5 was part of a larger project that has not yet been submitted for publication. We report how we determined our sample size, all data exclusions, all manipulations, and all measures in the study.

Preliminary Item Generation and Refinement

A detailed description of the item generation process and preliminary analyses are in the online supplement. The measure development process followed the practices described in Clark and Watson (2019). We first generated definitions of relevant and neighboring concepts based on the existing literature. Individuals in our labs independently generated items and collaboratively dropped, edited, and generated additional items to balance content coverage and item wording/coding. Initial analyses revealed that meta-awareness and external awareness were structurally distinct. One primary decentering factor emerged that included disidentification and reduced reactivity items, though several other decentering-related factors did as well. These additional subscales had problems that lead us to drop them (e.g., low reliability).

Below, we describe analyses using the most promising items from the preliminary analyses. These items relate to the contents of (i.e., meta-awareness and external awareness) or form of (i.e., decentered awareness) present moment awareness. Sample 6 was the only sample that contained only the final MAS items. The online supplement has more details regarding the initial studies and analyses, and the additional concepts that emerged in some of the analyses.

Participants and Procedures

We divide analyses into sections that examine the structure and the construct validity of the measure. These analyses draw on the same data sets, so we first describe the participants and procedures for each sample. Samples are continuously numbered, including preliminary samples. Sample 1 was used for initial item refinement, and Samples 2 and 3 were used for item reduction and initial structural analyses described in the online supplement. Samples 4 and 5 were used for exploratory structural analyses and Sample 6 was used for confirmatory structural analyses described below. Samples 2 to 6, which all included the final item set for the MAS, contributed to the reliability and validity analyses described below. Data from Samples 2 and 3 that do not overlap with the current focal questions were reported in Naragon-Gainey et al. (2020). However, data for the MAS items have not been previously reported.

Participants

We describe final samples—those participants who completed most of the MAS items (participants who skipped a full page [7-11 questions] on the MAS were dropped) and who "passed" our validity checks. Participants responded to 3+ validity questions (e.g., agreeing with "I often ride the wild animals at the zoo," indicates a likely invalid response; items taken from the Comprehensive Assessment of Traits Relevant to Personality Disorders [CAT-PD]; Simms et al., 2011). Validity items were embedded in other scales using the response format of the scale in which it appeared. Responses were recoded to a 0 to 1 scale, with higher values

indicating invalid responses, and then averaged. Consistent with our past research (Naragon-Gainey & DeMarree, 2017a, 2017b), participants whose invalidity index score was ≥2 standard deviations above the sample mean were excluded and are not reflected in the numbers below. This typically resulted in the removal of ~5% of the initial sample. We sought to collect at least 350 participants in each sample to obtain stable parameter estimates in structural and validity analyses.

Sample 2. Participants were 466 University at Buffalo undergraduate students (age range: 18-31 years, $M = 19.16$, $SD = 1.49$; 240 male, 226 female; 43 reported Hispanic ethnicity; 268 White, 145 Asian, 56 Black, 5 American Indian, 5 Pacific Islander/Hawaiian, 11 unreported, multiple categories possible). Participants completed the study on a computer in a psychology laboratory with visually isolated workstations, and they received course credit as compensation.

Sample 3. Participants were 437 individuals recruited through ResearchMatch (age range: 18-65 years, $M = 46.55$, $SD = 12.47$; 157 male, 277 female, nonbinary/other, 1 unreported; 26 reported Hispanic ethnicity; 320 White, 75 Black, 62 Asian, 24 American Indian, 2 Pacific Islander/Hawaiian, 3 did not report race, multiple categories possible; 20 high school, 49 some college, 37 2-year degree, 118 4-year degree, 35 some graduate school, 176 graduate degree; 74 unemployed, 53 employed part-time, 298 employed full-time, 7 part-time student, 21 full-time student; median income $60,000-80,000; 109 single, 33 cohabitating, 237 married, 43 divorced, 13 widowed; 204 self-reported lifetime diagnosis or treatment seeking for mental health problems, 122 indicated current treatment). ResearchMatch is a national health volunteer registry is supported by the U.S. National Institutes of Health as part of the Clinical Translational Science Award program. Participants in this sample completed the questionnaires online. They were entered into a lottery to win either a new iPad or one of 10 Amazon gift cards worth $50 each.

Sample 4. Participants were 407 University at Buffalo undergraduate students (age range: 18-46 years, $M = 18.94$, $SD = 1.83$; 166 male, 241 female; 32 reported Hispanic ethnicity; 188 White, 57 Black, 162 Asian, 7 Pacific Islander/Hawaiian, 3 did not report race, multiple categories possible). Participants completed the study in a laboratory with visually isolated workstations, and they received course credit as compensation.

Sample 5. Participants were community members in the Buffalo (NY) metropolitan area, recruited as part of a larger study examining decentering. Participants were recruited using flyers in the local community, including mental health clinics, online advertisements (e.g., Craigslist, websites of local publications), and lists of participants from previous studies who indicated interest in additional studies. Individuals reporting current mental health treatment were oversampled, constituting 50.9% of the final sample. In addition to dropping participants who failed attention check questions as described above, the protocol for the larger study from which these data are taken involved dropping individual blocks of questions when evidence suggested responses were unlikely to be valid based on response time, patterns of responses, and research assistant observations. In total, 379 participants completed the study, but 55 of these participants had at least one block of decentering items coded as missing so they were dropped to be consistent with the exclusion criteria employed in other samples. This left 324 participants in the final sample (age range: 18-65 years, $M = 35.12$, $SD = 14.03$; 99 male, 220 female, 5 nonbinary/other; 21 reported Hispanic ethnicity; 225 White, 45 Black, 3 American Indian or Alaskan Native, 28 Asian, 23 more than one race, 1 did not report race; 1 did not complete high school, 23 high school, 98 some college, 43 did 2-year degree, 56 did 4-year degree, 32 some graduate school, 71 graduate degree; 85 unemployed, 116 employed part-time, 83 employed full-time, 16 part-time student, 98 full-time student; median income $20,000-40,000; 174 single, 41 cohabitating, 74 married, 31 divorced, 4 widowed).

Current mood and anxiety disorders were assessed in Sample 5 with the Anxiety and Related Disorders Interview Schedule for *DSM-5* (ADIS-5; Brown & Barlow, 2014), which was conducted following the questionnaire portion of the session. Interrater reliability was acceptable ($\kappa = .56$ to .85 for each individual diagnosis with more than four cases), as assessed via independent scoring of 18% of recorded interviews. However, 43% of the sample was diagnosed with at least one current mood or anxiety disorder, and the most frequent diagnoses were social anxiety disorder (25.1%), generalized anxiety disorder (20.1%), and unipolar mood disorder (11.1%). In addition, 54 participants indicated they were currently engaged in psychotherapy only, 49 participants indicated current use of psychoactive medications only, and 59 participants indicated both psychotherapy and psychoactive medications. Participants completed the measures described one at a time on a laptop computer. They were compensated $50 for a baseline session for a larger study, which included the pool of items for the current measure.

Sample 6. Participants were 344 University at Buffalo undergraduate students (age range: 18-37 years, $M = 18.96$, $SD = 1.45$; 141 male, 201 female, 2 nonbinary/other; 23 reported Hispanic ethnicity, 193 White, 36 Black, 3 American Indian, 121 Asian, 4 did not report race, multiple categories possible). Participants completed the study online in exchange for course credit. Structural and validity

hypotheses for this confirmatory sample were preregistered at https://aspredicted.org/m7xa6.pdf.[4]

Procedure

After indicating consent, participants in Samples 2 to 4 and 6 began with the MAS candidate items, followed by the questionnaires described in Part II. Participants in Sample 5 first completed ~45 minutes of cognitive and physiological assessments related to that study's primary aims prior to the questionnaire portion of the baseline session. Furthermore, in Sample 5, the MAS was randomly presented with the other questionnaires rather than always appearing first. In addition, Sample 6 completed the measure at two time points: once in an online mass survey, generally completed in Weeks 2 to 3 of the academic term (but available throughout the term), and once in the main online session during Weeks 9 to 10 of the semester (average time elapsed = 44.64 days, $SD = 12.80$, range 0-64 days). The measures completed varied across samples; Part I only analyzes the MAS items and in Part II, we describe those measures most central to validating the MAS that are included in the present analyses. Online supplement Table S3 lists all measures completed by each sample and their descriptive statistics (reliability, means, *SD*s).

Part I: Structural Validity and Reliability

The goals of Part I were to build on preliminary studies to develop a measure of the content and nature of present-moment awareness and to test its structural and measurement properties. Following analyses described in the online supplement, we tested items identified as promising indicators of Meta-Awareness, External Awareness, and Decentered Awareness.

Measures

The MAS item pool (including the 31 items relevant to these analyses) was presented first to participants, except in Sample 5, with random presentation of items within blocks (which also were randomized). For each of the candidate MAS items, participants indicated the extent that they agreed with each statement on a 7-point scale anchored at *strongly disagree* and *strongly agree*. Instructions are in the appendix.

Results and Discussion

Analytic Strategy. Analyses were conducted with M*plus* 8.4, using robust maximum likelihood estimators to account for missing data and any nonnormal distributions. An oblique geomin rotation was used for exploratory factor analyses. We identified the maximum number of plausible factors using parallel analysis, but final decisions regarding which solution to retain was determined through inspection of the factor structure and its interpretability.

Consistent with our preregistration, we used two analytic strategies as confirmatory tests of the MAS structure: a confirmatory factor analysis (CFA) and exploratory structural equation modeling (ESEM) with a target rotation. Although CFA is the more commonly used method to validate a structure, it strictly fixes cross-loadings to zero. Marsh et al. (2014) note this is a rigid assumption for many psychological measures and constructs, which are often multidimensional. ESEM with target rotation provides a confirmatory test of an a priori model (i.e., by specifying all primary factor loadings), while allowing for free estimation of cross-loadings. For both analyses, we used standard guidelines for interpreting model fit indices (i.e., comparative fit index (CFI) $> .90$, root mean square error of approximation (RMSEA) $< .10$, and standardized root mean squared residual (SRMR) $< .08$ (Hu & Bentler, 1999; Marsh et al., 2014).

Exploratory Factor Analyses. Samples 4 and 5 served as our samples for exploratory factor analyses. For Sample 4, parallel analysis revealed a maximum of four factors. We inspected the solutions and found that the three-factor solution—consisting of Meta-Awareness, External Awareness, and Decentered Awareness—was most interpretable, as an additional fourth factor contained only forward coded items that had substantial cross-loadings (i.e., $> |.3|$) on the Decentered Awareness factor. Parallel analyses in Sample 5 revealed a maximum of three factors and the structure was consistent with Sample 4. Table 1 shows the factor loadings for the three-factor solution for each sample.

We retained items loading greater than |.35| on their primary factor without substantial cross loadings (i.e., loadings greater than |.3| on other factors or loadings within .2 in absolute magnitude of the primary loading). We dropped two meta-awareness items with weak primary loadings; two decentering items, one with a weak primary loading and one with a cross-loading; and two external awareness items, one with a weak primary loading and one with a cross-loading. The resultant MAS had 7 items reflecting meta-awareness, 12 items reflecting decentered awareness, and 6 items reflecting external awareness (see the appendix for final scale). The Decentered Awareness (MAS-DA) and External Awareness (MAS-EA) subscales had both forward and reverse coded items, but the Meta-Awareness (MAS-MA) subscale had only forward coded items. The MAS-DA had items assessing both MPM decentering processes (i.e., reduced reactivity and disidentification).

Confirmatory Structural Analyses. Sample 6 served as our confirmatory sample. We evaluated the MAS structure with both CFA and ESEM with a target rotation. The 3-factor

Table 1. Exploratory Factor Analysis of MAS Candidate Items.

	Sample 4			Sample 5		
Item	F1	F2	F3	F1	F2	F3
I am aware of my thoughts and feelings as I experience them.	**.617***	.050	.050	**.611***	.080	.041
I notice it when I am having a feeling.	**.622***	−.134	−.007	**.533***	−.121	.081
When my emotions change, I notice.	**.597***	−.173	.091	**.672***	−.164*	−.009
I hardly notice when my thoughts and feelings change. (r)[a]	−.322*	.036	−.232*	**−.514***	.099	−.034
I notice how my thoughts and feelings come and go.	**.574***	.046	.088	**.672***	.004	−.151*
I pay attention to sensations in my body to understand how I am feeling.	.498*	.002	.073	**.603***	.063	.034
I notice when I have physical sensations related to strong emotions.[a]	.204	−.209*	.240*	**.578***	−.080	.124
I can observe my feelings as they unfold.	**.669***	.011	−.015	**.533***	.264*	.017
I usually know what thoughts are going through my mind at any given time.	.489*	.151	.116	.489*	.123	.114
I get immersed in my thoughts and feelings. (r)[a]	.209	**−.650***	−.002	.434*	**−.656***	−.048
I often get lost in my thoughts. (r)	.050	**−.580***	−.056	.286*	**−.585***	−.047
Viewing my feelings objectively is difficult. (r)	−.176	−.467*	−.046	.020	**−.630***	.074
I often get "caught up" in my thoughts and can't look at them objectively. (r)	.027	**−.583***	−.155	.130	**−.711***	.035
I don't let my current feelings overwhelm me.	.158	**.627***	−.094	.017	**.711***	−.080
I experience my thoughts and feelings without being carried away by them.	.315	**.561***	−.007	.047	**.727***	.059
I can let go of thoughts I have without acting on them.[a]	.166	.279*	−.042	.119	**.560***	−.237*
I can think about something without getting worked up about it.	.195	.482*	.072	.128	**.532***	−.044
My internal experiences really bother me. (r)	.123	**−.655***	−.158	.183*	**−.700***	−.029
I observe my thoughts without getting caught up in them.	.298	.497*	−.079	.071	**.753***	−.133
I struggle with my thoughts and feelings a lot. (r)	−.052	**−.709***	−.106	.135	**−.803***	−.002
I keep thinking about things that bother me. (r)	.031	**−.635***	.028	.101	**−.684***	.102
When a thought or feeling is not helpful for me, I am able to let it go.	.200	**.524***	−.014	.002	**.771***	−.085
I don't know when I should listen to my thoughts and when I shouldn't. (r)	−.089	**−.514***	−.159	.007	**−.512***	−.042
I am usually aware of what is going on around me.	−.061	−.005	**.807***	.058	.053	**.752***
I notice when small things in my environment change.[a]	.068	−.062	**.509***	.291*	.000	.418*
I pay attention to the sights and sounds around me.	.071	−.113	**.658***	.224*	.070	**.528***
When I'm walking outside, I notice the people and scenery I pass by.	.057	−.129	**.672***	.197*	.019	**.603***
Even if I've only been somewhere once, I could describe the place in some detail.[a]	.032	−.019	.415*	.189*	.031	.333*
I tend to ignore my surroundings. (r)	−.009	−.117	**−.679***	.057	.032	**−.885***
My friends say I'm oblivious to what happens around me. (r)	.049	−.130	**−.479***	−.010	.015	**−.565***
I don't pay attention to my surroundings. (r)	.204	−.031	**−.881***	−.015	.041	**−.856***

Note. (r) indicated reverse scored items. Factor loadings > |.5| are indicated in bold. MAS = Multidimensional Awareness Scale.
[a]Indicates an item that is not included in the final scale.
*$p < .05$.

CFA did not fit the data well, as the CFI was low: $\chi^2(272) = 818.84$, $p < .001$, CFI = .83, RMSEA = .08, SRMR = .08. Modification indices revealed a large source of strain in the model, suggesting a covariance between Items 19 and 17, which have similar content and wording and may contribute to shared error variance. We reran the model allowing these items to freely covary (see Table 2 for factor loadings). However, this model also did not achieve acceptable fit and was not interpreted further: $\chi^2(271) = 749.76$, $p < .001$, CFI = .85, RMSEA = .07, SRMR = .08.

For the ESEM with target rotation we allowed the error covariance between Items 19 and 17, as in the CFA. This model provided acceptable fit: $\chi^2(277) = 548.67$, $p < .001$, CFI = .90, RMSEA = .06, SRMR = .04 (see Table 2 for factor loadings). All primary loadings were significant and in the expected direction, and all loadings except for one were greater than |.45|. Of note, only the MA factor had widespread but small cross loadings that likely accounted for the superior fit of the ESEM model relative to the CFA. The factors were significantly correlated (*r*s = .19-.33).

Table 2. Confirmatory Factor Analysis and ESEM Target Rotation, Sample 6.

		CFA			ESEM target rotation		
Item	Wording	MA	DA	EA	MA	DA	EA
5	I am aware of my thoughts and feelings as I experience them.	**.719***			**.615***	.091*	.161*
10	I notice it when I am having a feeling.	**.662***			**.631***	−.094*	.137*
21	When my emotions change, I notice.	**.669***			**.621***	−.044	.116
2	I notice how my thoughts and feelings come and go.	**.620***			**.634***	−.018*	.011
20	I pay attention to sensations in my body to understand how I am feeling.	**.735***			**.597***	.139*	.146
13	I can observe my feelings as they unfold.	**.761***			**.657***	.108*	.098
23	I usually know what thoughts are going through my mind at any given time.	**.576***			**.523***	.180*	.074
4	I often get lost in my thoughts. (r)		**−.661***		.231*	**−.680***	−.179*
25	Viewing my feelings objectively is difficult. (r)		**−.557***		−.127	**−.513***	−.064
8	I often get "caught up" in my thoughts and can't look at them objectively. (r)		**−.748***		.076	**−.764***	.013
15	I don't let my current feelings overwhelm me.		**.599***		.197*	**.621***	−.276*
17	I experience my thoughts and feelings without being carried away by them.		**.664***		.236*	**.635***	−.085
11	I can think about something without getting worked up about it.		.412*		.238*	.375*	−.045
24	My internal experiences really bother me. (r)		**−.677***		.157*	**−.688***	−.099
19	I observe my thoughts without getting caught up in them.		**.579***		.210*	**.561***	−.085
7	I struggle with my thoughts and feelings a lot. (r)		**−.840***		.107*	**−.846***	−.087
9	I keep thinking about things that bother me. (r)		**−.666***		.136*	**−.706***	.033
18	When a thought or feeling is not helpful for me, I am able to let it go.		**.583***		.282*	**.574***	−.207*
1	I don't know when I should listen to my thoughts and when I shouldn't. (r)		**−.715***		.152*	**−.711***	−.179*
6	I am usually aware of what is going on around me.			**.590***	.210*	.041	.463*
16	I pay attention to the sights and sounds around me.			**.730***	.300*	−.088*	**.577***
3	When I'm walking outside, I notice the people and scenery I pass by.			**.756***	.268*	−.094*	**.617***
22	I tend to ignore my surroundings. (r)			**−.762***	−.001	.018	**−.800***
14	My friends say I'm oblivious to what happens around me. (r)			**−.579***	.134*	−.137*	**−.655***
12	I don't pay attention to my surroundings. (r)			**−.806***	.005	−.040	**−.827***
	Covariance of Item 17 and Item 19	.490*			.441*		
	Factor correlations						
	DA	.292*			.221*		
	EA	.555*	.209*		.328*	.188*	

Note. Entries are standardized factor loadings (or factor covariance). (r) Indicated reverse scored items. Loadings ≥ |.5| are in bold. ESEM = exploratory structural equation modeling; CFA = confirmatory factor analysis; MA = Meta-Awareness; DA = Decentered Awareness; EA = External Awareness.
*$p < .05$.

Overall, the ESEM model supported the structural validity of the MAS.

Reliability, Stability, and Scale Intercorrelations. As seen in Table 3, MAS subscales demonstrated adequate reliability based on alpha and omega (A. F. Hayes & Coutts, 2020). MAS-MA was weakest, with reliabilities averaging $\alpha = .81$, $\omega = .81$, and MAS-DA and MAS-MA averaged $\alpha = .89$, $\omega = .89$ and $\alpha = .84$, $\omega = .84$, respectively. MAS-MA and MAS-EA were moderately correlated (average $r = .42$), whereas MAS-MA and MAS-EA had relatively small correlations with MAS-DA (mean rs = .22 and .26).

To examine ~6-week test–retest reliability, we selected those Sample 6 participants who completed the mass survey 4 to 8 weeks before the main session (subsample $n = 280$; mean interval = 47.54 days). Test–retest correlations for the subscales were: MAS-MA = .58, MAS-DA = .73, MAS-EA = .70, all ps $< .001$. These values suggest strong

Table 3. Reliability, Descriptive Statistics, and Intercorrelations Among Final MAS Subscales.

Sample	MA, α	DA, α	EA, α	MA, ω	DA, ω	EA ω	MA, *M* (*SD*)	DA, *M* (*SD*)	EA, *M* (*SD*)	MA–DA corr.	MA–EA corr	DA–EA corr.
2 (Student, in person)	.768	.876	.815	.769	.877	.820	5.375 (0.691)	4.169 (1.001)	5.357 (0.976)	.172**	.396**	.282**
3 (Community, online)	.821	.910	.860	.821	.912	.863	5.333 (0.779)	4.472 (1.101)	5.809 (0.909)	.299**	.328**	.292**
4 (Student, in person)	.808	.868	.818	.808	.870	.820	5.430 (0.741)	3.996 (0.978)	5.482 (0.927)	.212**	.468**	.300**
5 (Community, in person)	.800	.902	.869	.802	.903	.873	5.209 (0.889)	3.886 (1.154)	5.593 (1.118)	.216**	.436**	.314**
6 (Student, online, main)	.853	.898	.844	.854	.900	.850	5.445 (0.763)	4.072 (1.036)	5.481 (0.942)	.289**	.466**	.211**
6 (Student, online, mass)	.831	.885	.807	.831	.888	.812	5.261 (0.770)	3.979 (.989)	5.394 (0.907)	.131*	.451**	.138*

Note. MAS = Multidimensional Awareness Scale; MA = Meta-awareness, DA = Decentered awareness, EA = External awareness.
*$p < .05$. **$p < .001$.

test–retest reliability, although the MA value was lower than our preregistered target of ≥.60.

Part II: Measure Validation

To evaluate the construct validity of and expected differential associations of the MAS subscales, we examined zero-order and unique relationships of subscales with criteria. Regression results are in the online supplement (Table S4); we draw on them to clarify the specificity of MAS subscale associations as needed. We also tested known groups validity by comparing the MAS scores of individuals (a) with and without a current mood and anxiety disorder (Sample 5), and (b) with and without mediation experience.

Existing measures of mindfulness and decentering (or defusion) served as convergent criteria. As noted earlier, measures of present moment awareness vary in their meta-awareness and external awareness item content and may show correlations with the MAS-MA and MAS-EA that reflect this. The MPFI-Present Moment Awareness has the most meta-awareness items, followed by the Philadelphia Mindfulness Awareness subscale and the FFMQ-Observe subscale. Mindfulness measures that target the *form* of present-moment awareness, like acceptance, nonjudging, and nonreactivity should be strongly and specifically related to MAS-DA. In addition, we expected MAS-DA to be strongly related to existing measures of decentering and (de)fusion.

Discriminant validity measures included personality traits (i.e., Big Five, trait positive and negative affect) and response styles (i.e., socially desirable responding) that should measure different constructs than the MAS. We expected small associations with these variables. However, neuroticism and negative affect should have strong associations with MAS-DA, given prior work finding a strong link between decentering and these traits (e.g., Hadash et al., 2017; Naragon-Gainey & DeMarree, 2017b).

We also examined measures of emotion regulation and psychological distress versus well-being to test concurrent validity. Third wave therapeutic approaches are interested in meta-awareness and decentering, in part, because of the roles they may play in emotion regulation. Meta-awareness should relate to people's awareness of or attention to their emotional state. However, because meta-awareness does not guarantee a distanced perspective, we did not expect it to predict emotion regulation outcomes associated with psychological distance. Instead, we expected MAS-DA to most strongly predict these outcomes, including use of adaptive versus maladaptive emotion regulation strategies (i.e., greater use of reappraisal and savoring, less suppression and dampening) and levels of abilities underlying emotion regulation (i.e., increased emotional clarity, emotion regulation flexibility). In contrast, MAS-EA should be most strongly related to sensitivity to contextual external cues that may inform emotion regulation attempts.

Last, we examined associations with measures of psychological distress and well-being to further test concurrent validity. Decentering is thought to predict mental health and has been implicated as a mediator of treatments on symptom reduction or relapse prevention (Bieling et al., 2012; O'Toole et al., 2019). As such, we predicted MAS-DA would be negatively related to psychopathology symptoms and related processes such as rumination and experiential avoidance, and positively related to markers of well-being, such as self-compassion and eudaimonic well-being. These associations should be relatively small for MAS-EA and MAS-MA.

Measures

See the online supplement for a full description of each scale and focal subscales. To assess convergent validity with existing measures of decentering, we administered the CFQ (Gillanders et al., 2014), the EQ (Fresco et al., 2007), the Toronto Mindfulness Scale–Decentering (TMS; Davis et al., 2009), and the Drexel Defusion Scale (DDS; Forman et al., 2012). We also administered several multidimensional mindfulness-related inventories. The short form of the Five-Factor Mindfulness Questionnaire (FFMQ-SF; Bohlmeijer et al., 2011) includes subscales assessing Observing, Acting with Awareness, Describing, Nonjudging, and Nonreactivity. The PMS (Cardaciotto et al., 2008) has Acceptance and Awareness subscales. Last, the MPFI (Rolffs et al., 2018) has 12 subscales that reflect ACT processes, with 6 subscales representing flexible, adaptive responding, and 6 corresponding subscales representing inflexible, maladaptive responding. We focus on the Present Moment Awareness, Fusion, and Defusion subscales, but also included the Lack of Contact with the Present Moment subscale.

To assess discriminant validity, we administered the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988), the Big Five Inventory (BFI; John et al., 2008; Neuroticism, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience), and the Marlowe–Crown Social Desirability Scale–Short Form (MCSDS; Reynolds, 1982).

To assess concurrent validity, we administered scales related to emotion regulation. These include the Emotion Regulation Questionnaire (ERQ) Suppression and Reappraisal subscales (Gross & John, 2003), the Trait Meta-Mood Scale (TMMS) Attention to Feelings, Clarity, and Mood Repair subscales (Salovey et al., 1995), the Context Sensitivity Index (CSI) Cue Presence and Cue Absence subscales (Bonanno et al., 2020), the Responses to Positive Affect (RPA) Questionnaire Dampening, Self-Focused, and Emotion-Focused subscales (Feldman et al., 2008), total score and select subscales of the Difficulties in Emotion Regulation (DERS) scale (Gratz & Roemer, 2004) or its short form (Bjureberg et al., 2016), and the Flexible Regulation of

Emotional Expression (FREE) scale (Burton & Bonanno, 2016). Measures of psychological distress and well-being included subscales of the Inventory of Depression and Anxiety Scale (IDAS; Watson et al., 2007) and IDAS-II (Watson et al., 2012), the Ruminative Response Scale Brooding (RRS-B) subscale (Nolen-Hoeksema & Morrow, 1991), several measures of experiential avoidance, including the Multidimensional Experiential Avoidance Questionnaire–Distress Aversion (MEAQ-DA; Gámez et al., 2011), Brief Experiential Avoidance Questionnaire (BEAQ; Gámez et al., 2014), the Acceptance and Action Questionnaire (AAQ-II; Bond et al., 2011), the Self-compassion Scale (SCS; Neff, 2003) or its short form (SCS-SF; Raes et al., 2011), and the Questionnaire for Eudaimonic Well-Being (QEWB; Waterman et al., 2010).

Results and Discussion

Analytic Strategy. We used a combination of correlations and regression models to examine relationships with validity measures. For the regression models, all MAS subscales were entered in a simultaneous regression model. Consistent with our preregistration for Sample 6, if the correlations between any subscale and social desirability exceeded .30 in a given sample, we included social desirability in the regression models for that sample. Table 4 presents zero-order relationships between MAS subscales and criteria, and online supplement Table S4 presents the regression models. To synthesize the findings across numerous samples, we report median correlations in Table 4 and focus on these in the text. We base effect size interpretations on Cohen's (1988) approximate guidelines (r = .10-30 or d = .20-.50 is small, r = .31-.50 or d = .51-.80 is moderate, and $r > .50$ or $d > .80$ is large).

Convergent Relationships With Measures of Similar Concepts. We evaluated the convergent validity of the MAS subscales by examining the relationships with measures of mindfulness and decentering/defusion. We predicted that MAS-MA and MAS-EA would be more strongly related to measures of present moment awareness, whereas the MAS-DA would be more strongly related to measures of decentering, defusion, and conceptually related mindfulness subscales. Results were largely consistent with expectations.

The MAS-MA showed strong expected relationships with the PMS-Awareness (median r = .60) and MPFI-Present Moment Awareness (r = .61), as well as a moderate relationship with FFMQ–Observing (median r = .39). Consistent with the observations about item contents noted earlier, subscales with relatively more meta-awareness items seem to have stronger relationships with MAS-MA. MAS-EA had moderate to large associations with FFMQ–Observing (median r = .51), MPFI Lack of Contact with Present Moment (r = −.42), PMS-Awareness (median r = .41), and MPFI-Present Moment Awareness (r = .41). Both MAS-MA and MAS-EA generally remained significant predictors in regression analyses, indicating that each captures a unique portion of the variance of these measures. Because most of the convergent criteria do not specifically assess either external awareness or meta-awareness, the moderate to strong associations suggest convergence with similar (but not identical) constructs. Consistent with expectations, correlations of the MAS-DA with these scales were small (median rs = .17 to .24), except for a moderate association with MPFI Lack of Contact with Present Moment (r = −.41).

The MAS-DA showed the expected convergent relationships with the other measures of decentering and defusion, including strong relationships with the CFQ, EQ, and MPFI-Fusion/Defusion subscales (median rs = |.57| to |.77|), and moderate relationships with the TMS-D and DDS (median rs = .32 and .41, respectively). In addition, MAS-DA was moderately to strongly related to mindfulness scales reflecting an accepting or objective approach to internal experience (i.e., PMS-Acceptance, FFMQ–Nonreactivity, and FFMQ–Nonjudging; median rs = .46 to .61). The MAS-EA and MAS-MA subscales generally had small associations with these measures, except for moderate associations with the EQ (median r = .43 with MAS-MA, and .34 with MAS-EA) and MPFI Defusion (r with MAS-MA = .33). Both MAS-DA and MAS-MA consistently predicted these measures in regressions.

Discriminant Relationships With Measures of Personality and Response Style. We evaluated the discriminant validity of the MAS subscales by examining relationships with measures of personality and response style. Supporting discriminant validity, associations with BFI Extraversion, Agreeableness, and Openness were all small. All three MAS subscales had moderate associations with Conscientiousness (median rs = .31 to .45) and Positive Affect (median rs = .29 to .35), and all MAS subscales generally remained significant predictors in regression models. Given the close relationships of decentering with psychopathology and related processes, we observed strong negative associations of MAS-DA with Neuroticism and Negative Affect (median rs = −.75 and -.61, respectively). Associations of the other two MAS subscales with Negative Affect and Neuroticism were small. Finally, MAS-EA and MAS-MA had small associations with the MCSDS (median rs = .13 and .09, respectively), and MAS-DA had a moderate association (median r = .31).

Concurrent Relationships With Measures of Emotion Regulation. We first evaluated the concurrent validity of the MAS subscales by examining relationships with measures of emotion regulation processes. The MAS-MA showed

Table 4. Zero-Order Correlations With MAS Subscales.

	Sample 2			Sample 3			Sample 4			Sample 5			Sample 6			Median *rs*		
Scale	MA	DA	EA	MA	DA	EA	MA	DA	EA	MA	DA	EA	MA	DA	EA	MA	DA	EA
CFQ	−.05	**−.73****	−.27**	−.24**	**−.83****	−.29**	−.08	**−.73****	−.25**	−.07	**−.80****	−.25**	−.13*	**−.77****	−.13*	−.08	**−.77**	−.25
EQ	.39**	**.66****	.34**	**.43****	**.76****	.33**	**.41****	**.64****	.36**	**.44****	**.71****	**.42****	**.44****	**.60****	.26**	**.43**	**.66**	.34
TMS	.22**	.20**	.05	.25**	**.41****	.14**	.20**	.22**	.003	.25**	**.41****	.16**				.24	.32	.10
DDS													.26**	**.41****	.13*	.24	**.41**	.13
FFMQOb	.35**	.19**	**.51****	.39**	.23**	**.52****	.37**	.07	**.44****	.53**	.17**	**.51****	**.40****	.05	.38**	.39	.17	**.51**
FFMQNJ	−.07	**.46****	.12*	.07	**.51****	.16**	−.04	**.40****	.17**	.03	**.51****	.15**	<.01	**.44****	.15**	.00	**.46**	.15
FFMQNR	.20**	**.61****	.21**	.31**	**.75****	.22**	.26**	**.55****	.20**	.29**	**.68****	.23**	.32**	**.56****	.07	.29	**.61**	.21
FFMQAct	.13**	**.45****	.36**	.33**	**.50****	.40**	.23**	**.44****	**.42****	.18**	**.41****	**.42****	.19**	**.40****	.34**	.19	**.44**	**.40**
FFMQLab	.35**	**.47****	.30**	**.42****	**.49****	.27**	.34**	.34**	.32**	**.51****	.34**	.39**	**.43****	**.52****	.31**	**.42**	**.47**	.31
PMS-Aw	**.61****	.15**	.34**	**.59****	.29**	**.47****										**.60**	.22	**.41**
PMS-Acc	−.04	**.54****	.16**	.08	.51**	.06										.02	**.53**	.11
MPFI PMA							**.61****	.24**	**.41****							**.61**	.24	**.41**
MPFI Def							.33**	**.57****	.25**							.33	**.57**	.25
MPFI LCP							−.23**	**−.41****	**−.42****							−.23	**−.41**	**−.42**
MPFI Fuse							−.02	**−.73****	−.20**							−.02	**−.73**	−.20
NA	−.10*	**−.58****	−.25**	−.19**	**−.69****	−.23**	−.08	**−.60****	−.23**	−.11	**−.62****	−.20**				−.11	**−.61**	−.23
PA	.28**	.28**	.29**	.28**	**.49****	.28**	.31**	.20**	.28**	.37**	**.42****	**.41****				.30	.35	.29
Ext	.17**	.21**	.15**	.14**	.33**	.20**				.22**	.19**	.23**				.17	.21	.20
Neurot	−.10*	**−.75****	−.24**	−.19**	**−.80****	−.28**				−.18**	**−.74****	−.28**				−.18	**−.75**	−.28
Open	.34**	.15**	.25**	.28**	.23**	.23**				.25**	.05	.29**				.28	.15	.25
Cons	.31**	**.45****	.39**	.24**	**.45****	.33**				.31**	**.40****	**.45****				.31	**.45**	.39
Agr	.29**	.27**	.23**	.19**	.39**	.15**				.16**	.29**	.20**				.19	.29	.20
MC-SDS				.18**	.34**	.13*	.07	.31**	.19**				.09	.24**	.03	.09	.31	.13
ERQ-R	.32**	.30**	.13**	.36**	**.46****	.20**	.26**	.27**	.12*							.32	.30	.13
ERQ-S	−.13**	−.11*	−.12**	−.17**	−.05	−.13*	−.09	.01	−.09							−.13	−.05	−.12

(continued)

Table 4. (continued)

	Sample 2			Sample 3			Sample 4			Sample 5			Sample 6			Median *rs*		
Scale	MA	DA	EA	MA	DA	EA	MA	DA	EA	MA	DA	EA	MA	DA	EA	MA	DA	EA
Emo Clar							**.46****	**.55****	**.45****				**.45****	**.62****	**.35****	**.46**	**.59**	**.40**
Emo Atn													**.40****	.07	.33**	**.40**	.07	.33
CSI-Pres													.32**	.07	.23**	.32	.07	.23
CSI-Abs													.07	.10	.20**	.07	.10	.20
PA Emot	.32**	.09	.22**							.31**	.13*	.19**				.32	.11	.21
PA Damp	−.003	**−.46****	−.12**							−.12*	−.36**	−.17**				−.06	**−.41**	−.15
PA Self	.19**	.12**	.12**							.31**	.18**	.21**				.25	.15	.17
DERS-Tot	−.21**	**−.71****	−.32**							−.36**	**−.71****	−.38**	−.14**	−.66**	−.17**	−.21	**−.71**	−.32
DERS-A	**−.52****	−.13**	−.20**							**−.63****	−.19**	**−.40****				**−.58**	−.16	−.30
DERS-C	−.37**	−.54**	−.32**							**−.52****	**−.44****	**−.44****				**−.45**	**−.49**	−.38
Emot Enh										.18**	.20**	.25**				.18	.20	.25
Emot Sup										.15**	.12*	.14*				.15	.12	.14
Panic	−.06	−.38**	−.19**	−.10*	**−.44****	−.26**				.05	**−.41****	−.08				−.06	**−.41**	−.19
SA	−.09*	**−.49****	−.28**	−.21**	**−.59****	−.30**				−.15**	**−.41****	−.27**				−.15	**−.49**	−.28
Dys	−.05	**−.60****	−.24**	−.19**	**−.73****	−.27**	−.12*	**−.61****	−.30**	−.15**	**−.63****	−.22**	−.14*	**−.60****	−.16**	−.14	**−.61**	−.24
Mania	−.02	**−.42****	−.22**	−.11*	**−.42****	−.20**				−.09	−.32**	−.13*				−.09	**−.42**	−.20
Brood	.02	**−.58****	−.17**	−.18**	**−.59****	−.20**	−.05	**−.55****	−.15**	−.05	**−.60****	−.09	−.02	**−.56****	−.10	−.05	**−.58**	−.15
Dist Aver	.04	**−.44****	−.17**	−.12*	−.39**	−.16**										−.04	**−.42**	−.17
Exp Avo										−.17**	−.37**	−.23**				−.17	**−.37**	−.23
AAQ	−.09	**−.68****	−.24**													−.09	**−.68**	−.24
SCS	.14**	**.63****	.19**							.37**	**.68****	.33**				.26	**.66**	.26
EWB										**.51****	**.43****	.39**				**.51**	**.43**	.39

Note. Correlations ≥ |.40| are in bold. MA = MAS-Meta-awareness; DA = MAS-Decentered awareness; EA = MAS-External awareness; CFQ = Cognitive Fusion Questionnaire; EQ = Experiences Questionnaire; TMS = Toronto Mindfulness Scale–Decentering; DDS = Drexel Defusion Scale; FFMQ-Ob = FFMQ Observing; FFMQ-NJ = FFMQ Nonjudging of Experience; FFMQ-NR = FFMQ Nonreactivity; FFMQ-Act = FFMQ Acting with Awareness; FFMQ-Lab = FFMQ Labeling of Experience; PMS-Aw = Philadelphia Mindfulness Scale–Awareness; PMS-Acc = Philadelphia Mindfulness Scale–Acceptance; MPFI = Multidimensional Psychological Flexibility Inventory; MPFI PMA = MPFI Present Moment Awareness; MPFI Def = MPFI Defusion; MPFI LCP = MPFI Lack of Contact with the Present Moment; MPFI Fuse = MPFI Fusion; NA = Negative Affect (PANAS); PA = Positive Affect (PANAS); Ext = Extraversion; Neurot = Neuroticism; Open = Openness to Experience; Cons = Conscientiousness; Agr = Agreeableness; MC-SDS = Marlowe–Crowne Social Desirability Scale; ERQ-R = Emotion Regulation Questionnaire–Reappraisal ; ERQ-S = Emotion Regulation Questionnaire–Suppression ; Emo Clar = Trait Meta-Mood Scale–Clarity; Emo Atn = Trait Meta-Mood Scale–Attention; CSI-Pres = Context-Sensitivity Index–Cue Presence; CSI-Abs = Context-Sensitivity Index - Cue Absence; PA Emot = Responses to Positive Affect - Emotion Focus; PA Damp = Responses to Positive Affect–Dampening; PA Self = Responses to Positive Affect–Self-Focus; DERS-Tot = Difficulties in Emotion Regulation–Total Score (or DERS-16 when no subscale scores are presented); DERS-A = Difficulties in Emotion Regulation–Lack of Awareness; DERS-C = Difficulties in Emotion Regulation–Lack of Clarity; Emot Enh = FREE Overall Enhance; Emot Sup = FREE Overall Suppress; Panic = IDAS Panic; SA = IDAS Social Anxiety; Dys = IDAS Dysphoria; Mania = IDAS Mania; Brood = Ruminative Response Scale–Brooding (RRS-B); Dist Aver = Experiential Avoidance Questionnaire: Distress Aversion (MEAQ); Exp Avo = BEAQ Experienital Avoidance; AAQ = Acceptance and Action Questionnaire; SCS = Self-compassion Scale (SCS) Total (brief in online supplemental Table S2, full in online supplemental Table S5); EWB = Eudaimonic Well Being.

*$p < .05$. **$p < .01$.

expected relationships with emotional awareness, with a moderate positive relationship with TMMS-Attention to Emotions (median $r = .40$) and a strong negative relationship to DERS-Lack of Awareness (median $r = -.58$), whereas the other MAS subscales had smaller associations with these measures (median rs = |.07| to |.33|). The only predicted relationships for the MAS-EA were with sensitivity to the presence and absence of contextual cues to emotion regulation, as indexed by the CSI. Both correlations were observed, although the effects were small (median rs = .23 and .20). However, MAS-MA was moderately associated with the presence of contextual cues (median r = .32), and in regression models, MAS-EA was only related to sensitivity to the *lack* of contextual cues.

The MAS-DA showed moderate to strong relationships with higher emotional clarity and lower emotion-regulation difficulties (i.e., DERS total; median rs = |.49| to |.71|). The association with DERS was specific to MAS-DA. However, the MAS-MA and MAS-EA also had moderate relationships with emotional clarity measures (median rs = |.38| to |.46|), and regression analyses indicated all three MAS subscales predicted variance in emotional clarity. Consistent with predictions, as MAS-DA scores increased, people reported using more reappraisal, less dampening of positive emotions, and increased ability to enhance emotional expressions (median rs = |.20| to |.41|). MAS-MA was also moderately associated with reappraisal, and MAS-EA was moderately associated with enhancing emotional expressions (median rs = .23 to .32), and they remained significant predictors in regressions. Other expected associations for MAS-DA (i.e., with suppression, positive emotion savoring, flexibly suppressing emotional expression) were small in magnitude. In contrast, MAS-MA had small to moderate associations with savoring (median rs = .25 to .32).

Concurrent Relationships With Measures of Psychological Distress and Well-Being. We next examined relationships the MAS subscales with measures of psychological symptoms and well-being. The MAS-DA was moderately to strongly negatively related to all measures of psychopathology, with the strongest relationship with dysphoria (median rs = −.41 to −.61). In addition, the MAS-DA was moderately to strongly related to less rumination and experiential avoidance (median rs −.37 to −.68). MAS-DA was positively related to measures of psychological well-being, including self-compassion ($r = .66$) and eudaimonic well-being (r = .43). In contrast, these measures had small associations with MAS-MA and MAS-EA, except that all MAS subscales had at least moderate associations with eudaimonic well-being.

Known-Groups Validity

Last, we examined two types of known-groups validity, comparing MAS scores for individuals with and without current psychopathology (diagnosed with the ADIS-5 in Sample 5), and for individuals with and without meditation experience (Samples 2-6). We expected that MAS-DA scores would be lower among people with current emotional disorder diagnoses, but did not expect differences on the other MAS subscales. We compared the scores of individuals in Sample 5 diagnosed with one or more current mood or anxiety disorders ($n = 146$) with the scores of individuals without these diagnoses ($n = 178$). As seen in Table S5 (available in the online supplement), participants with a current diagnosis scored significantly lower than participants without a diagnosis on MAS-DA (a large effect) and MAS-EA (a small effect), and there was no difference on MAS-MA scores.

Participants in Samples 2 to 6 were asked to report whether they had any experience with meditation or mindfulness practice, and if so, for how long. This measure was quite crude and did not include the frequency, depth, or type of practice. We considered individuals who reported more than 6 months of experience as "meditators" (19% to 44% of each sample; $ns = 86$ to 191) and all others as "nonmeditators" ($ns = 193$ to 374; see Naragon-Gainey et al., 2020, for a similar criterion). Meditation and mindfulness practices vary in their focus and techniques, potentially targeting different forms of awareness to varying degrees. It is thus plausible that meditators would have higher levels of all three MAS scales. As shown in Table S6 in the online supplement, independent samples t tests indicated that individuals with 6+ months of meditation experience had higher MAS-MA scores in four of five samples, as well as higher MAS-EA scores in two of five samples. However, MAS-DA scores were not significantly different between groups, except Sample 2 meditators had *lower* MAS-DA scores than nonmeditators. All significant differences were small in magnitude.

General Discussion

We began with the goal of developing a dispositional measure of meta-awareness and decentering, using the MPM (Bernstein et al., 2015) and the decentering literature as guides for item generation. The resultant measure, refined across numerous samples of different types, does not overlap perfectly with the concepts postulated by the MPM. Instead, the 25-item MAS is better characterized as a measure of the contents (i.e., empirically distinct Meta-Awareness and External Awareness subscales) and form (i.e., Decentered Awareness) of present moment awareness.

Measure Properties

The MAS showed a consistent three-factor structure in exploratory analyses across two samples, with at least

acceptable internal consistency and test–retest reliability. The MA subscale had the weakest psychometric properties based on these standards, though internal consistency was typically above .8, and 6-week test–retest reliability, at .58, was only slightly below our target of .6. The lower test–retest reliability could be a product of the relatively lower reliability of the MA subscale.

We sought a measure with both forward and reverse coding for each construct, referring to both thoughts and feelings, and that generally did not assume the presence of negative mental contents. These criteria were met in our final instrument except that the MA subscale has only forward coded items. Factor analyses with the initial item pool indicated that many reverse coded items targeting meta-awareness did not load on any factor. The lack of awareness of something is likely challenging for people to detect (see Naragon-Gainey & DeMarree, 2017b), particularly when people themselves are the only ones with *potential* access to their internal states. Though conjecture, relatively low access to missed internal information may make it difficult to develop meta-awareness compared with external awareness. One consequence is that the MA subscale may be more susceptible to response biases (e.g., acquiescence) than the other MAS subscales.

Validity analyses supported the validity of the MAS, as did known-groups validity analyses of individuals with and without a current mood or anxiety disorder. The MAS-DA subscale had strong correlations with existing measures of decentering and relevant aspects of mindfulness (e.g., acceptance, nonreactivity), as well as relatively weak associations with discriminant measures (e.g., Big Five traits except neuroticism; socially desirable responding). The relationships with most measures of concurrent validity, including those related to emotion regulation and psychopathology (self-reported symptoms and diagnoses derived from interviews), were consistent with theory and existing research on decentering measurement (e.g., Hadash et al., 2017; Naragon-Gainey & DeMarree, 2017b). Unlike other decentering instruments, the MAS-DA is not dominated by negative item content and has both forward and reverse coded items. A potential concern with the MAS-DA is the strong negative correlations with negative affect and neuroticism measures. But, these correlations are similar to other work, particularly for measures of reduced reactivity (e.g., correlations between negative affect and this factor = .69 and .64 in Hadash et al., 2017 and Naragon-Gainey & DeMarree, 2017). Importantly, past work has found that decentering is dissociable from, and can even interact with, trait negative affect (Naragon-Gainey & DeMarree, 2017a, 2017b).

The correlations of the MAS-MA and MAS-EA subscales also largely supported their construct validity and distinctiveness, although our examination was more limited than for MAS-DA due to fewer existing convergent and concurrent validity measures. Both were related to measures of present moment awareness. However, they showed some selectivity in their relationships in convergent and concurrent validity analyses, as MAS-MA was more strongly related to most measures of *internal* awareness (e.g., MPFS Present Moment Awareness, PMS Awareness, TMMS-Attention). MAS-EA, was more strongly related to measures with items assessing awareness of external stimuli (e.g., FFMQ–Observing). It also showed specific relationships with reports of sensitivity to the *absence* of emotion-regulation cues, *lack* of contact with the present moment, and ability to enhance emotional expression. Each of these measures was included in one data set, so the replicability of these patterns is unclear. However, consistent with the idea that external awareness can develop as a consequence of not only noticing what is perceived but also learning about what was not perceived, we note that two of these correlations were with measures relating to the absence of awareness.

Individuals who reported at least 6 months of meditation or mindfulness experience had higher scores on the MAS-MA, and some samples had marginally higher scores on the MAS-EA. The groups generally did not differ in MAS-DA scores. Overall, these analyses provide initial support for MAS associations with meditation experience, but they should be interpreted with caution since the current study did not assess the type, frequency, or depth of mindfulness experience, only the length.

Still much is unknown about these measures. We do not know how well the perceptions assessed by the MAS subscales map onto people's moment-to-moment experiences of present moment awareness. Past work with decentering suggests that existing scales predict similar outcomes whether those outcomes are examined with cross-sectional or momentary approaches (Naragon-Gainey & DeMarree, 2017a), but we do not yet know if the same applies to the MAS. The validity criteria used in this article were all self-report instruments. Because of this, we know little about how MAS subscales relate to external criteria, such as informant assessments or cognitive/objective tasks. Furthermore, we have relatively little information regarding the EA subscale's convergent and discriminant validity because external awareness has not been extensively studied, making it difficult to identify appropriate criterion. Psychological interventions are designed to change people's general tendency to engage in meta-awareness and decentering, and we do not yet know whether the MAS subscales are sensitive to these changes.

Conceptual Questions

As noted earlier, the MPM of decentering (Bernstein et al., 2015) posits three distinct decentering-related concepts: meta-awareness, disidentification from internal experiences,

and reduced reactivity to thought content. We noted that existing scales were not designed with these processes in mind (Bernstein et al., 2019), and conceptual questions relating to MPM concepts were not addressed by existing measures of relevant concepts.

Internal Versus External Awareness. Nearly all existing measures of dispositional present moment awareness contain items assessing internal and external awareness (as well as bodily awareness). It was unclear if combining internal and external awareness is valid, though recent work suggests these may be dissociable (Rudkin et al., 2018). In the present work, we consistently found them to be distinct but moderately related concepts, with differential associations across criteria. Although external awareness is not postulated by the MPM and developing a measure of this concept was not our primary goal, we retained this factor because we believe it is interesting and useful to consider, both to differentiate EA from MA and to study EA as focal concept itself.

Another important issue is clarifying how MA and EA are related to mindfulness. They both appear to reflect aspects of present-moment awareness (i.e., the "what" of mindfulness; see Eisenlohr-Moul et al., 2012), but most definitions of mindfulness characterize mindful awareness as both occurring in the present moment and with particular properties (e.g., nonjudgmental or accepting; the "how" of mindfulness; Baer, 2019; Creswell & Lindsay, 2014; Kabat-Zinn, 1994). The items on the MA and EA subscales do not reflect these additional properties, as items were written to isolate present-moment awareness. Decentered awareness is both present-moment and characterized by psychological distance that is objective (i.e., nonjudging) in nature. Perhaps most tellingly, when DA was included in regression models predicting validity criteria, MA predicted several measures across samples in the opposite direction than theory would suggest (e.g., *more* cognitive fusion, *less* nonjudging, see online supplemental Table S4). These relationships did not exist in the absence of DA, so it suggests that MA captures a range of types of awareness of mental contents, and once those aspects of awareness that are decentered are considered, the meaningful variability that remains is more self-judgmental than when considered by itself (see Watson et al., 2013, regarding substantive interpretations of suppressor effects). In other words, the MAS-MA may capture both mindful and nonmindful ways of being aware of one's current thoughts. However, meta-awareness has interested scholars beyond its potential role in mindfulness, and there may be instances in mindfulness research when it is useful to separately assess present moment awareness and the nature of that awareness.

Nature of Decentered Awareness. As noted in the introduction, recent analyses of decentering scales found support for the MPM processes of disidentification from internal experiences and reduced reactivity to thought content (Hadash et al., 2017; Naragon-Gainey & DeMarree, 2017b), although this finding could have emerged due to methodological issues, such as the direction of item coding or the valence of item contents (Naragon-Gainey & DeMarree, 2017b). To avoid these concerns, the MAS used primarily valence-neutral items, and the resulting DA factor contained both forward and reverse coded items and showed strong relationships with decentering measures that in past analyses had characterized different decentering factors. Furthermore, items in the final instrument reflect aspects of both MPM components considered in previous analyses. Across multiple samples, the present work does not support the MPM distinction between disidentification from internal experiences and reduced reactivity to thought content, at least at the dispositional level. Some work has found that measures of those concepts predict outcomes to different degrees (Hadash et al., 2017; Naragon-Gainey & DeMarree, 2017a, 2017b), but this could be due to measure-specific issues (e.g., differences in item content, common method factors, etc.) rather than to meaningful conceptual distinctions. The MPM describes the three proposed processes as occurring in a moment-to-moment manner, but proposes that with time and repetition they will manifest at the level of dispositions (Bernstein et al., 2015). The present work does not address the moment-to-moment level of analysis, and future work should examine whether these concepts diverge when examined as more dynamic processes rather than stable dispositions.

Potential Uses for the MAS

The MAS has the potential to be a useful tool in research in multiple domains. Meta-awareness and decentered awareness are explicitly targeted in third wave interventions (S. C. Hayes et al., 2012; Segal et al., 2013). Initial longitudinal research finds that therapeutic changes in decentering may precede improvement in psychological functioning (e.g., O'Toole et al., 2019), offering tentative evidence of a potential causal role of decentering in psychological well-being. Furthermore, the MAS-DA is strongly related to low psychological distress and a variety of mental health-related processes. The use of forward and reverse coding and valence-neutral items in the MAS-DA is particularly important when assessing psychopathology, because individuals experiencing emotional distress tend to endorse items that describe distress (i.e., negative thoughts and feelings), regardless of the specific item focus (e.g., Clark & Watson, 2019). Furthermore, in intervention contexts, all three MAS subscales may be useful to assess a client's specific deficits or developmental trajectories, potentially informing personalized intervention targets. We don't yet know whether the MAS is sensitive to shifts that occur during psychological

treatment, and such data would identify the range of appropriate contexts for use and whether a more time-limited version of the MAS should be developed.

The MAS might also aid the understanding of self-regulation, which consists of iterative monitoring and regulatory processes (Carver & Scheier, 1998; Gross, 2015) and is a potential mechanisms of decentering-related concepts. MAS-MA subscales may facilitate studying individual differences in the operation of regulatory monitoring (e.g., using paradigms employed in the study of learning, attentional biases, and mind wandering; Kornell & Bjork, 2007; Ruimi et al., 2018; Smallwood et al., 2007). Importantly, effective monitoring is necessary but not sufficient for self-regulation (Kornell & Bjork, 2007), as flexible strategy selection is often helpful in promoting effective regulation (Fujita, 2011; Kruglanski et al., 2002). Higher levels of decentered awareness should predict flexible deployment of regulatory strategies, by reducing the motivational force of behavioral tendencies (Papies et al., 2015) and allowing a person to consider factors beyond their immediate emotions and impulses (broader goals, situational constraints, etc.; see also Lindsay & Creswell, 2017). The MAS-DA may be a useful individual difference predictor of the flexibility and success of people's regulatory attempts. Finally, external awareness may help people identify goal-relevant situations or features of the situation relevant to goal pursuit (e.g., resources available in the situation), both of which are important to effective self-regulation (Bonanno et al., 2020; Kruglanski et al., 2002).

Limitations and Future Directions

As this is the first investigation into the MAS, it is necessarily incomplete. The present article provides a great deal of information about validity of the MAS vis-à-vis other self-report measures, but does not use any objective measures or external criterion to evaluate the MAS. Relatedly, although we examined associations with many neighboring constructs, we did not test all relevant constructs (e.g., dissociation; see Zerubavel & Messman-Moore, 2015, for a discussion of the similarities and distinctions between mindfulness and dissociation). As described above, a great deal of additional validity information would help inform the range of appropriate contexts for use of the MAS (e.g., predicting moment-to-moment experiences, responsiveness to interventions). Other mindfulness-related instruments have different properties across levels of meditation and mindfulness experience (Aguado et al., 2015; Gu et al., 2016), so we know it is possible that the structure and validity of the MAS will similarly vary. In addition, although our MAS development and validation efforts drew on relatively diverse student and nonstudent samples, all samples were collected in the United States. Consequently, we do not know how well the MAS would perform, in terms of structure, reliability, or validity, in samples from other cultural contexts. In addition, we should explicitly note that although there is substantial variance in mindful states that remains consistent over time and likely reflects individual differences in mindfulness, mindfulness-related constructs also vary over time and across situations (McMahon & Naragon-Gainey, 2019; Tanay & Bernstein, 2013). The MAS only seeks to capture the relatively stable aspects of people's present moment awareness.

Many of these limitations provide useful future directions for research. In addition, there are a host of potential uses of the MAS, such as those outlined above, and the instrument may be a useful tool in many subdisciplines of psychology. Not all forms of awareness will be relevant to every context, but we believe it is useful to have a single instrument available to measure internal (meta-), external, and decentered awareness to facilitate evaluating the generality or specificity of effects. Overall, we believe that the MAS complements and extends the existing toolkit of mindfulness-related assessments, with potential utility across a range of contexts.

Appendix

Multidimensional Awareness Scale

Below is a series of statements that may or may not represent your typical experiences with your thoughts or feelings. Please indicate the extent to which you generally agree with each of these statements.

Strongly disagree (1)	*Disagree* (2)	*Somewhat disagree* (3)	*Neither agree nor disagree* (4)	*Somewhat agree* (5)	*Agree* (6)	*Strongly agree* (7)

1 I don't know when I should listen to my thoughts and when I shouldn't. (r)
2 I notice how my thoughts and feelings come and go.
3 When I'm walking outside, I notice the people and scenery I pass by.
4 I often get lost in my thoughts. (r)
5 I am aware of my thoughts and feelings as I experience them.
6 I am usually aware of what is going on around me.

7 I struggle with my thoughts and feelings a lot. (r)
8 I often get "caught up" in my thoughts and can't look at them objectively. (r)
9 I keep thinking about things that bother me. (r)
10 I notice it when I am having a feeling.
11 I can think about something without getting worked up about it.
12 I don't pay attention to my surroundings. (r)
13 I can observe my feelings as they unfold.
14 My friends say I'm oblivious to what happens around me. (r)
15 I don't let my current feelings overwhelm me.
16 I pay attention to the sights and sounds around me.
17 I experience my thoughts and feelings without being carried away by them.
18 When a thought or feeling is not helpful for me, I am able to let it go.
19 I observe my thoughts without getting caught up in them.
20 I pay attention to sensations in my body to understand how I am feeling.
21 When my emotions change, I notice.
22 I tend to ignore my surroundings. (r)
23 I usually know what thoughts are going through my mind at any given time.
24 My internal experiences really bother me. (r)
25 Viewing my feelings objectively is difficult. (r)

Note. (r) Indicates reverse-scored item. Meta-awareness: Items 2, 5, 10, 13, 20, 21, and 23; Decentered awareness: Items 1, 4, 7, 8, 9, 11, 15, 17, 18, 19, 24, and 25; External awareness: Items 3, 6, 12, 14, 16, and 22.

Authors' Note

The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health. Study materials and data are available at https://osf.io/3dqgr/

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Supplemental Material

Supplemental material for this article is available online.

Notes

1. Following Bernstein et al. (2015), we use the term decentering, a term most identified with MBCT, as an umbrella term that also includes defusion, self-distancing, and several other terms that convey similar meanings in different literatures.
2. Note that this is no longer true. Following submission of the present manuscript, Hanley et al. (2020) published a scale designed to assess the MPM components, the Metacognitive Processes of Decentering Scale. It is not yet clear how the subscales of the Metacognitive Processes of Decentering Scale relate to the MAS subscales. Although development of both inventories was guided by the MPM, the process and final measures differ in numerous important ways. We chose to start with a broad item pool reflecting a variety of related constructs and all items were newly constructed for this measure, whereas Hanley et al. limited the item pool to the three MPM constructs and mostly existing items from other inventories. Due to these and other differences in scale development choices, our final measure and theirs do not have the same structure or content, although it is not yet clear exactly how the two scales relate empirically.
3. Its conceptually opposing subscale, "Lack of Contact with the Present Moment," does not seem linked to meta-awareness, instead assessing reliance on automatic responses (e.g., "I did most things mindlessly without paying much attention").
4. Data collection occurred during the initial COVID-19 outbreak when the university had moved to online instruction and students had left campus. Primary data collection was in the first two weeks of online instruction. Because of the magnitude of impact the initial outbreak had on participants' lives, it may have affected measure properties or relationships in this sample.

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