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Beyond the Unitary: Direct, Moderated, and Mediated Associations of Mindfulness Facets With Mental Health Literacy and Treatment-Seeking Attitudes

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Abstract: Background and Objectives: Psychological disorders are prevalent and distressing. Early treatment initiation can prevent adverse outcomes and reduce healthcare impacts. Improving mental health literacy (MHL) and treatment-seeking attitudes (TSA) is key in early treatment initiation. Examining the facets of dispositional mindfulness, the capacity to pay attention to present-moment experiences with acceptance, may offer more granular insights in understanding MHL and TSA than examining it as a unitary concept. This study examined: a) associations between mindfulness facets and MHL and TSA, b) facets' prediction of MHL and TSA beyond demographics, c) moderation of the MHL–TSA relationship by mindfulness facets, and d) mediation of mindfulness–TSA relationships via general self-efficacy (GSE). Methods: A community sample of 299 adults (49.5% cis women; Mage = 41.0) were recruited online (TurkPrime) and completed demographic questions and self-report measures: Five Facet Mindfulness Questionnaire-15, Mental Health Literacy Scale, Mental Help Seeking Attitudes Scale, and General Self-Efficacy Scale. Results: Describe, Non-Judgment, and Act with Awareness were modestly associated with MHL; all five facets correlated with TSA. Hierarchical regressions controlling demographics showed Describe and Non-React predicted MHL, while Act with Awareness uniquely predicted TSA. Non-React moderated the MHL–TSA relationship, with higher non-react amplifying the relationship. GSE fully mediated relationships between Observe and Non-Judgment with TSA, suggesting self-efficacy as a key mechanism of these facets. Conclusions: Findings support examining mindfulness as multifaceted. Interventions cultivating Non-React may improve the translation of mental health knowledge into treatment-seeking behaviors. Future research should explore how mindfulness facets independently and interactively foster early intervention and treatment engagement.

Keywords: dispositional mindfulness; mental health literacy; treatment-seeking attitudes; self-efficacy; mindfulness facets; five facet mindfulness questionnaire (FFMQ)

1. Introduction

Psychological disorders are prevalent, distressing, and significantly disruptive to daily functioning [1]. Unfortunately, symptoms of psychological disorders are not isolated; those who experience elevated symptoms are also more susceptible to developing physical health conditions, such as cardiovascular conditions, cancers, and other chronic disorders [2,3]. Negative impacts of psychological disorders are widespread, leading to reduced life expectancy and increased risk for suicide [4]. Unaddressed or delayed treatment of psychological disorder symptoms has a substantial negative impact, and has accrued costs on individuals, societies, and healthcare systems [5]. Early

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intervention has been shown to reduce the burden and impact of psychological disorders on individuals and society [6].

Despite a growing effort supporting mental health service initiatives led by institutions, there remain significant barriers to accessing services or obtaining accurate information [7]. Beyond systemic barriers, interpersonal factors such as attitudes, intentions, and behaviors related to psychological disorders or treatment seeking are critical. Negative attitudes towards or a lack of knowledge about psychological disorders may create reluctance towards treatment seeking [7]. Promotion and cultivation of mental health literacy (MHL) is key to preventing psychological distress. MHL is a broad, multifaceted concept, and a key pillar of what is one's knowledge, beliefs, attitudes, and abilities to recognize specified factors surrounding mental health [8]. Specifically, MHL includes the knowledge and beliefs surrounding risk factors and causes, self-help interventions, and availability of professional help; knowledge of how to seek information on psychological disorders; attitudes facilitating recognition and appropriate help-seeking; and abilities in recognizing specific disorders or varying states of psychological distress [8]. Therefore, high levels of MHL have the potential to decrease psychological distress by promoting better detection of symptoms and early treatment-seeking behaviors through enhancing knowledge among laypersons.

Many with psychological distress do not receive or seek help, and when they do, they do not seek professional services [9,10]. Attitudes and intentions surrounding treatment seeking are pivotal in determining whether individuals access mental health services. Although various factors (i.e., affordability, accessibility) can influence this decision, MHL emerges as a particularly consistent predictor. Researchers found that MHL was the second strongest predictor of help-seeking intention and the strongest predictor of treatment-seeking attitudes [11].

According to the World Health Organization [4], improving MHL is key in preventing consequences surrounding psychological disorders. In a study of psychologically distressed older adults, Mackenzie et al. [12] found that individuals with lower MHL exhibited reduced treatment-seeking behaviors and increased self-stigmatization, potentially compounding psychological distress. By contrast, targeted MHL interventions were associated with fewer psychological disorder symptoms [12]. Early treatment seeking has been associated with better long-term outcomes [13]. Furthermore, a systematic review by Magallón-Botaya et al. [14] revealed MHL interventions significantly reduced symptoms of depression and anxiety. This lends further support to the notion that MHL can lead to improved mental health outcomes for individuals and healthcare systems [14].

Accordingly, MHL is robustly associated with an increased overall inclination to access mental health help; however, other factors, such as demographic characteristics, sociocultural context, and dispositional traits, may also play a role in how individuals acquire and apply MHL. Given that recognition and acknowledgment of psychological distress are critical aspects of MHL and treatment initiation, it stands to reason that personal qualities that enhance one's awareness of their cognitions and emotions, such as mindfulness, may be associated with MHL. Mindfulness is commonly defined as paying attention to internal and external present-moment experiences with an attitude of openness, acceptance, and curiosity [15,16]. Dispositional mindfulness (DM) is a naturally occurring trait characterized by an individual's ability to regulate their attention to present-moment experiences with an attitude of acceptance [17,18]. Although various conceptualizations of mindfulness exist, empirical evidence has provided support for multifaceted models of DM [19–21]. One such model is the five-factor model of mindfulness, often measured by the Five Facet Mindfulness Questionnaire (FFMQ)[19]. The FFMQ assesses five distinct but correlated facets: observing (OB; attending to thoughts, emotions, and sensations), describing (DS; labeling internal experiences), acting with awareness (AA; fully engaging in activities rather than being mindless or engaged in habitual responding), non-judgment (NJ; adopting a non-evaluative stance to experience), and non-reactivity (NR; allowing thoughts and emotions to come and go without attachment)[19]. Given DM's broad and multifaceted nature, examining it as a unitary construct in the context of important clinical correlates may prevent researchers from achieving granularity in understanding

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such relationships. This poor granularity may in turn provide little insight regarding optimal MHL intervention development or refinement.

Theoretically, DM may support MHL and treatment-seeking attitudes through several mechanisms. First, by promoting a non-judgmental awareness of present-moment experience, DM may improve individuals' recognition of psychological distress, which is an essential element of MHL [17]. Second, the beneficial effects of DM in relation to MHL and treatment seeking may be explained using the Theory of Planned Behavior (TPB), which posits that attitudes, norms, perceived behavioral control, and intentions interact to predict one's behavior [22]. Within the framework of the TPB, DM may be associated with perceptions of control over mental health concerns, which influence positive attitudes toward treatment seeking, directly or indirectly, and thus may ultimately lead to adaptive behavior among individuals facing psychological distress. There are several supportive lines of evidence of this potential relationship. Bowlin and Baer [23] found that DM was positively associated with perceptions of self-control and that it moderated the relationship between self-control and psychological well-being. Further, Short et al. [24] found that DM was associated with improved self-regulation and that self-regulation mediated the mindfulness-wellbeing relationship. Consistent with TPB, DM appears to be associated with a higher sense of self-control and self-regulation. Accordingly, DM and heightened MHL may be critical predictors of improved treatment-seeking attitudes (TSA), which in turn are vital for taking practical actions toward seeking support for psychological symptoms.

In direct support of the TPB, self-efficacy is consistently associated with improved intentions to change health and practical health change behaviors [25]. Self-efficacy is defined as an individual's belief in their ability to successfully perform tasks, achieve goals, and manage challenges [26]. High self-efficacy has been found to be correlated with better coping with chronic conditions (e.g., diabetes, heart disease) and high rates of quality of life [27,28]. Self-efficacy is also correlated with a sense of internal control over psychological symptoms [29]. Moreover, there is evidence to suggest that DM may be associated with higher levels of self-efficacy. Chandna et al. [30] found that NR, AA, OB, and DS facets positively predict self-efficacy. Accordingly, the TPB [22] posits that dispositional factors (such as DM and its facets) may lead to stronger intentions or more favorable attitudes toward treatment seeking, with this effect potentially mediated by an individual's general sense of self-efficacy and perceived control over health behaviors.

As mentioned, DM is not a unitary construct, and evidence suggests each of the facets has a differential relationship with symptoms of psychopathology and their correlates. For example, a meta-analysis by Carpenter et al. [31] found that NJ and AA have the strongest negative relationships with symptoms, followed by NR. OB did not show a systematic relationship with symptoms. AA and NJ have also displayed the strongest negative relationships with emotional dysregulation [32]. Pertinently, Karl et al. [33] found DS, AA, and NJ were more strongly negatively associated with alexithymia (difficulty in the recognition and description of emotions) compared to other facets of mindfulness. Taken together, the extant literature on the correlates of the facets, while scarce, shows a consistent pattern. Among non-meditating samples, OB tends to display weaker relationships with symptoms but may have other interactive properties that make correlates of mindfulness (or the effects of other facets) more pronounced [19]. DS appears to provide emotional clarity and hence may lead to improved emotional regulation [33]. AA, which captures the attentional regulation aspects of mindfulness, is robustly associated with reduced symptoms [31]. NJ is more directly and strongly associated with reduced symptoms and therefore may be less interactive in its effects compared to other facets [31]. Finally, NR seems to have an instrumental role in helping patients be less reactive to their own distress. Each facet of DM may have unique relationships with MHL and TSA. FFMQ facets related to enhanced awareness-- OB, DS, and AA-- may relate more closely to MHL. By contrast, attitudinal components of DM, such as NJ and NR, may have greater predictive utility regarding TSA. However, there is an absence of research examining the direct or indirect relationships of mindfulness facets with self-efficacy, MHL, and TSA.

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Research examining the association between DM and MHL is scarce; however, existing research is suggestive. For instance, DM is positively associated with emotional intelligence, which reflects an individual's ability to understand, address, and regulate their emotions [34]. The ability to direct one's attention to and understand their emotions, including the contributing causes, may closely align with knowledge and recognition components of MHL. Lo et al. [35] found that DM is positively correlated with MHL. The ability to describe and label one's internal states, including psychopathological symptoms, may help individuals recognize that they are experiencing distress. When this awareness is intentional and non-judgmental, individuals may be more likely to address such symptoms. Consistent with this notion, Blignault et al. [36] found that participation in a mindfulness-based intervention led to improved MHL and treatment-seeking behaviors. These findings align with previous findings that high levels of DM are associated with various adaptive behaviors including healthy life skills (e.g., health literacy)[37], effective emotional regulation [38], and active coping strategies (e.g., self-help, problem-solving)[39].

Attitudinal barriers are among the most common and influential deterrents to treatment seeking [40]. Accepting attitudes characteristic of individuals high in DM may facilitate positive attitudes toward treatment. For instance, DM has been identified as a moderator of the relationship between psychological distress and self-stigma, such that the positive association between distress and stigma was attenuated among individuals high in DM [41]. DM and its facets have been associated with reduced levels of stigma among schizophrenia patients [42]. Specifically, Tang et al. [42] found that all DM facets were associated with reduced perceptions of discrimination, AA was the only facet associated with lower stigma coping (e.g., withdrawal), and NJ was uniquely associated with reduced stigma-related feelings (e.g., shame). NJ, OB, DS, and NR also displayed moderate positive correlations with insight and treatment attitudes among the patients [42], further supporting the notion that consideration of DM facets is required to achieve a nuanced understanding of the relationships between DM and TSA.

In addition to dispositional factors, several demographic variables contribute to MHL and TSA. Higher education levels are significantly linked to greater MHL and more positive attitudes toward seeking help [43,44]. Age also plays a role, as older adults with chronic conditions may delay seeking support due to higher internalized stigma, lower mental health knowledge, and reduced symptom recognition [45]. Lower-income individuals generally experience more psychological distress while also having lower MHL [46,47]. Additionally, Ziapour et al. [48] found that income was one of the strongest predictors of health literacy among diabetic patients. Gender differences also emerge, with men exhibiting lower MHL than women and being less likely to seek professional help [49]. Lastly, married individuals tend to have more positive attitudes toward seeking mental health services compared to single individuals [50]. Given the strong association between demographic factors, MHL, and TSA, it is crucial to control for these variables when examining the unique contributions of FFMQ facets in this context.

2. Current Study

Collectively, the extant literature suggests that DM may relate to higher MHL, and an enhanced ability to seek out treatment for psychological distress is associated with higher levels of MHL, with FFMQ facets of DS, AA, and NJ being particularly influential in this association [35]. To the best of the researchers' knowledge, only one study to date examined the relationship of DM and MHL, finding a moderate positive correlation between the constructs among university students. Given that Lo et al. [35] utilized a unidimensional measure of DM, the potentially nuanced relationships between DM facets, MHL, and TSA have yet to be investigated. As such, it is not clear whether facets interact with knowledge (MHL) to explain TSA, given the distressing nature of increased awareness of symptoms. Whether and which of the facets provide incremental validity in explaining MHL and TSA beyond variance contributed by demographics alone is also yet to be discovered. Further, it is not clear if, as consistent with TPB, a sense of self-control (self-efficacy) can explain the relationships between facets and improved TSA.

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The aim of the present study is to investigate the direct and indirect relationships of FFMQ facets with self-efficacy, MHL, and TSA. In this study, we examined the direct relationships of the FFMQ facets with self-efficacy, MHL, and TSA. We further explored a potential moderator of the relationship between MHL and TSA. It is hypothesized that: (1) all facets will exhibit moderate positive correlations with MHL, TSA, and general self-efficacy; (2) FFMQ-24's facets of DS, AA, and NJ will be significant predictors of MHL over and above demographic variables; (3) FFMQ-24's facets of OB, DS, AA, NJ, and NR will be significant predictors of TSA over and above demographic variables; (4) DS, AA, and NJ [33] will moderate the relationship of MHL with TSA; and (5) general self-efficacy will mediate the relationships of DS, AA, and NJ and TSA.

2.1. Methods

2.1.1. Participants

Participants were recruited online using Amazon Mechanical Turk (AMT) extension's TurkPrime, a crowdsourcing website [51]. As the current study was targeting English-speaking individuals, participant recruitment was limited to English-speaking nations: Australia, Canada, New Zealand, the United Kingdom, and the United States. Inclusion criteria consisted of (1) at least 18 years of age; (2) an English language proficiency of six or above on a scale from one to ten; and (3) passing the included attention check question. Before inclusion criteria was implemented, a total of 313 respondents completed the survey; however, n = 10 were excluded from the sample for low English language proficiency, n = 2 were excluded for not responding to the English language proficiency item listed in the demographics questionnaire, and n = 2 were excluded for failing the attention check question. The final sample consisted of N = 299 participants for all analyses, except the multiple regressions, as one participant had to be excluded due to not disclosing a gender, which was a demographic predictor used. Table 1 provides a summary of participant demographics. The current study was approved by the first authors' institutional Research Ethics Board (#2022-232).

Table 1. Summary of pertinent demographics.

Total sample (*n*)		***N* = 299**
Age	**M**	**SD**
	41.04	11.62
Gender	*n*	%
Cis woman	148	49.5
Cis man	145	48.5
Other	6	2.0
Ethnicity	*n*	%
Black	25	8.4
East Asian	11	3.7
Latinx	14	4.7
Middle Eastern	1	.3
Southeast Asian	10	3.3
White	231	77.3
Other racial categories	6	2.0
Marital Status	*n*	%
Single, never married	123	41.1
Married	136	45.5
Separated/Divorced	35	11.7
Widowed	5	1.7
Children	*n*	%
Yes	144	48.2
No	154	51.5

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Approximate Annual Income (CAD)	*n*	%
Unemployed/No yearly income	13	4.3
10,000-30,000	84	28.1
31,000-50,000	66	22.1
51,000-75,000	59	19.7
76,000-99,000	40	13.4
100,000 and over	34	11.4
Other	3	1.0
Highest Level of Education	*n*	%
No degree, certificate, or diploma	5	1.7
Secondary (high) school diploma or equivalent	60	20.1
Trades certificate or diploma	14	4.7
Other non-university certificate or diploma	14	4.7
University certificate or diploma under bachelor level	28	9.4
Bachelor's degree	121	40.5
Master's degree	45	15.1
Doctorate	6	2.0
Other	6	2.0
Religion/Belief System	*n*	%
Christianity	157	52.5
Atheism	50	16.7
Agnosticism	61	20.4
Other	31	10.4
First Language	*n*	%
English	294	98.3
Other	5	1.7
Prior Mental Illness Diagnosis	*n*	%
Yes, please specify	94	31.4
No	192	64.2
Prefer not to disclose	13	4.3
Prior Psychotherapy	*n*	%
Yes	80	26.8
No	207	69.2
Prefer not to disclose	12	4.0
Mindfulness/Mindfulness-Based Intervention Knowledge (0-10 scale)	*n*	%
0	15	5.0
1	40	13.4
2	29	9.7
3	26	8.7
4	23	7.7
5	41	13.7
6	36	12.0
7	36	12.0
8	23	7.7
9	9	3.0
10	21	7.0

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Prior Mindfulness-Based Intervention Participation	*n*	%
Yes	49	16.4
No	244	81.6
Prefer not to disclose	6	2.0
Current Mindfulness Practices	*n*	%
Yes	85	28.4
No	210	70.2
Prefer not to disclose	4	1.3
Current Anti-Depressant Medication	*n*	%
Yes	43	14.4
No	254	84.9
Prefer not to disclose	2	.7

2.1.2. Measures

Five Facet Mindfulness Questionnaire

The Five Facet Mindfulness Questionnaire-- 24 (FFMQ-24)[52] is a 24-item, shortened version of the original 39-item FFMQ-24 developed by Baer et al. [19]. The FFMQ-24 measures DM on five facets: observing (OB), describing (DS), acting with awareness (AA), non-judgment of inner experience (NJ), and non-reactivity to inner experience (NR). Respondents rated their agreement with each item on a 5-point Likert scale, ranging from one (*never or very rarely true*) to five (*very often or always true*). An example item includes *"I tell myself that I shouldn't be feeling the way I'm feeling."* Upon reversing negatively worded items, higher scores are indicative of high DM levels, and among a study with similar participants (i.e., crowdsourcing recruitment), the FFMQ-24 produced a Cronbach's alpha of .79 [53]. In the present study, Cronbach's alphas for the facets were as follows: OB = .83, DS = .87, AA = .87, NJ = .87, and NR = .87. The Cronbach alpha for the entire FFMQ-24 scale was .90.

Mental Health Literacy Scale

The Mental Health Literacy Scale (MHLS)[54] is a self-report measure, consisting of 35 items, that assesses an individual's knowledge and understanding of different aspects of mental health. An example of an item on the scale is "*To what extent do you think that Personality Disorders are a category of mental illness?*" For questions one to ten and thirteen to fifteen, responses are rated on a 4-point Likert scale, ranging from one (*very unlikely*) to four (*very likely*). Items eleven and twelve are also rated on a 4-point Likert scale, ranging from one (*very unhelpful*) to four (*very helpful*). Items 16-28 are rated on a 5-point Likert scale, ranging from one (*strongly disagree*) to five (*strongly agree*), as well as items 29-35 being rated on a 5-point Likert scale, but with responses ranging from one (*definitely unwilling)* to five (*definitely willing*). Higher scores are indicative of higher knowledge of mental health and its related concepts. The Cronbach's alpha for the 4-point and 5-point Likert scales were .84 and .89, respectively.

Mental Help-Seeking Attitudes Scale

The Mental Help-Seeking Attitudes Scale-– 9 (MHSAS)[55] is a 9-item scale that measures a participant's evaluation of mental health professionals and treatments in circumstances where they find themselves experiencing psychological distress. The scale is presented to participants on a 7-point semantic differential scale, and they are prompted with the following phrase: *"If I had a mental health concern, seeking help from a mental health professional would be..."* The scale offers a list of adjectives and their opposite to describe their attitudes, such as "important" or "unimportant" with ratings from zero to three, but only allowing for the participant to pick one option. Higher scores indicate more positive attitudes towards mental health professionals and treatment. The measure has been used extensively in psychology research, as one systematic review on patient-reported outcome measures of TSA rated the MHSAS as "class A" [56]. Accordingly, the Cronbach's alpha for the present study was .94.

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General Self-Efficacy Scale

The General Self-Efficacy Scale–10 (GSES)[57] is a 10-item scale that measures a person's own perceived sense of self-efficacy. The scale was developed to predict capacity to cope with daily life stressors and positive adaptation after adverse life events [56]. An example of an item on the GSES is "*I can always manage to solve difficult problems if I try hard enough*." The responses are measured on a 4-point Likert scale ranging from one (*not at all true)* to four (*exactly true)*. Higher scores on the GSES indicate more perceived self-efficacy. The Cronbach's alpha for the current study was .92.

2.1.3. Procedure

Questionnaires were hosted on Qualtrics. Upon viewing the study title and description on TurkPrime, interested participants were directed to click a survey link, which connected them to the study consent procedure and measures. Prior to completing any measures, participants were required to provide their informed consent. Upon completion of study measures, participants were presented with a demographic information form. Besides gathering basic demographic information related to age, gender, income, marital status, education, and ethnic background, we also ask respondents to report whether they received any formal psychotherapy in the past, if they ever received a mental health diagnosis, whether they had been involved in a mindfulness-based practice, and their current knowledge levels (from 1 to 10) related to mindfulness. The demographic form also included an attention check item required to pass to be included in the study (i.e., "*What was this survey about? Please do not select "Mindfulness" but instead choose "Other" and type "Psychology" in the text box*). A debriefing form was provided to participants after the demographics form, and they were automatically compensated 2.50 USD through AMT.

2.2. Data Analyses

Prior to running any analyses, all collected data were first scanned for missingness and completion, cleaned, and reverse scored as appropriate. Skewness and kurtosis values were tabulated to evaluate any violations of assumptions of normalcy, as well as multicollinearity. The study's data were collected for use in a separate study by the first and last authors; therefore, preliminary Pearson correlations were used as rationale for the current study, as significant associations were found between FFMQ-24's specific facets of OB, DS, AA, NJ, and NR, MHL, and TSA. Two multiple regressions were conducted with demographics (i.e., age, gender, marital status, income, and education) in the first block, and FFMQ-24 facets in the second block (i.e., OB, DS, AA, NJ, and NR). Subsequently, we conducted five exploratory moderation analyses using Hayes [58] PROCESS SPSS macro. The five moderators were the five facets of the FFMQ-24. The moderation analyses, Model 1, used 5,000-sample bootstrapping, and significant interactions were followed up with conditional effects examining the strength of the relationships between scores on MHLS and MHSAS at -1SD of the moderator, mean of the moderator, and +1SD of the moderator. The critical alpha for these moderations was Bonferroni-adjusted adjusted to .05/5 or 0.01.

Finally, we conducted five exploratory mediation analyses using PROCESS (Model 4)[58] in SPSS to examine whether general self-efficacy mediated the relationship between various facets of mindfulness and attitudes toward mental help seeking. Separate mediation models were estimated for each mindfulness facet (e.g., OB; DS; AA; NJ, and NR) as predictors (X), with general self-efficacy scores (GSES) serving as the mediator (M) and scores on the MHSAS as the outcome (Y).

For each model, ordinary least squares regression was used to estimate the path from the predictor to the mediator (a path), from the mediator to the outcome (b path), and the direct effect of the predictor on the outcome (c′ path), controlling for the mediator. The total effect (c path) was also computed for each mindfulness facet. Indirect effects were determined using 5,000 bootstrap samples to construct bias-corrected 99% confidence intervals, with mediation deemed significant when the confidence interval did not include zero. In light of multiple comparisons across the five facets, a Bonferroni-adjusted alpha level of .01 was applied for interpreting the significance of indirect (mediation) effects.

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3. Results

3.1. Demographics

The final sample consisted of N = 299 participants, (N = 298 for multiple regressions; see participant section above), M_{age} = 41.02, and 49.7% identifying as a cis woman, n = 1 preferred not to disclose gender, and n = 14 did not meet inclusion criteria. For all regressions, those identified as a trans man (n = 1) were collapsed into man, those who identified as other and specified identifying as a woman or female (n = 2) were collapsed into woman, and those who identified as man or male (n = 2) were collapsed into man. For the multiple regressions, women (vs. men) and married status (45.5%) vs. single, divorced/separated, or widowed were the reference group. Highest level of education was not dummy-coded, as it was hierarchical in nature of degree (e.g., 1 = no high school diploma; 2 = high school diploma). In the current sample, n = 80 participants (26.8%) reported receiving psychotherapy, while n = 207 (69.2%) reported never receiving any form of psychotherapy in the past (and n = 12 not disclosing their previous psychotherapy exposure). People who reported receiving any form of psychotherapy also reported higher scores on the MHLS, $t(285) = 7.51$, $p<.001$ (Cohen's d = 0.99), and higher scores on the MHSAS, $t(285) = 2.10$, $p = .04$, (Cohen's d = 0.28). Further, n = 85 participants (28.5%) report current engagement in a mindfulness meditation practice, while n = 210 (70.2%) do not, and n = 4 (1.3%) preferred not to disclose. On a 10-point Likert scale, where 1 is not at all knowledgeable and 10 is very knowledgeable about mindfulness, the average mindfulness knowledge was M = 4.74 (SD = 2.86). Table 1 provides a summary of pertinent demographics.

3.1.1. Zero-Order Correlations among Study Measures

Zero-order correlation coefficients of scores on the five FFMQ-24 facets, MHLS, the MHSAS, and GSES are summarized in Table 2. As can be observed, **DS** was positively associated with MHLS (r = .17, $p < .01$), MHSAS (r = .18, $p < .01$), and GSES (r = .50, $p < .01$). **NR** was not significantly related to MHLS but showed significant positive relationships with MHSAS (r = .16, $p < .01$) and GSES (r = .56, $p < .01$). **NJ** was correlated modestly with MHLS (r = .12, $p < .05$), MHSAS (r = .14, $p < .05$), and GSES (r = .24, $p < .01$). **OB** was not significantly linked to MHLS but showed significant positive associations with MHSAS (r = .13, $p < .05$) and GSES (r = .24, $p < .01$). Finally, **AA** demonstrated small-to-moderate correlations with MHLS (r = .13, $p < .05$), MHSAS (r = .23, $p < .01$), and GSES (r = .30, $p < .01$). There were significant relationships among the three outcome measures, with MHLS being positively associated with MHSAS (r = .37, $p < .01$) and GSES (r = .13, $p < .05$). Finally, MHSAS was correlated with GSES (r = .20, $p < .01$).

Table 2. Pearson correlations between pertinent study variables. .

Variable	1	2	3	4	5	6	7	8
1. OB	1.0	-						
2. DS	.33**	1.0	-					
3. AA	.17**	.50**	1.0	-				
4. NJ	-.01	.43**	.51**	1.0	-			
5. NR	.20**	.32**	.23**	.30**	1.0	-		
6. MHLS	.08	.17**	.13*	.12*	-.07	1.0	-	
7. MHSAS	.13*	.18**	.23**	.14*	.16**	.37**	1.0	-
8. GSES	.24**	.50**	.30**	.23**	.56**	.13**	.20**	1.0

Note: 1. OB = Observe facet 2. DS = Describe facet 3. AA = Act with Awareness facet 4. NJ = Non-judgment facet 5. NR = Non-reactivity facet 6. MHLS = Mental Health Literacy Scale 7. MHSAS = Mental Help Seeking Attitudes Scale 8. GSES = General Self-Efficacy; all values rounded up to one decimal place. ** = significant at the .01 level; * = significant at the .05 level .

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3.2. Multiple Regressions

3.2.1. Mental Health Literacy Scale

A hierarchical multiple regression was run with demographic variables (i.e., age, gender, marital status, income, and education) in the first block, and all FFMQ-24 facets (OB, DS, AA, NJ, and NR) being entered in the second block. The overall model with both sets of predictors was significant $F(10, 297) = 4.76$, $p < .001$. The first model, with demographic predictors, was significant, $F(5, 292) = 6.97$, $R^2 = .11$, $p < .001$. When all facets were added in the second block, they contributed to significant variation in MHLS scores, $\Delta F(5, 287) = 2.39$, $R^2 = .14$, $\Delta R^2 = .11$, $p < .04$. However, significant predictors in the model, were only DS, $t(5,287) = 2.09$, $p < .04$, and NR, $t(5,287) = -2.51$, $p < .01$, despite NR not having a prior association with MHLS scores. Demographic predictors included age, being married, and education level. Seemingly, higher scores on DS, as well as older age, being married, and education predicted MHLS scores. Regression coefficients are presented in Table 3.

Table 3. Demographics and dispositional mindfulness facets predicting mental health literacy. .

	B	SE B	b	t
Model 1 (Demographics): $R = .34$, $R^2 = .11$, F for change in $R^2 = 6.97$**				
Constant	116.20	4.12		28.21
Age	.25	.08	.17**	3.10
Women ref	3.43	1.86	.11	1.84
Married	-6.82	2.08	-.21**	-3.28
Education	-1.28	.43	-.19**	-3.01
Yearly Income	1.45	.73	.13*	2.00
Model 2 (Demographics and Predicting Factors): $R = .38$, $R^2 = .14$, $DR^2 = .04$, F for change in $R^2 = 2.39$*				
Constant	112.00	6.46		17.3
Age	.21	.08	.15**	2.58
Women ref	2.38	1.88	.07	1.26
Married	-6.85	2.09	-.21**	-3.27
Education	-1.19	.43	-.17**	-2.78
Yearly Income	1.39	.73	.13	1.92
OB	.18	.31	.04	.59
DS	.55	.26	.15*	2.09
AA	-.05	.25	-.02	-.21
NJ	.21	.23	.06	.89
NR	-.57	.23	-.15*	-2.51

Note: OB = Observe facet; DS = Describe facet; AA = Act with Awareness facet; NJ = Non-judgment facet; NR = Non-reactivity facet. All values have been rounded up to one decimal place. ** = significant at the .01 level; * = significant at the .05 level .

3.2.2. Mental Help Seeking Attitudes Scale

A second hierarchical regression was conducted to evaluate whether FFMQ-24 facets could predict MHSAS scores over demographic variables. In the first step, demographic variables (i.e., age, gender, marital status, income, education) were added, and FFMQ-24 facets of OB, DS, AA, NJ, and NR were added in the second block. The overall model was significant, $F(10, 297) = 2.79$, $p < .003$. The first model with only demographics as predictors was not significant, $F(5, 292) = .86$, $R^2 = .01$, $p = .52$. However, when FFMQ-24 facets were included, the model became significant, $\Delta F(5, 287) = 4.67$, $R^2 = .09$, $\Delta R^2 = .06$, $p < .001$. No demographics were significant predictors, and only one FFMQ-24 facet was a significant predictor, AA, $t(5,287) = 2.92$, $p < .004$. Regression coefficients are presented in Table 4.

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Table 4. Demographics and dispositional mindfulness facets predicting mental help seeking attitudes. .

	B	SE B	b	t
Model 1 (Demographics): R = .12, R^2 = 01., F for change in R^2 = .85				
Constant	43.09	3.02		14.28
Age	.07	.06	.07	1.24
Women ref	1.25	1.36	.06	.92
Married	.07	1.52	.00	.05
Education	.27	.31	.06	.86
Yearly Income	.08	.53	.01	.16
Model 2 (Demographics and Predicting Factors): R = .30, R^2 = .09, DR^2 = .07, F for change in R^2 = 4.67**				
Constant	28.18	4.64		6.07
Age	.00	.06	.00	.03
Women ref	1.75	1.35	.08	1.29
Married	.66	1.50	.03	.44
Education	.44	.31	.09	1.44
Yearly Income	-.21	.52	-.03	-.41
OB	.20	.22	.06	.90
DS	.07	.19	.03	.38
AA	.52	.18	.21**	2.92
NJ	-.03	.17	-.01	-.15
NR	.27	.16	.10	1.63

Note: OB = Observe facet; DS = Describe facet; AA = Act with Awareness facet; NJ = Non-judgment facet; NR = Non-reactivity facet. All values have been rounded up to one decimal place. ** = significant at the .01 level; * = significant at the .05 level .

3.3. Moderation Analyses

As planned, five, Bonferroni-adjusted PROCESS [58] moderation analyses were conducted to determine whether any of the FFMQ-24 facets moderated the relationship between MHLS and MHSAS. The only variable that survived the Bonferroni-adjusted alpha was NR. The overall regression model was significant, $F(3, 295) = 23.09$, $p < .000$. The interaction of NR and MHLS scores predicting incremental variance in MHSAS scores over and above main effects of NR and MHLS scores, $F(1, 295) = 7.47$, $\Delta R^2 = .02$, $p < .007$. Conditional effects indicate that at mean and +1 SD, effects are significant. At mean, (NR = .0000), the effect was $B = .27$, $SE = .04$, $p < .0001$, and at +1 SD, (NR = 4.4105) the effect was $B = .37$, $SE = .05$, $p < .0001$. However, at -1 SD, it was approaching significance, (NR = -4.4105), with an effect of $B = .16$, $SE = .05$, $p < .002$. Altogether, these results indicate that as NR scores increase, the relationship between MHLS and MHSAS scores also increases, confirming that higher levels of NR intensify the relationship between MHLS and MHSAS.

AA appeared to have marginal significant moderation effect. The overall regression model was significant $F(3, 295) = 21.72$, $p < .001$. The interaction effect was significant at the .05 alpha level, , $F(1, 295) = 4.11$, $\Delta R^2 = .01$, $p < .04$, but did not survive corrected alpha of .01. Summary of all five moderation analyses coefficients are presented in Table 5.

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Table 5. Moderating effects of the five FFMQ facets on the relationship between mental health literacy and help-seeking attitudes.

Facet (W/Moderator)	R^2 (Model)	b (Interaction)	SE (Interaction)	p (Interaction)	ΔR^2 (interaction)	X→Y at Low W (b, *p*)	X→Y at Mean W (b, *p*)	X→Y at High W (b, *p*)
OB	0.15*	-0.0169	0.0114	0.138	0.0064	Not provided	Not provided	Not provided
DS	0.16*	0.0124	0.0093	0.1865	0.005	Not provided	Not provided	Not provided
AA	0.18*	0.0163	0.0080	0.044	0.0114	0.1766 (p = .0003)	0.2518 (p < .0001)	0.3271 (p < .0001)
NJ	0.15*	0.0063	0.0079	0.795	0.4273	Not provided	Not provided	Not provided
NR	**0.19***	**0.0237***	**0.0237**	**0.007***	**.0205**	**0.1638 (p = .0018)**	**0.2684 (p < .001)**	**0.3730 (p < .001)**

Note: OB = Observe facet; DS = Describe facet; AA = Act with Awareness facet; NJ = Non-judgment facet; NR = Non-reactivity facet. All values have been rounded up to one decimal place. ** = significant at the .01 level; * = significant at the .05 level . All values are rounded up to one decimal place. *Critical alpha for analysis is .01. Bold lines indicate significant interaction below adjusted critical alpha. Interaction b* = unstandardized coefficient. ΔR^2 indicates the additional variance explained by the interaction term. Conditional effects are presented for low (M – 1 SD), mean, and high (M + 1 SD) values of when the interaction is significant.

3.4. Mediation Analyses

Five mediation analyses examining whether GSES scores explained the relationship between each of the FFMQ-24 facets and MHSAS were conducted as planned. Summary of these analyses is presented in Table 6. These analyses were also Bonferroni-adjusted to a critical alpha of .01. GSES demonstrated full mediation of the relationship between OB and MHSAS, and full mediation of the relationship between NJ and MHSAS. No other mediation analyses survived the Bonferroni-corrected critical alpha.

Table 6. Mediating effects of general self-efficacy in the relationship of five facets of FFMQ and help-seeking attitudes.

Facet (Predictor)	a (XàM)	b (MàY)	c (Total)	c′ (Total)	Indirect Effect	99% CI (Indirect)	p (mediation sig at .01)
OB	**0.4144****	**0.3605****	**0.4421 (p = .03)***	**0.2927 (p = .16)**	**0.1494**	**[0.0033, 0.3848]**	**Yes**
DS	0.6320**	0.2862	0.4692**	0.2884	0.1809	[−0.0542, 0.4634]	No
AA	0.3622**	0.2856	.5715**	0.4680**	0.1034	[−0.0121, 0.2665]	No
NJ	**0.2840****	**0.3530****	**0.3270 (p = .0168)***	**0.2268 (p = .1022)**	**0.1002**	**[0.0088, 0.2305]**	**Yes**
NR	0.7211**	0.3170	.4165**	0.1879	0.2286	[−0.0486, 0.4990]	No

Note: OB = Observe facet; DS = Describe facet; AA = Act with Awareness facet; NJ = Non-judgment facet; NR = Non-reactivity facet. All values have been rounded up to one decimal place. *Critical alpha for analysis is .01. Bold lines indicate significant indirect (mediation) effect below adjusted critical alpha. ** significant at .001 level, * significant at .05 level.*

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4. Discussion

Behaviours related to treatment seeking is influenced by attitudes, an understanding of the source of the illness [59], awareness of treatment options, and perceived severity of the distress, all of which are key components in MHL [60]. The present study sought to determine what facets of the FFMQ-24 were most strongly predictive of MHL and treatment seeking, as well as which facets may be able to moderate and involved in the mediation of the relationship between MHL and treatment seeking. The current study yields promising results to the field of mental health promotion, and provides rationale for mindfulness being integrated into educational systems and mental health treatment/prevention programs.

4.1. Demographics

Demographics have consistently been found to correlate with MHL and TSA [43-45,47,48]. In the present study, participants who reported receiving any form of psychotherapy reported higher MHL and TSA; accordingly, these outcomes seem to be a valid indicator of treatment seeking behaviour. This is consistent with previous findings, which showed that participants who received therapy had higher levels of MHL compared to those not in therapy [61]. Relatedly, attitudes towards treatment were regarded as more positive, and acceptance was higher for those who had received treatment for psychological distress or had a close relative with treatment experience [44]. A longitudinal study found that positive attitudes towards mental health care and higher MHL predicted the use of psychotherapy at 6-month follow-up, controlling for sociodemographic variables and symptomatology [62].

As consistent with evidence reviewed, in the present study, we found age, marital status, and education emerged as significant predictors of MHL. The results showed older, married participants, and those reporting higher education have lower rates of MHL. While previous literature found older age to be associated with lower MHL [45] the finding that being married and higher education was correlated with lower MHL was inconsistent with existing literature [43,44,50]. Literature on relationship statuses have found evidence of those identifying as single to report more psychological symptoms [63], perceived stress and loneliness [64], as well as lower perceived social support and life satisfaction [65]; however, married individuals demonstrated greater life satisfaction, lower stress, and less depression [66]. This may be in line with prior results that exposure to therapeutic services increases MHL and treatment seeking, as depending on life satisfaction and psychological health, married individuals may not experience psychological distress as often.

The Dunning-Kruger effect [67], or the metacognitive bias associated with overconfidence in one's abilities, may provide insights regarding education's paradoxical relationship with MHL. Current results showed a negative relationship between education and MHL rates, which is often seen in health literacy, a concept closely related to MHL [68,69]. Those with high self-rated health knowledge scored lower on health literacy measures compared to those with higher health literacy, and demonstrated more overconfidence [68]. This overconfidence was related to poorer health behaviours and outcomes [68]. In the present study, this may explain the seemingly paradoxical relationship between higher education and lower MHL.

4.2. Facet Predictors

In the current study, and consistent with hypotheses, the facet of DS was a robust predictor of MHL. This finding is aligned with the finding that ability to name or label internal experiences may increase recognition of mental health and its related resources [70]. This is also consistent with extant research [31,33]. A meta-analysis identified a strong relationship between DS and ability to label emotional reaction against physical reactions, promoting adaptive acknowledgment and regulation of negative affect [31]. Also in the present study, we found NR had an inverse relationship with MHL after controlling for the effects of other facets, demonstrating a potential suppression effect. This suggested that, in the absence of other facets of mindfulness, being highly non-reactive to internal

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experiences may reduce the drive to seek out information or perceive a need for seeking out mental health resources. Low or no aversive feelings in reaction to symptoms, as consistent with NR, may explain why, when all facets have been controlled, NR may be associated with reduced drive to seek information regarding mental health symptoms. Consistent with hypotheses, AA was the only significant predictor of treatment seeking once demographics had been controlled for. Present-focused awareness of psychological distress may make it more likely for individuals to consider or pursue appropriate and professional services rather than stigma coping [42]. These findings correlate with prior literature finding a negative relationship between AA and alexithymia [33], and its positive relationship with self-efficacy [30].

4.3. Facet Moderators

NR strengthened the positive association between MHL and TSA and behaviours. At higher levels of NR, being informed about mental health appeared to be more likely to translate into positive treatment seeking attitudes, which is consistent with prior literature [42]. The results of the current study suggest that, while NR may reduce the drive to seek out mental health information, individuals who already possess adequate baseline information regarding mental health may be more moved toward appropriate treatment seeking when this information is combined with higher levels of non-reactivity to inner experience.

4.4. Facet Mediators

GSES mediated the relationship between OB and TSA and behaviours, as well as between NJ and TSA and behaviours. This is in support of the TPB [22], which suggests that some dispositional factors might create a better sense of self-efficacy over behaviour. Higher self-efficacy then spills over into more positive attitudes, moving individuals toward appropriate action and change. Mindfulness includes qualities that strengthen intention-behaviour relationships, strengthening self-control abilities [71] and characteristics of lower mindfulness levels weaken the intention-behaviour relationships [17,71,72]. In the current study, it appeared both OB and NJ may increase one's sense of control over mental health challenges and capacity to seek treatment. NJ has been construed as accepting without judgment in earlier research and was found to be related with greater coping self-efficacy [73]. Coping self-efficacy mediated the relationship between non-judgment and emotion regulation, believed to be the result of mindfulness fostering a greater sense of self-control [73]. It is likely that individuals higher in self-efficacy are able to observe internal events and respond appropriately, which may facilitate treatment seeking.

4.5. Strengths and Limitations

The present study yielded a large sample size from several countries, and had an even split amongst genders, allowing for more generalizability and power to detect differences in our outcome variables. The measures used were of excellent psychometrics, and are commonly used measures of the constructs. Further, the current study was theory-driven (TPB). This theory-drivenness focused on increasing health promotion allows for easier implementation into current practices and makes development of appropriate MHL interventions more accessible.

With that, there were several notable limitations that pave the way for future studies. First, measures were administered solely in English, and most participants were White (77.3%). Accordingly, the generalizability of the results to other demographics is limited. Second, the study had a cross-sectional design, which does not allow for causal inferences to be drawn and presents questions related to the replicability of some of the analyses (e.g., mediation). Third, mindfulness has several operationalizations, so our results may not corroborate with other operationalizations of mindfulness.

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5. Conclusions

The present study's findings demonstrated the relationships between DM and important clinical outcomes related to literacy and treatment-seeking. DM does not appear to function as a unitary concept, and interventions designed to improve treatment seeking should focus specifically on cultivating specific facets of mindfulness, which may alone or in interaction with other facets or constructs work to enhance MHL and/or treatment-seeking attitudes. Given the results in the current study, and assuming successful replication, MHL interventions should focus on cultivating observing facet of mindfulness, which appears to work through general self-efficacy to increase treatment seeking attitudes. Interventions should balance non-reactivity with increases in MHL to foster better attitudes toward seeking help. Finally, cultivation of facets such as non-judgement also appears to have a direct relationship with a sense of control over health outcomes, and hence works through self-efficacy to improve attitudes toward help-seeking. Cultivating self-efficacy seems to key for individuals high in OB and NJ, which may facilitate translation into positive attitudes and adaptive treatment seeking behaviour. All in all, this study demonstrated that the concept of dispositional mindfulness is multifaceted, and should be considered as such for a more granular understanding of literacy and health-related attitudes.

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