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Mindfulness impairments in individuals seeking treatment for substance use disorders

Elias Dakwar, M.D., **John P. Mariani, M.D.**, and **Frances R. Levin, M.D.**
Department of Psychiatry, New York State Psychiatric Institute (NYSPI), Columbia University, New York, NY, USA

Abstract

Background—Mindfulness training may be an effective treatment for substance use disorders (SUDs). Little research has been done, however, on baseline levels of mindfulness in the substance using population.

Objectives/Methods—We investigated mindfulness levels using the Mindful Attention Awareness Scale (MAAS) in individuals presenting for substance use treatment, and compared polydrug vs. monodrug users, as well as investigated for differences between groups based on substance used, predicting that group means would fall below the mean obtained from a large national adult sample, that the different drug groups would have comparable scores, and that the polydrug users would have a significantly lower score than do monodrug users.

Results—We found that the means of most drug groups were below the national mean, and that the polydrug users had a lower score on the MAAS than did monodrug users (4 vs. 3.6, $p = 0.04$). We were also surprised to find that opiate users had a significantly higher score (4.31) than did users of other substances ($p = 0.02$).

Conclusion/Significance—These results suggest that mindfulness deficits may be common in the substance using population, that there may be sub-groups in which these deficits are more pronounced, and that they may be a suitable focus of SUD treatment. These findings lend support to the ongoing development of mindfulness-based treatments for SUDs, and suggest that particular sub-groups may benefit more than others. Future research can aim at clarifying these deficits, and at elucidating their clinical relevance.

Keywords

mindfulness; substance use; addiction

1. INTRODUCTION

Defined as the capacity to attend to phenomena on a moment-to-moment basis, nonjudgmentally, and with accepting, relaxed awareness (1,2), mindfulness has become increasingly important in the fields of mental health, pain management, stress reduction, and most recently, substance use disorder (SUD) treatment (3). Since the emergence of the first mindfulness-based treatment nearly 30 years ago (4), various treatments have come to incorporate mindfulness training for a spectrum of disorders. These include mindfulness-

Address correspondence to: Elias Dakwar, Division on Substance Abuse, NYSPI, Columbia University Medical Center, 1051 Riverside Drive, Unit 66, New York, NY 10032, USA. Tel: +212 543 6709. dakware@pi.cpmc.columbia.edu.

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based cognitive therapy to prevent depressive relapses (5), dialectical behavioral therapy for borderline personality disorder (6), and mindfulness-based relapse prevention therapy to maintain abstinence from drugs of abuse.

Despite a growing number of mindfulness-based treatments targeting SUDs (7), there is no research to our knowledge investigating mindfulness impairments in the substance-using population. Although the deficits that characterize SUDs – such as impaired self-regulation, heightened reactivity to drug cues, and diminished insight – suggest that impairments in mindfulness may play a prominent role, the extent and nature of these impairments have not been examined.

An evaluation of mindfulness impairments in this population may consequently lend further support to the development of mindfulness-based SUD interventions. Moreover, it may also indicate whether there are particular subgroups that are more likely than others to benefit from such treatments. It has been proposed, for example, that the stress reduction associated with mindfulness training may be particularly helpful for a subset of SUD patients with impairments in stress tolerance and stress management (8).

Although various scales have been developed to assess mindfulness, there remains little consensus on the best and most comprehensive way to do so, as mindfulness encompasses many domains and attributes (9). Furthermore, mindfulness fluctuates over time, making it difficult to delineate between transient (state) and enduring (trait) capacities for mindfulness. However, certain core features of mindfulness are generally agreed upon, including the capacity to disengage from and neutrally contemplate affective, physiological, and cognitive responses to stimuli on a moment-to-moment basis (1–3). In fact, it has been proposed that this shift in attention represents the crux of mindfulness, and has been termed “decentering” (10), “openness” (2), “detachment” (11), “mindful attention” (12), and “diffuse awareness” (13). The Mindful Attention Awareness Scale (MAAS) is an easily administered scale with good reliability ratings and a history of clinical and research use (12,14,15) that was developed to assess this core attentional aspect of mindfulness, and the capacity for moment-to-moment attention in particular (12).

We therefore investigated mindfulness impairments in individuals seeking treatment for SUDs using the MAAS. We predict that in individuals seeking treatment for SUDs, there are low levels of mindfulness as ascertained by the MAAS relative to a national mean, that there will be comparable scores among users of different substances, and that individuals seeking treatment for two or more substances (polydrug users) will have lower scores than do those seeking treatment for one substance (monodrug users).

2. SUBJECTS AND METHODS

2.1. Subjects

Subjects were treatment-seeking individuals who provided consent to be evaluated at our university-based clinical research site (n = 315). They were recruited from the New York City metropolitan area by subway, television, and radio advertisements. Individuals were initially screened over the phone, found to have a cannabis, opioid, and/or cocaine problem for which they seek treatment, and asked to come in for further evaluation in a nonintoxicated state. Participants who were obviously intoxicated at the time of the evaluation were rescheduled for another visit.

2.2. Instruments

The MAAS is a short questionnaire that was administered to eligible participants during their initial visit (Table 1). It is a 15-item instrument that asks participants to rate the

frequency with which they experience impaired moment-to-moment attention on a 6-point Likert scale from 1 (almost always) to 6 (almost never). A mean score was obtained for each individual. Higher scores reflect higher levels of mindfulness. Although the MAAS has neither been normed nor rigorously evaluated in regard to what constitutes a healthy or unhealthy score, average scores have been obtained for different groups for the purposes of comparison (12). In a large US adult sample (16), the average MAAS score was 4.22 (SD = .63). For the purposes of this analysis, therefore, we will refer to the score of 4.22 as an indicator of normal average levels of mindfulness. Scores that fall below 4.22 will be provisionally considered below average. A questionnaire was also provided to determine which substances they believed required treatment. Finally, demographic information was collected for each participant.

2.3. Statistical Analyses

T-tests were performed to investigate statistically significant differences in MAAS scores between drug groups, and between monodrug and polydrug users. A chi-squared test was performed to determine statistically significant demographic differences between groups.

3. RESULTS

Table 2 demonstrates the demographic differences as well as differences in MAAS scores between groups based on substance(s) used. There were no significant demographic differences between the various groups. There was considerable overlap with regard to the types of substances for which patients sought treatment, with 108 of the 315 patients presenting for help with two or more substances (the polydrug group). Therefore, although patients were separated into groups based on the type of substance for which they sought treatment, certain individuals within each group also sought treatment for other substances. Most groups had a score lower than the historical comparison score of 4.22 (SD = .63). The single exception was the group seeking treatment for opioid use disorders, which had a higher score than the national mean as well as a significantly higher score than did the other groups. A MAAS score below that of the historical comparison group is considered for the purposes of this descriptive analysis to be in the range of below average mindfulness. When the mono- and polydrug groups were compared with one another, the former had a significantly higher score than did the latter.

4. DISCUSSION

As expected, MAAS scores were significantly lower in the polydrug than in the monodrug users. Furthermore, MAAS scores for users taken as a group were lower than the mean value of 4.22 obtained from a large US adult sample. Surprisingly, users seeking treatment for opioid use disorders were not found to be in the range of below average mindfulness. These data suggest that mindfulness-related attentional impairments may be common in individuals seeking treatment for SUDs, that they vary depending on the type and number of substances abused, and that they may be a suitable focus of care in addiction treatment.

The role that attentional difficulties may have in producing or maintaining SUDs has received substantial attention in attention-deficit hyperactivity disorder (ADHD) research. The high comorbidity between ADHD and SUDs has been attributed to ADHD-related heightened impulsivity, impaired self-regulation, increased delay discounting, recklessness, sensation-seeking, and attempts at self-medication (17,18). Impaired attention is implicated in many of these deficits (17). Impairments in mindful attention may perhaps lead to increased vulnerability to SUDs in some of the ways that ADHD does, even if these impairments are too subtle or mild to be diagnostic of the disorder.

The role of moment-to-moment attention in protecting against relapse is well-recognized in drug treatment. Relapse prevention therapy emphasizes developing awareness of cues and triggers so that they can be more easily navigated, and it encourages participants to remain aware of the ramifications of their intentions and decisions, no matter how seemingly irrelevant to drug use (19). The dictum of "one day at a time" in the 12-step programs (20) cultivates in group members a similar appreciation for moment-to-moment vigilance, awareness, and intentionality. Our data give further support to the long-standing anecdotal and clinical impression that these domains are impaired in individuals with SUDs, and according to our findings, in alcohol, cocaine, cannabis, and polysubstance users specifically. In addition, mindfulness training may represent a new way to improve these clinically important capacities in this population.

The MAAS was chosen for inclusion in this study because it is the only scale that has been developed to focus on core attentional aspects of mindfulness. The focus of the MAAS on attentional vigilance and moment-to-moment awareness, however, leads to certain shortcomings; it overlooks other key domains and consequently construes impairments in mindfulness as "spacey-ness," as one critic of the instrument put it (9). Other important aspects of mindfulness include acceptance, a suspension of judgment, nonreactivity, openness, and an emphasis on spiritual growth. Although no single instrument ascertains all aspects of mindfulness, instruments that assess other aspects and that may be incorporated into future studies include the Freiburg Mindfulness Inventory (9), the Toronto Scale (9), and the Five Aspects of Mindfulness Questionnaire (21).

The higher MAAS score in the opioid using group compared to other groups in the sample deserves discussion. One interpretation is that this may be due to the particular pattern of use in opioid users. Opioid dependence is generally characterized by regular self-administration that is often intended to ward off aversive withdrawal states. Opioid users report that this pattern of use compels them to remain attentive to physiological or psychological harbingers of withdrawal so that they can administer the drug in a timely manner (22). Moment-to-moment awareness may therefore be preserved in opioid users due to the unique demands of their illness, even if other aspects of mindfulness may be impaired. This finding suggests that mindfulness training may need to be targeted toward particular mindfulness-related impairments, depending on the specific deficits of the population.

It is therefore important to consider here how impairments in other domains of mindfulness, such as the capacity for acceptance, emotional and physiological self-regulation, and nonreactivity, may be targeted by mindfulness training for SUDs. As has been previously summarized (13), mindfulness training may provide benefit to those with SUDs by revitalizing their capacity for healthy adaptation, by easing the navigation of drug cravings and cues, by reducing emotional reactivity and cue salience, and by facilitating cue extinction through dampening the affective and semantic cascade associated with drug-related cues. As posited by Marlatt, mindfulness exercises may also provide a rewarding and relaxing alternative to drug use (7). Mindfulness training may therefore be well suited to address many of the difficulties characteristic of SUDs, with the focus of training guided by the particular deficits of the patient.

There are important limitations of this analysis worth noting, in addition to the limitations of the instrument discussed above and the limitations that beset questionnaires in general. First, there is no healthy comparison group; for this reason a historical comparison was used. The assessment of scores being "low" in this sample must therefore be qualified as relative to mean obtained from a large US adult sample, and consequently of uncertain statistical significance. Second, the questionnaire cannot delineate between state and trait mindfulness. Thus, one cannot determine, based on the MAAS alone, how much attentional impairment

can be attributed to the acute or chronic effects of substance use. Although intoxicated subjects were excluded from participating in this study, it is still possible that some participants were acutely affected by one or more substances while completing the questionnaire, and were in a state of mild intoxication or withdrawal not obvious to study staff. Such acute effects, as well as chronic neurotoxic effects that may vary among individuals depending on the history and severity of drug use, may partly explain the variable mindfulness ratings among the different drug groups. Third, the presence of psychiatric comorbidity, drug use patterns and history, and SUD diagnoses were not determined. It is likely that certain psychiatric conditions, such as ADHD, anxiety disorders, or mood disorders, may present significant overlap with impairments in mindfulness. These issues limit the clinical utility of our data. A future study utilizing more sophisticated and comprehensive mindfulness measures, as well as a healthy comparison group, could better examine the association of various factors with impairment in moment-to-moment attention and other aspects of mindfulness.

Notwithstanding these limitations, this analysis represents the first attempt to assess mindfulness impairments in individuals seeking treatment for SUDs. Our findings suggest that this population may benefit from mindfulness training, and specifically training that improves moment-to-moment attention. Our findings also introduce the possibility that subgroups within the SUD population have variable mindfulness-related impairments, and that mindfulness training should be tailored to the particular needs of each group. Future research directed at examining the associations between particular subgroups and their unique mindfulness-related impairments will undoubtedly be helpful in guiding mindfulness-based treatment and in better understanding the role of mindfulness impairments in SUDs.

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TABLE 1

The Mindful Attention Awareness Scale (MAAS) Instructions: Below is a collection of statements about your everyday experience. Using the 1–6 scale below, please indicate how frequently or infrequently you currently have each experience. Please answer according to what really reflects your experience rather than what you think your experience should be. Please treat each item separately from every other item.

1) I could be experiencing some emotion and not be conscious of it until some time later.	1	2	3	4	5	6
2) I break or spill things because of carelessness, not paying attention, or thinking of something else.	1	2	3	4	5	6
3) I find it difficult to stay focused on what's happening in the present.	1	2	3	4	5	6
4) I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.	1	2	3	4	5	6
5) I tend not to notice feelings of physical tension or discomfort until they really grab my attention.	1	2	3	4	5	6
6) I forget a person's name almost as soon as I've been told it for the first time.	1	2	3	4	5	6
7) It seems I am "running on automatic," without much awareness of what I'm doing.	1	2	3	4	5	6
8) I rush through activities without being really attentive to them.	1	2	3	4	5	6
9) I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there.	1	2	3	4	5	6
10) I do jobs or tasks automatically, without being aware of what I'm doing.	1	2	3	4	5	6
11) I find myself listening to someone with one ear, doing something else at the same time.	1	2	3	4	5	6
12) I drive places on 'automatic pilot' and then wonder why I went there.	1	2	3	4	5	6
13) I find myself preoccupied with the future or the past.	1	2	3	4	5	6
14) I find myself doing things without paying attention.	1	2	3	4	5	6
15) I snack or eat without full awareness that I'm eating.	1	2	3	4	5	6

Notes: 1: Almost always, 2: Very frequently, 3: Somewhat frequently, 4: Somewhat infrequently, 5: Very infrequently, 6: Almost never.

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TABLE 2

A comparison of patients by the substance for which they seek treatment, and by mono versus polydrug use patterns

	Cannabis (*n* = 147)	Cocaine (*n* = 138)	Opioids (*n* = 70)	Alcohol (*n* = 69)	Mono (*n* = 207)	Poly (*n* = 108)
MAAS (SD)	3.81(.9)	3.83(1.1)	4.31(.8)*	3.52(1)	4(1)**	3.6(1.2)
Age, years (SD)	35.3(9.8)	41.2(10.1)	42.3(9.6)	41.6(9.2)	38.9(10.3)	37.3(9.9)
Male (%)	70.1	69	73.2	71.2	68.2	74.3
Ethnicity (%)						
AA	28.7	45.9	35.3	36.3	30.2	32.7
Caucasian	30.3	27	40.2	36.4	30.3	28.3
Hispanic	34.8	16.2	17.9	20.1	34.3	33.8
Asian	3	2.7	2.9	2.9	3	2.9
Other	3	5.4	3.1	4.3	2.5	3
Edu, years (SD)	12.8(2.2)	12.6(2.1)	12.5(2)	13.1(2.2)	13.1(2)	12.8(2.1)

Note:

* *T*-test between opioid and non-opioid users, $p = .02$;

** *T*-test between mono- and polydrug groups, $p = .04$.