Elsevier Editorial System(tm) for
Personality and Individual Differences
Manuscript Draft

Manuscript Number: PAID-D-18-00059R3

Title: The Relationship between Emotional Intelligence and Trait Mindfulness: A Meta-Analytic Review

Article Type: Review Article

Section/Category: Review Article (<10,000 words)

Keywords: emotional intelligence; mindfulness; meta-analysis

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Abstract: According to theory, emotional intelligence (EI) and trait mindfulness should be positively associated with each other; nevertheless, the reported effect sizes of this relationship were mixed across studies. This meta-analysis was done to clarify this line of research. The analysis found that (1) EI had a statistically significant association with trait mindfulness (overall EI: $\rho = .48$; self-report EI: $\rho = .48$; mixed EI: $\rho = .49$); (2) gender did not moderate the relationship between EI and trait mindfulness; (3) age was a statistically significant moderator of the relationship between EI and trait mindfulness (the association was stronger for older subjects); and (4) the type of scale used was a statistically significant moderator of the relationship between EI and trait mindfulness (FFMQ: $\rho = .72$; FMI: $\rho = .79$; MAAS: $\rho = .38$; other scales: $\rho = .60$).

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Dear Associate Editor Gerald Matthews,

Chao Miao (first author) and I would like to resubmit to *Personality and Individual Differences* our manuscript, "**The Relationship between Emotional Intelligence and Trait Mindfulness: A Meta-Analytic Review**". We have made the remaining changes you have requested, and we are glad that the paper is now closer to being accepted. We have submitted our response letter that goes over the changes, and the revised manuscript. We have been very pleased throughout the review process with the high quality of the reviewers' comments and with the helpful approach that they have taken to our manuscripts. We appreciate the help we have been given.

Respectfully yours,

Ron

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Humphrey, Ronald H. (2013). *Effective Leadership: Theories, Cases, and Applications*. SAGE Publications. Los Angeles. ISBN: 978-1-4129-6355-8.

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I have received a further evaluation of your submission to PAID from one of the previous reviewers and I have read it carefully myself. The manuscript is much improved and close to being acceptable for publication. The reviewer has two minor comments that require attention. Please revise the article in response to the comments below and resubmit one more time. I anticipate reaching a quick decision following resubmission.

Sincerely,

Gerald Matthews
Associate Editor

Response

Dear Editor Gerald Matthews,

Thank you for the opportunity to revise and resubmit our article again. We are excited to hear that our paper is close to being acceptable for publication. We followed the reviewer's suggestion and made the revisions in line with the reviewer's comments. Thank you again for your consideration of our manuscript.

Reviewer #1: Authors have adequately addressed my previous comments. In particular, authors have added the exact keywords, they have specified the language taken into account in the searches, they have specified the effect size in Table 1, they have replaced the first person tenses with impersonal forms, they have provided correlations in the right way (without zero before the point), and they gave improved the manuscript's English level.

Response

Thank you. We are glad to hear that our revisions have met your expectations.

Although in the first round I asked for more information in Table 2, I agree with Reviewer 2 in that the last paragraph in p. 13 (first paragraph of "Main Effects and Moderator Effects") belongs to a table note (and not to the text). In fact, it is enough with the information offered in the note that contains Table 2. Thus, I would remove that paragraph.

Response

Thanks a lot for your comment. We followed your suggestion and removed that content in accordance with your advice.

As a last comment, throughout the text, "EI" and "Emotional intelligence" are used interchangeably. I would suggest equalling the use of the concept throughout the manuscript.

Response

Thank you for spotting our inconsistency on this. We spelled out emotional intelligence and gave its abbreviation in both the abstract and the first paragraph of the paper during our initial mention of EI. In the first paragraph, we found a sentence where we used the term "emotional intelligence" even though we had just given the abbreviation (EI). We have corrected this to use "EI". We also found a spot where we used "Emotional Intelligence" as a header; we changed this to "EI". A search for the phrase "emotional intelligence" also found that it was used when giving the name of scales, e.g., the Wong and Law Emotional Intelligence Scale (WLEIS). We kept the spelled out version when giving the names of the scales, but used the scale abbreviations for later references. We also kept the spelled out version when it was part of a quote, or in a references. Otherwise, EI is used throughout the manuscript.

***Title page with author details**

The Relationship between Emotional Intelligence and Trait Mindfulness:

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Abstract

According to theory, emotional intelligence (EI) and trait mindfulness should be positively associated with each other; nevertheless, the reported effect sizes of this relationship were mixed across studies. This meta-analysis was done to clarify this line of research. The analysis found that (1) EI had a statistically significant association with trait mindfulness (overall EI: $\bar{\rho}$ = .48; self-report EI: $\bar{\rho}$ = .48; mixed EI: $\bar{\rho}$ = .49); (2) gender did not moderate the relationship between EI and trait mindfulness; (3) age was a statistically significant moderator of the relationship between EI and trait mindfulness (the association was stronger for older subjects); and (4) the type of scale used was a statistically significant moderator of the relationship between EI and trait mindfulness (FFMQ: $\bar{\rho}$ = .72; FMI: $\bar{\rho}$ = .79; MAAS: $\bar{\rho}$ = .38; other scales: $\bar{\rho}$ = .60).

Keywords: emotional intelligence; mindfulness; meta-analysis

The Relationship between Emotional Intelligence and Trait Mindfulness: A Meta-Analytic Review

Introduction

According to Brown and Ryan (2003), mindfulness is "most commonly defined as the state of being attentive to and aware of what is taking place in the present" (p. 822). They described it as a type of enhanced attention and they contrasted mindfulness with situations where people may be distracted from the present moment by anxieties or fantasies, preoccupied by multitasking, or behaving compulsively or automatically. Mindfulness also involves attending to the present moment in a nonjudgmental or accepting way (Baer, Smith, & Allen, 2004; Giluk, 2009; Kabat-Zinn, 1994). Trait mindfulness includes the disposition to be aware of one's emotions (Brown & Ryan, 2003). Brown and Ryan (2003) stated, "For example, in speaking with a friend, one can be highly attentive to the communication and sensitively aware of the perhaps subtle emotional tone underlying it" (p. 823). Likewise, emotional intelligence (EI) also encompasses being aware of one's emotions (as well as others' emotions). Best-selling EI authors, such as Daniel Goleman (1995), have also published on mindfulness (Goleman, Langer, David, & Congleton, 2017). Thus, researchers have begun to examine how the two constructs are related (e.g., Schutte & Malouff, 2011; Wright & Schutte, 2014).

Research findings indicate that mindfulness encourages the development of a set of key abilities or competencies comprising EI, and that EI may be a mediating variable between mindfulness and positive outcomes (Schutte & Malouff, 2011). For example, Schutte and Malouff (2011) used the Assessing Emotions Scale (AES, Schutte, Malouff, & Bhullar, 2009; Schutte et al., 1998) to examine whether mindfulness is associated with EI and with subjective well-being. The AES measures how proficiently people identify, understand, regulate, and

harness emotions in themselves and others. They concluded (2011, p. 1116) that "Higher levels of mindfulness were associated with greater emotional intelligence, positive affect, and life satisfaction and lower negative affect. … Emotional intelligence mediated between mindfulness and higher positive affect, lower negative affect, and greater life satisfaction." Likewise, Bao, Xue, and Kong (2015) found that mindfulness predicted all four dimensions of the Wong and Law Emotional Intelligence Scale (WLEIS, Self Emotion Appraisals, Others' Emotion Appraisals, Regulation of Emotion, and Use of Emotion; Wong & Law, 2002). Moreover, they found that two of the dimensions (Regulation of Emotion, Use of Emotion) partially mediated the effects of mindfulness on perceived stress.

The mechanisms underlying mindfulness involve one's receptive attention to psychological states, which resemble the construct of EI because one aspect of EI relates to perceptual clarity about one's emotional states (Brown & Ryan, 2003). That is why EI has been routinely included as a variable in the studies that have focused on the scale development of mindfulness. These studies needed to demonstrate mindfulness's association with related variables such as EI (e.g., Baer et al., 2006; Brown & Ryan, 2003). Despite the plausible relation between EI and trait mindfulness, the reported effect sizes across studies regarding this relation were highly mixed, ranging from weak (around .10) to strong (around .70). For example, Heidari and Morovati (2016) reported a correlation of .15, whereas Wright and Schutte (2014) reported a correlation of .70 for the relationship between EI and trait mindfulness. Hence, this meta-analysis aims to report an overall estimate of the relationship between EI and trait mindfulness. This study also aims to explore what accounts for the heterogeneity in effect sizes across studies from both conceptual and methodological perspectives. A meta-analytic integration is a much-needed addition to the fast growing EI and trait mindfulness literature. This meta-analysis aims to clarify

the empirical landscape of the research regarding EI – trait mindfulness and pinpoint the areas where more research is needed.

Theory and Hypotheses

EI

EI is an emotion-related individual difference variable that has underpinned a substantial portion of the work on emotion, especially at the micro level of analysis (Ashkanasy, Humphrey, & Huy, 2017). EI can be classified into three types, which are ability EI, self-report EI, and mixed EI (Ashkanasy & Daus, 2005; Miao, Humphrey, & Qian, 2017a). Ability EI measures are based on the concept that EI is a type of intelligence, and like traditional cognitive intelligence measures, they use objective right and wrong questions to assess EI (Mayer, Caruso, & Salovey, 1999). For example, the Mayer, Salovey, and Caruso Emotional Intelligence Test (MSCEIT V2.0) (Mayer, Salovey, Caruso, & Sitarenios, 2003) measures four branches of abilities: (a) emotional perception; (b) using emotions to facilitate thought; (c) understanding emotions; and (d) managing emotions (Mayer, Roberts, & Barsade, 2008).

Although some EI scholars conceptualize EI as a type of intelligence, many others in the self-report and mixed EI categories view it as a type of trait. For example, Petrides and his co-authors state that trait EI is "a constellation of behavioral dispositions and self-perceptions concerning one's ability to recognize, process, and utilize emotion-laden information." (Petrides, Frederickson, & Furnham, 2004, p. 278). Furthermore, Petrides, Pita, and Kokkinaki (2007) examined how the Trait Emotional Intelligence Questionnaire (TEIQue) (Petrides, 2009a, 2009b; Petrides & Furnham, 2003) relates to other personality constructs. They used "factor analyses to determine the location of trait EI in Eysenckian and Big Five factor space. The results showed that trait EI is a compound personality construct located at the lower levels of the two

taxonomies." (Petrides et al., 2007, p. 273). They maintain that this lends credibility to the "conceptualization of trait EI as a lower-order construct that comprehensively encompasses the emotion-related facets of personality" (Petrides et al., 2007, p. 287). Their arguments and results suggest that trait EI should also encompass the emotion-related facets of mindfulness.

EI scales in the EI self-report category include the Workgroup Emotional Intelligence Profile (WEIP, Jordan, Ashkanasy, Hartel, & Hooper, 2002; Jordan & Troth, 2011) and the WLEIS (Wong & Law, 2002) previously described. These two EI self-report scales are based on the four branches of the Mayer, Caruso, and Salovey (1999) theoretical model but use self-reports instead of ability items.

Mixed EI measures are also based on self-report measures but contain a wider set of variables (e.g., a mix of competencies, behaviors, and/or skills). For example, Bar-On, Brown, Kirkcaldy, and Thome (2000) defined the Bar-On EQ-i as a type of noncognitive intelligence, and state, "Noncognitive intelligence is defined as an array of emotional, personal, and social abilities and skills that influence an individual's ability to cope effectively with environmental demands and pressures" (p. 1108). According to the Bar-On manual (Bar-On, 1997, p. 1; 2004), the EQ-i consists of five factors and associated subscales: "(1) Intrapersonal (Self-Regard, Emotional Self-Awareness, Assertiveness, Independence, and Self Actualization); (2) Interpersonal (Empathy, Social Responsibility, and Interpersonal Relationship); (3) Stress Management (Stress Tolerance and Impulse Control); (4) Adaptability (Reality Testing, Flexibility, and Problem Solving); and (5) General Mood Scale (Optimism and Happiness)." Likewise, the Emotional and Social Competency Inventory (ESCI) has 14 dimensions, which include emotion-related traits, skills, and competencies (Boyatzis, Brizz, & Godwin, 2011).

EI has predicted various psychological, behavioral, work-related, and non-work related outcomes, such as job performance, job satisfaction, leadership effectiveness, leadership behaviors, organizational commitment, turnover intention, academic performance, health, and job resources (Boyatzis, Smith, Van Oosten, & Woolford, 2013; Goleman, 1995; Goleman, Boyatzis, & McKee, 2013; Miao, Humphrey, & Qian, 2016, 2017b, 2018; Miao et al., 2017a; O'Boyle et al., 2011; Petrides et al., 2004; Schutte et al., 2007). Research findings have also demonstrated that EI contributes incremental variance in predicting various criteria after controlling for Big Five personality traits, cognitive ability, positive and negative affectivity, self-rated job performance, and/or general self-efficacy (Andrei et al., 2016; Miao, Humphrey, & Qian, 2017c; Petrides, Pérez-González, & Furnham, 2007).

Mindfulness

There exist some disagreements over the nature and definition of mindfulness, as well as the factor structure of mindfulness (Petrides, Gómez, & Pérez-González, 2017; Siegling & Petrides, 2014). Nevertheless, researchers appear to agree that "(a) mindfulness can be achieved without meditation; (b) attaining a mindful state is an inherent human capability; (c) mindfulness is both a state and a trait; anyone can attain a state of mindfulness but there are individual differences in tendency toward mindfulness; and (d) mindfulness is not always deliberate; sometimes it can occur subconsciously" (p. 81, Mesmer-Magnus, Manapragada, Viswesvaran, & Allen, 2017). Research indicates that mindfulness and/or mindfulness-based therapy or exercises might improve well-being, mitigate clinical and nonclinical problems (e.g., anxiety, stress, depression, negative feeling, pain, and burnout, etc.), and result in positive work outcomes (e.g., improved work performance, job satisfaction, and social relations) (Brown & Ryan, 2003; Mesmer-Magnus et al., 2017; Schutte & Malouff, 2011; Wright & Schutte, 2014).

The Relationship Between EI and Trait Mindfulness

Mindfulness stimulates the development of emotional regulation and enhances people's recognition of their own and others' emotions; further, the nonjudgmental and self-regulating aspects of mindfulness may enable individuals to more accurately decipher their own and others' emotions and to possess better emotion management capacities (Schutte & Malouff, 2011; Wang & Kong, 2014). Mindfulness is associated with adaptive emotional functioning and helps to reorient individuals away from maladaptive processes, thus minimizing psychological distress (Mesmer-Magnus et al., 2017; Schutte & Malouff, 2011). Hence, some of the core aspects of trait mindfulness are related to emotion regulation and emotion perception, which are also core components of EI. This leads to the following hypothesis:

Hypothesis 1: EI is positively related to trait mindfulness.

Conceptual and Methodological Moderators

There is considerable debate in the literature about whether men and women differ in their levels of EI, and women are often assumed to have higher EI. In contrast to this perspective, Taylor and Hood's (2011) research found no evidence for the widely-assumed female advantage in emotional competencies. Regardless of whether there are differences in the mean levels of EI according to gender, it is still possible that gender could moderate the relationships between EI and other variables. For example, Byron (2007, p. 713) found that "Female but not male managers who more accurately perceived non-verbal emotional expressions received higher performance ratings from their supervisor and higher satisfaction ratings from their subordinates." In contrast, Koveshnikov, Wechtler, and Dejoux (2014, p. 362) hypothesized that moderation effects on EI would be stronger for women, yet they concluded that "our analysis reveals an interesting interaction effect between gender and the ability to appraise and express emotions:

the influence of the latter on all three dimensions of CCA [cross-cultural adjustment] tends to be slightly stronger for male than female expatriates" [Note: the authors stated that the 3-way interaction "tends to be slightly stronger" because the statistical significance level is only .10]. Another study also found stronger effects for men when looking at the relationship between ability EI and depression (Salguero, Extremera, & Fernández-Berrocal, 2012, p. 31); this study concluded that "whereas lower scores in ability EI were a significant determinant of depression among men, ability EI was not associated with depression in women." Likewise, Miao and his co-authors hypothesized that gender would moderate the relationship between EI and job satisfaction (with stronger effects for women), but their meta-analysis found no difference between men and women in the relationship between EI and job satisfaction (Miao et al., 2017b). The above controversy led to the following hypothesis:

Hypothesis 2: Gender moderates the relationship between EI and trait mindfulness in such a way that this relationship is stronger when the percentage of male subjects is low than when the percentage of male subjects is high.

Very little research has examined how EI varies with age. However, what research that has been done suggests that EI improves over the life course because of maturation, learning, and training (Extremera, Fernández-Berrocal, & Salovey, 2006; Mayer, Caruso, & Salovey, 1999). A study of Egyptian faculty members found that EI did increase with age (El Badawy & Magdy, 2015). However, the Miao et al. (2017b) meta-analysis found that the relationship between EI and job satisfaction did not differ by either age or tenure. Whether the relationship between EI and other outcome variables varies with age is still unknown. This suggests the following hypothesis:

Hypothesis 3: Age moderates the relationship between EI and trait mindfulness in such a way that this relationship is stronger when the age of subjects is high than when the age of subjects is low.

There are variations in factor structures and contents across different trait mindfulness scales (Mesmer-Magnus et al., 2017). For example, the Five Facets Mindfulness Questionnaire (FFMQ) is a multidimensional measure that is comprised of five factors (Baer et al., 2006), whereas the Mindful Attention Awareness Scale (MAAS) is a unidimensional scale (Brown & Ryan, 2003). Although different scales of trait mindfulness supposedly tap the same construct, Baer et al. (2006) correlated different scales of mindfulness and found a wide range of correlations. For example, MAAS has a correlation of only .31 with FMI (Freiburg Mindfulness Inventory). This suggests that these two trait mindfulness scales may differentially tap the construct domain of trait mindfulness. Due to the differences in length, comprehensiveness, facets, and conceptualization across trait mindfulness scales, different trait mindfulness scales may vary in tapping the construct domain of trait mindfulness, thus resulting in differences in associations with other variables. Thus, the following exploratory research question is raised:

Research Question: Do the scales of trait mindfulness moderate the relationship between EI and trait mindfulness?

Method

Article Search and Inclusion Criteria

The article search specified the range of dates, starting from the earliest date of each database, journal, and conference to the year 2018. A computerized search of the usual plethora of literature databases was used to find relevant literature (ABI/INFORM, EBSCO Host, Google Scholar, JSTOR, ProQuest Dissertations and Theses, PsycNET, ScienceDirect, and Social

Sciences Citation Index). The keywords used were emotional intelligence, emotional ability, emotional competency, mindfulness, and trait mindfulness. Google websites (i.e., Google and Google Scholar) and pertinent conferences related to psychology and management were also searched to identify unpublished papers (Academy of Management, Southern Management Association, and Society for Industrial and Organizational Psychology). The following journals were also searched: *Academy of Management Journal, Administrative Science Quarterly, Emotion, Journal of Applied Psychology, Journal of Management, Journal of Management Studies, Journal of Organizational Behavior, Journal of Occupational and Organizational Psychology, Journal of Personality, Journal of Personality and Social Psychology, Journal of Research in Personality, Journal of Vocational Behavior, Organizational Behavior and Human Decision Processes, Organization Science, Personality and Individual Differences, Personality and Social Psychology Bulletin, Personnel Psychology*, and *Psychological Science*. The English language was used in these searches. The search yielded some articles written in Chinese and Korean languages that had English abstracts and titles. Two of the authors are bilingual in Chinese and English and they were able to code the Chinese articles. Further, they also read and coded the article written in the Korean language with the help of a translator.

There were three inclusion criteria: (1) the eligible studies must be empirical and quantitative; (2) the eligible studies must operationalize mindfulness as a trait or disposition; and (3) the included studies had to report at least one correlation coefficient between EI and trait mindfulness, or report sufficient statistics that allowed the conversion into effect sizes through Lipsey and Wilson's (2001) and/or Peterson and Brown's (2005) methods. There were no other criteria, such as the age of subjects, the health condition of subjects, and the time during which studies had to be conducted. A flow chart of the article search processes and the inclusion funnel

is shown in Figure 1. The funneling process resulted in 17 studies, which contained 19 samples for inclusion in the meta-analysis (k = 19, N = 4,771). The included studies are denoted by an * in the reference list. Table 1 gives the description of the included studies.

Insert Figure 1 about Here

Insert Table 1 about Here

Coding and Meta-Analytic Procedures

Each study was coded according to the EI measure that was used: (a) ability EI, (b) self-report EI, and (c) mixed EI; this classification of EI is consistent with prior meta-analyses (e.g., Miao et al., 2017a; O'Boyle et al., 2011). Only one study used an ability EI measure, and this study was also unpublished. Therefore, this study was deleted from the meta-analysis, and the meta-analysis was conducted on studies that used self-report and mixed EI measures. The percentage of male subjects in each study was coded using the method developed by Bae, Qian, Miao, and Fiet (2014). The mean age of subjects was also coded, as in other meta-analyses (e.g., Miao et al., 2017b). Each study clearly reported the trait mindfulness scale that was used and was coded accordingly. Studies were assigned into different subgroups according to the trait mindfulness scale employed in each study. This allowed the examination of whether the effect size of the EI – trait mindfulness relationship varied according to the scales used. The majority of the included studies used FFMQ, FMI, or MAAS trait mindfulness scales, so three subgroups were created for these studies. The samples which used scales other than FFMQ, FMI, or MAAS were assigned to the "others" category. The "others" category contains the studies using the Kentucky Inventory of Mindfulness Skills (KIMS) and the Cognitive and Affective Mindfulness Scale–Revised (CAMS–R). This was done because there were not enough studies to further sub-divide the category of "others". Two coders who have PhD degrees and prior experience in

performing meta-analysis research independently coded all studies. The initial inter-coder reliability was excellent (Cohen's Kappa = .93) (Fleiss, 1981). Coding disagreement was resolved via discussion and a 100% consensus was finally reached.

Random-effects meta-analyses were performed by following Schmidt and Hunter's (2015) methods. Since both EI and trait mindfulness are psychological constructs, there exists unreliability (or measurement errors) in both of them. Hence, measurement errors were corrected in both independent and dependent variables for each effect size. Coefficient alphas of both EI and trait mindfulness were used to perform psychometric corrections for measurement errors. Using coefficient alphas allowed for the correction of specific factor error and random response error (Schmidt, Le, & Ilies, 2003). Table 2 shows the reported $\bar{\rho}$ (corrected sample-size-weighted mean correlation) in addition to $\bar{r}$ (uncorrected sample-size-weighted mean correlation). Corrected 95% confidence intervals were computed to determine the statistical significance of effect sizes. An effect size is statistically significant at the .05 level when its corrected 95% confidence interval excludes zero. Both the Var_{art}% statistic and the corrected 80% credibility interval were calculated to assess the heterogeneity in effect sizes and the potential presence of moderators. Moderators may operate in meta-analytic distributions if less than 75% of the variance in the meta-analytic effect sizes is explained by statistical artifacts (i.e., $Var_{art}\% < 75\%$). The Var_{art}% statistic is similar to the I^2 statistic; yet, I^2 refers to the percentage of the variance that is not due to statistical artifacts (Higgins, Thompson, Deeks, & Altman, 2003) whereas Var_{art}% refers to the percentage of variance explained by statistical artifacts. The Var_{art}% statistic was chosen to examine the heterogeneity in effect sizes rather than the I^2 statistic, because this analysis uses Schmidt and Hunter's tradition of psychometric meta-analysis and the Var_{art}% statistic is the one that is utilized in that meta-analytic approach. Further, a wide corrected 80%

credibility interval also indicates the potential presence of moderators in meta-analytic distributions. Sub-group analyses based on z-tests (Hunter & Schmidt, 1990) were performed to investigate the effects of categorical moderators in accordance with prior research (e.g., Garrett, Miao, Qian, & Bae, 2017).

Meta-Regression Analyses

To prevent continuous moderators from being degraded into split categories, meta-regression was conducted to analyze continuous moderators (i.e., gender and age). The meta-regression technique treated effect size as the dependent variable and moderators as the independent variables. This method allowed the examination of multiple moderators simultaneously in order to find the relative explanatory power of each moderator when other moderators were accounted for (Steel & Kammeyer-Mueller, 2002). Fisher's z transformation was performed on effect sizes and inverse variance was specified as weights. The method of moments random effects meta-regression used was based on Lipsey and Wilson (2001).

Results

Main Effects and Moderator Effects

Table 2 displays the meta-analytic findings. EI had a positive and statistically significant relationship to trait mindfulness ($\bar{\rho}$ = .48). Thus, the hypothesis was supported. EI was positively related to trait mindfulness across two types of EI (self-report EI: $\bar{\rho}$ = .48; mixed EI: $\bar{\rho}$ = .49) at a statistically significant level.

According to Schmidt and Hunter's (2015) recommendations, moderators may need to be examined when Var_{art}% is less than 75% due to the heterogeneity in effect size distributions. The Var_{art}% value of the EI – trait mindfulness meta-analytic distribution was only 10%, thus supporting the search for moderators. With regard to subgroup moderator analyses, the

relationship between EI and trait mindfulness varied (at a statistically significant level) according to the type of trait mindfulness scale used ($\tilde{\rho}$[FFMQ] = .72; $\tilde{\rho}$[FMI] = .79; $\tilde{\rho}$[MAAS] = .38; $\tilde{\rho}$[other scales] = .60).

Insert Table 2 about Here

Meta-regression analyses were performed to analyze the effects of continuous moderators (see Table 3). Gender was not a statistically significant moderator of the relationship between EI and trait mindfulness, whereas age was a statistically significant moderator of the relationship between EI and trait mindfulness (B = .02, $p < .01$). Hence, Hypothesis 2 was not supported, whereas Hypothesis 3 was supported.

Insert Table 3 about Here

Publication Bias Analyses

Trim-and-fill analysis was performed to examine the influence of publication bias on the meta-analytic results. With regard to the distribution of the EI – trait mindfulness relationship, trim-and-fill analysis demonstrated that no sample was imputed in the funnel plot and the difference between the observed mean correlation and adjusted observed mean correlation was zero, which suggested the absence of publication bias.

Discussion

EI has been associated with a myriad of prosocial and positive outcomes; analogously, trait mindfulness has also been associated with an impressive set of positive outcomes (Schutte & Malouff, 2011). The two constructs share some similarities in that they both involve the recognition and regulation of emotions; thus, a number of studies have examined the interrelations between these two constructs (e.g., Petrides et al., 2017; Schutte & Malouff, 2011; Wang & Kong, 2014). Nevertheless, the reported effect sizes of the relationship between EI and

trait mindfulness were mixed across these studies. This meta-analysis found that EI was positively related to trait mindfulness ($\tilde{\rho}$ = .48; adjusted for measurement error).

Gender did not moderate the relationship between EI and trait mindfulness. However, age was a moderator, such that the association between EI and trait mindfulness was stronger for older subjects.

The relationship between EI and trait mindfulness differed according to the type of trait mindfulness scale used. The studies that used the MAAS trait mindfulness scale had the smallest effect size for the relationship between EI and trait mindfulness. This finding might reflect the differences in construct domain sampling across different trait mindfulness scales, meaning that the MAAS may not focus as much on emotional domains as do the other scales (e.g., FFMQ, FMI, and other scales). An examination of the 15 items in the MAAS (Brown & Ryan, 2003) shows that only two items refer to emotions or feelings. Item number one (Brown & Ryan, 2003, p. 862) is, "I could be experiencing some emotion and not be conscious of it until some time later." The other item is, "5. I tend not to notice feelings of physical tension or discomfort until they really grab my attention." The other items refer to not paying attention, behaving automatically, being preoccupied or unaware, etc. In contrast, the FFMQ has a variety of items related to emotions, and four out of its five subscales have items directly on emotions (Baer et al., 2006, see pp. 34-35). The first factor, "Nonreactivity to Inner Experience", focuses on the ability to not react to one's emotions and is thus strongly related conceptually to the emotion regulation dimension of EI. The second factor is labelled, "Observing/noticing/attending to sensations/perceptions/thoughts/feelings" and is conceptually related to the EI ability to be aware of one's emotions. Although the third factor focuses on the concentration/distraction component of mindfulness, the fourth factor is "Describing/labeling with words" and includes items about

expressing emotions. The fifth factor is "Nonjudging of experience," and includes items about not being judgmental about the emotions one is feeling. This focus on emotions explains why the FFMQ has a higher correlation with EI than does the MAAS.

Limitations and Future Directions

This study has several limitations. First, the Var_{art}% values are small across a majority of the meta-analytic distributions in the present study. According to Schmidt and Hunter's 75% rule, moderators may operate in a meta-analytic distribution when the Var_{art}% value is less than 75%. Although several moderators were tested, it appears that there still exist unidentified moderators that may influence the strength and direction of the EI – trait mindfulness relationship. For example, prior research has shown that the amount of emotional labor required by a job can moderate EI relationships (e.g., Miao et al., 2017a, 2017c). Future research may examine how the relationship between EI and trait mindfulness varies across different occupational groups and/or industries that call for different levels of emotional labor. Other job characteristics, such as the amount of interpersonal contact, job autonomy, responsibility, skill variety, etc., may also play a role. Research has shown that EI can partially mediate the relationship between mindfulness and stress (Bao et al., 2015), and the relationships among EI, mindfulness, and various other outcome variables need further examination and replication.

Second, some of the moderation tests are based on a small number of samples. For example, the meta-analytic distribution of the FMI subgroup only has two samples. Hence, one should exercise caution when interpreting the meta-analytic results based on a small number of samples. However, these preliminary results based on a small number of samples are still quite beneficial to develop the EI and mindfulness literature because they provide an interim

assessment of the current literature and clarify the areas where more research may be done (Miao, Rutherford, & Pollack, 2017).

Third, this study analyzed two types of EI measures based on self-reports. There is a new type of EI measure, called a behavioral approach, which is based on others' reports of the target person's EI-related behaviors (Boyatzis, 2016). Incorporating peer ratings, supervisors' ratings, subordinate ratings, etc., of behavior can add to the evidence on the validity of both mindfulness and EI. Since this behavioral approach to EI is still new, there were no studies on EI and mindfulness that used the behavioral approach, so this type of EI measure could not be included in this study. Researchers should consider incorporating peer and other ratings into their research on EI and mindfulness.

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Figure 1. A Flow Chart of Article Search Process and Inclusion Funnel

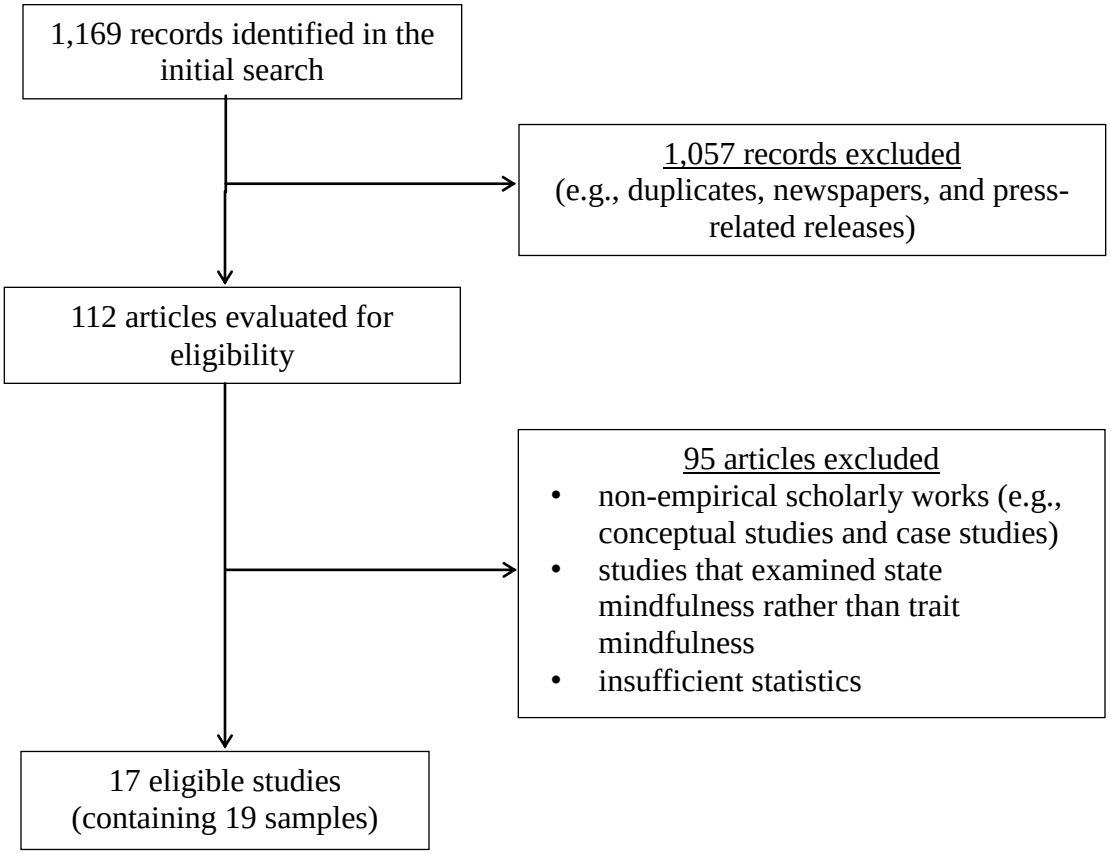

Table 1. Primary Studies Included in the Meta-Analysis

Authors	Year	Publication Status	Sample Size	EI Type	Male%	Age	Mindfulness Scale	*r*
Bao, Xue, & Kong	2015	Published	380	Self-Report EI	41.3%	27.2	MAAS	.34
Brown & Ryan	2003 - Sample 1	Published	313	Mixed EI	34.0%	19.5	MAAS	.46
Brown & Ryan	2003 - Sample 2	Published	187	Mixed EI	38.0%	19.7	MAAS	.42
Brown & Ryan	2003 - Sample 3	Published	145	Mixed EI	36.0%	19.8	MAAS	.37
Chhabra & Kaur	2013	Published	378	Self-Report EI	50.0%	16.5	MAAS	.11
Grant	2012	Unpublished	225	Self-Report EI	31.1%	38.6	FFMQ	.63
Griebel	2015	Unpublished	123	Self-Report EI	31.7%	24.2	FFMQ	.51
Heidari & Morovati	2016	Published	250	Self-Report EI	-	-	MAAS	.15
Jacobs et al.	2016	Published	427	Mixed EI	5.1%	34.1	Other	.43
Kotsou, Leys, & Fossion	2018	Published	228	Mixed EI	23.2%	43.7	MAAS	.42
Oh & Koh	2014	Published	151	Self-Report EI	0.7%	29.2	Other	.50
Park & Dhandra	2017	Published	319	Self-Report EI	48.3%	28.2	Other	.62
Petrides, Gómez, & Pérez-González	2017	Published	121	Mixed EI	64.5%	38.8	FFMQ	.74
Ralston	2016	Unpublished	44	Self-Report EI	34.1%	-	MAAS	.42
Schutte & Malouff	2011	Published	125	Self-Report EI	11.5%	34.2	FMI	.65
Shih	2010	Unpublished	434	Mixed EI	-	-	MAAS	.42
Siwach & Devi	2014	Published	400	Mixed EI	50.0%	-	MAAS	.27
Wang & Kong	2014	Published	321	Self-Report EI	43.0%	27.3	MAAS	.33
Wright & Schutte	2014	Published	200	Self-Report EI	22.5%	47.4	FMI	.70

Note: MAAS = Mindful Attention Awareness Scale; FFMQ = Five Facets Mindfulness Questionnaire; FMI = Freiburg Mindfulness Inventory; *r* = correlation coefficient.

Table 2. Meta-Analytic Results of the EI – Trait Mindfulness Relation

	k	*N*	$\bar{r}$	SD_r	$\hat{\rho}$	SD_ρ	CI LL	CI UL	CV LL	CV UL	Var_{art}%	Sig. Diff.
EI - Trait Mindfulness	19	4,771	.41	.17	.48	.18	.40	.57	.25	.72	10%	
EI Type												
a. Self-Report EI	11	2,516	.41	.21	.48	.23	.34	.62	.18	.77	7%	
b. Mixed EI	8	2,255	.41	.10	.49	.11	.41	.57	.35	.63	23%	
Mindfulness Scale												
a. FFMQ	3	469	.63	.08	.72	.10	.59	.84	.59	.84	25%	c
b. FMI	2	325	.68	.02	.79	.00	.73	.84	.79	.79	100%	c, d
c. MAAS	11	3,080	.32	.12	.38	.12	.30	.46	.22	.53	21%	a, b, d
d. Others	3	897	.51	.09	.60	.11	.46	.74	.46	.75	16%	b, c

Note. *k* = number of independent samples; *N* = sample size; $\bar{r}$ = uncorrected sample-size-weighted mean correlation; SD_r = sample-size-weighted standard deviation of observed mean correlations; $\hat{\rho}$ = corrected sample-size-weighted mean correlation; SD_ρ = sample-size-weighted standard deviation of corrected mean correlations; CI LL and CI UL = lower and upper bounds of corrected 95% confidence interval; CV LL and CV UL = lower and upper bounds of corrected 80% credibility interval; Var_{art}% = percent of variance in $\hat{\rho}$ explained by statistical artifacts; EI = emotional intelligence; FFMQ = Five Facets Mindfulness Questionnaire; FMI = Freiburg Mindfulness Inventory; MAAS = Mindful Attention Awareness Scale; Sig. Diff. = significant between-group difference. Letters in this column correspond to the letters in rows. They show that effect sizes significantly differ from one another at a .05 level.

Table 3. Meta-Regression Results

	Model 1	
	B	*SE*
Constant	-.03	.22
Gender	.00	.00
Age	.02**	.01
Q_{model}	9.77**	
$Q_{residual}$	11.31	
v	.03	
R^2	.46	
k	15	

Note: k = number of samples; B = unstandardized regression coefficient; *SE* = standard error of the estimate; R^2 = coefficient of determination; Q_{model} = a statistic that indicates whether a regression model explains a significant proportion of the variability across effect sizes (Lipsey & Wilson, 2001); $Q_{residual}$ = a statistic that indicates whether the remaining variability across effect sizes is homogeneous (Lipsey & Wilson, 2001); *v* = random-effects variance component.

** $p < .01$