



## Review

# A meta-analysis of the relationship between trait mindfulness and substance use behaviors<sup>☆</sup>



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## ABSTRACT

**Background:** The relationship between trait mindfulness and substance use behaviors has been inconsistent across studies. The current meta-analysis aimed at quantifying the magnitude of this relationship, and at determining how this relationship varies in context of (1) mindfulness facets, (2) substance type, (3) sample characteristics, and (4) substance use severity.

**Methods:** Using electronic databases, the literature search yielded 303 articles, but only 39 articles met inclusion criteria to be included in this meta-analysis. The relationship was quantified as a Pearson's  $r$  correlation coefficient for all studies.

**Results:** Findings indicated a small, negative, and significant trait mindfulness-substance use behaviors relationship ( $r = -0.13$ ). This relationship varied across substance type, clinical status of the sample, and substance use severity. Mindfulness facet was not a significant moderator; however, only particular facets (e.g., acting with awareness, non-judgment, and non-reactivity) were consistently associated with substance use behaviors.

**Conclusions:** This meta-analysis quantified the trait mindfulness-substance use behaviors relationship, which can be used as future effect size estimates. Findings also indicated that the trait mindfulness-substance use behaviors relationship was more robust: (1) for alcohol and tobacco use compared to marijuana use behaviors; (2) for problematic compared to non-problematic substance use behaviors; and (3) with inpatient compared to outpatient and non-clinical samples. Further work should continue to examine if acting with awareness, non-judgment, and non-reactivity mindfulness facets are more robustly associated with substance use behaviors. Failure to consider these factors, or collapsing across these factors, could explain the smaller or inconsistently reported associations across previous studies.

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<sup>☆</sup> Supplementary material can be found by accessing the online version of this paper. Please see [Appendix A](#) for more information.

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## 1. Introduction

Substance use behaviors are highly prevalent in the United States (Grant et al., 2004; Lopez-Quintero et al., 2011; Kessler et al., 2005) and often result in negative consequences—such as physical and psychological, interpersonal, and legal problems (Wills, 2005). Despite the high prevalence of substance use behaviors, only a small subset of individuals develops problematic levels of substance use (Anthony et al., 1994). Identifying protective factors that prevent substance use behaviors and the development of problematic substance use behaviors is necessary in order to design more effective treatment and prevention approaches. One potentially important factor is trait mindfulness (Black et al., 2012; Bramm et al., 2013; Brewer et al., 2009; Brister, 2012; Marlatt et al., 2004; Rogojanski et al., 2011). The present meta-analysis examines the relationship between trait mindfulness and substance use behaviors, along with factors that could influence this relationship (e.g., mindfulness facets, substance type, sample characteristics, and substance use severity).

### 1.1. Conceptualizing mindfulness

Although there are multiple definitions of mindfulness (Baer, 2011), mindfulness is commonly defined as a way of paying attention that is focused in the present moment in a non-judgmental, non-reactive, and compassionate manner (Baer, 2011; Kabat-Zinn, 1994, 2003). Through mindfulness, all experiences that enter awareness (e.g., distressing emotions and thoughts) are viewed as fleeting experiences that naturally rise and fall rather than experiences that should be avoided or acted upon (Kabat-Zinn, 2003; Marlatt et al., 2004). Mindfulness has been thought to be a naturally occurring individual difference or a dispositional trait (Brown and Ryan, 2003) that can be developed through meditative practices and mindfulness based interventions (Baer et al., 2006; Baer, 2011). Both trait mindfulness and the cultivation of mindfulness through interventions or practices can be assessed through self-report questionnaires (Baer et al., 2008; Brown and Ryan, 2003; Carmody and Baer, 2008; Kuyken et al., 2010).

Examination of instructions and definitions used in mindfulness practices and interventions, along with confirmatory and exploratory analyses of existing mindfulness questionnaires, indicates that trait mindfulness is multidimensional (Baer, 2011; Baer et al., 2006). In particular, one formulation suggests that mindfulness is comprised of five facets: (1) observing, which refers to noticing or attending to internal and external experiences; (2) describing, which refers to labeling internal experiences with words; (3) acting with awareness, which refers to attending to one's activities of the moment; (4) non-judgment, which refers to taking a non-evaluative stance toward thoughts and feelings; and (5) non-reactivity, which refers to the tendency to allow thoughts and feelings to come and go without being attached to them (Baer et al., 2006). These facets seem to represent dispositional qualities that are malleable through mindfulness training (Baer, 2011).

### 1.2. Trait mindfulness and substance use behaviors

Individuals with high levels of trait mindfulness are theorized to be better able to view aversive experiences as being transient

and to be less likely to engage in substance use behaviors as a way of coping with such experiences (Brewer et al., 2010; de Dios et al., 2012; Kabat-Zinn, 2003). Although there generally appears to be a negative relationship between trait mindfulness and substance use behaviors (Black et al., 2012; Bramm et al., 2013; Brewer et al., 2009; Brister, 2012; Rogojanski et al., 2011), some studies have failed to find this relationship (Philip, 2010; Rendon, 2006) or have reported a positive relationship between trait mindfulness and substance use behaviors (Leigh and Neighbors, 2009; Leigh et al., 2005).

Inconsistencies in the relationship might be explained by (1) the use of different mindfulness facets across studies, (2) assessment of different substance use behaviors across studies, and (3) by interactions among mindfulness facets (Eisenlohr-Moul et al., 2012). Collapsing across different mindfulness facets (e.g., observing, describing, acting with awareness, non-reactivity, and non-judgment) could weaken or obscure the robust relationship of specific facets of mindfulness with substance use behaviors (see Smith et al., 2003). This could account for the overall small relationship between trait mindfulness and substance use behaviors found in prior studies. Indeed, the five facets of mindfulness have been shown to be differentially related with substance use behaviors—with acting with awareness, non-judgment, and non-reactivity being the facets most frequently related to reduced substance use behaviors (Bodenlos et al., 2013; Fernandez et al., 2010; Leigh and Neighbors, 2009; Murphy and MacKillop, 2012). Additionally, trait mindfulness might be differentially related to distinct substance use behaviors (Black et al., 2011; Fernandez et al., 2010; Robinson, 2010). In particular, trait mindfulness has been most consistently related to alcohol use behaviors (Fernandez et al., 2010; Murphy, 2012; Murphy and MacKillop, 2012; Robinson, 2010), but the relationship has been less consistent for tobacco use (Adams et al., 2012a; Black et al., 2011, 2012; Luberto et al., 2011) and marijuana use behaviors (Bonn-Miller et al., 2010; Philip, 2010).

### 1.3. Study aims

Understanding the size of the relationship between trait mindfulness and substance use behaviors, along with identifying factors influencing this relationship, would allow for a better understanding of the degree of protection trait mindfulness confers against substance use behaviors, as well as the clinical utility of mindfulness interventions or trainings in decreasing substance use behaviors. The current meta-analysis aimed to quantify the relationship between trait mindfulness and substance use behaviors, and to examine how the size of the relationship varies across (1) mindfulness facets and (2) substance type. Furthermore, in exploratory analyses, sample characteristics (e.g., clinical status, gender, age, and race) and substance use severity (e.g., problematic vs. non-problematic substance use behaviors) were examined as potential moderators of the relationship.

## 2. Method

### 2.1. Study selection and coding

Articles were identified for inclusion with searches through electronic databases (Embase, Google Scholar, MedLine, PsychArticles, PsychInfo, PubMed, and Web of

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