

Mindfully in Love: A Meta-Analysis of the Association Between Mindfulness and Relationship Satisfaction

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Mindfulness is an individual practice, where one has a heightened awareness of the present moment. An extensive research literature finds links between trait mindfulness and individual-level physical and mental health benefits. A limited but growing amount of research focuses on the association between mindfulness and romantic relationship satisfaction. Though there have been comprehensive reviews, no study has statistically tested the magnitude of the association between mindfulness and relationship satisfaction. Better understanding the value of this practice for relationships can serve to inform community educators and practitioners focused on promoting healthy family relationships. This study used a meta-analytic technique focused on 12 effect sizes from 10 different studies, and found that the relationship between mindfulness and relationship satisfaction was statistically significant with an overall effect size of .27. This finding suggests that higher levels of mindfulness are associated with higher levels of relationship satisfaction; therefore, educators can reasonably consider level of mindfulness as an education target.

Keywords: mindfulness, relationship satisfaction, meta-analysis, relationship education

Introduction

Mindfulness is an open attention to and awareness of the present moment. This attentiveness is felt internally and externally by using meditative techniques such as bringing awareness to the breath, practicing yoga, and engaging in focused activities, such as mindful eating or walking (Barnes, Brown, Krusemark, Campbell, & Rogge, 2007). The practice is based in Eastern religious philosophy, but programs have been developed that glean the skills of the practice and teach them in an educational setting. Mindfulness is based on the principles of nonstriving, attention, beginner's mind, and nonjudgement. To be nonstriving means to have no agenda or purpose behind the choice to be mindful; rather mindfulness is about accepting and paying attention to experiences moment to moment. Having a beginner's mind is a key aspect of mindfulness, as well. Having an open and fresh attitude to your experiences while taking an

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impartial stance toward those experiences allows one to fully appreciate and understand the moment. The key to mindfulness is being open to each experience with thoughtfulness in order to notice feelings in a patient way. Being mindful also includes being nonjudgmental and gentle towards your experience and allowing yourself to let the experience exist exactly as it is without trying to force it to be different (Brantley & Millstine, 2008).

The most common training program is Mindfulness-Based Stress Reduction (MBSR) which was developed by John Kabat-Zinn in 1979. The MBSR program is typically eight weeks and focuses on different forms of mindful meditation practices. MBSR is used to develop an understanding of thoughts and feelings in the present moment in order to act skillfully, and not reactively, in all situations (Kabat-Zinn, 1990). Mindfulness practice typically involves setting aside a short period of time in one's day (anywhere between 5 minutes and an hour) to allow care for oneself in the moment, while recognizing and nurturing a healthy relationship with oneself and those around one.

There has been a major influx of interest in research on the use of mindfulness, with the majority of studies focused on physical and mental health benefits for the individual. There were 21 studies related to mindfulness published in 2000, but in 2013, there were 549 published articles related to mindfulness (Black, 2014). This surge coincides with increased funding by the National Science Foundation and the National Institute of Health to study the effect of mindfulness on health outcomes due to early indicators of health benefits (Hebert et al., 2001; Kabat-Zinn, Lipworth, Burney, & Sellers, 1987; Rosenzweig, Reibel, Greeson, Brainard, & Hojat, 2003). A meta-analysis conducted by Grossman, Niemann, Schmidt, and Walach (2004) of 20 studies indicated improvements in mental health (e.g., anxiety, depression, binge eating disorder), with effect sizes (Cohen's *d*) ranging from .50-.54 for observational and controlled studies. There were also improvements for physical health (e.g., chronic pain, fibromyalgia, cancer), with effect sizes ranging from .42-.53 for observational and controlled studies (Grossman et al., 2004).

Though there are robust findings of mindfulness' effect on mental and physical health outcomes, there is a limited but growing number of research studies focused on relational outcomes. Mindfulness is an individual practice, but the essence of mindfulness is relational because it promotes unity, connection, and closeness within relationships (Kabat-Zinn, 1990). Several mindfulness practices are "other-oriented" with a focus on gratitude or well-wishing for others, normally referred to as a "loving kindness" practice. Research has found that mindfulness increases empathy in healthcare practitioners (Shapiro, Schwartz, & Bonner, 1998) and promotes acceptance and less avoidant behaviors in romantic relationships (Kabat-Zinn, 1990; Wachs & Cordova, 2007). Some research has also suggested that practicing mindfulness has positively influenced social connectedness (Deci & Ryan, 1991), social skills, and perspective taking (Schutte et al., 2001) and has inhibited negative reactivity during conflict (Baer, 2003). More

recently, researchers link the level of mindfulness and marital satisfaction and relationship quality (Barnes et al., 2007; Burpee & Langer, 2005; Wachs & Cordova, 2007).

Most recently, Kozlowski (2013) consolidated the work conducted on the association between mindfulness level and relationship satisfaction in a literature review and pointed out a trend towards a positive link between mindfulness and relational outcomes. Still, a systematic and analytical synthesis is needed to statistically validate the association between these two concepts. Therefore, a meta-analysis, a statistical method of rendering results of comparable studies and empirically quantifying an overall finding from the aggregate, was utilized in the current study. This is different than a literature review which typically involves a more descriptive, tallying approach (i.e., the number of studies reporting a positive association, the number of studies reporting no association). A literature review may also include unintentional author's bias in the description of findings. A meta-analysis statistically aggregates results in order to achieve statistical power from multiple studies instead of just one study.

In sum, research suggests the connection between healthy relational behaviors and increased mindfulness, as well as between healthy relationship skills and relationship quality (Overall, Fletcher, & Simpson, 2010); therefore, using meta-analytic techniques across existing studies, we expect to find that there will be a significant and positive association between mindfulness levels and relationship satisfaction. This is a critical next step that may provide enhanced validation for community educators to consider addressing mindfulness as a means for promoting more positive relationship behaviors and higher relationship quality.

Methods

Search Procedure

In addition to the studies listed in Kozlowski's (2013) literature review, we searched the literature for research focused on the relationship between mindfulness and romantic relationship outcomes (i.e., relationship satisfaction, relationship quality, etc.). First, we searched PsycINFO and Google Scholar using the keywords "mindfulness," "meditation," "romantic relationship," "marriage," "relationship satisfaction," and "relationship quality." Then, we reviewed the bibliographies of all the articles discovered in the initial internet search to find new sources. Finally, we searched the Mindfulness Research Guide (MRG) website that compiles all research focused on mindfulness. The source of each study included in the current meta-analysis is described in Table 1 on the next page.

Table 1. Description of Studies Included in Meta-Analysis

# Study name	<i>n</i>	Mindfulness Measure	RS Measure	Intervention	Dissertation/ Published	Source
1 Burpee & Langer (2005)	95	LMS	DAS	No	Published	Kozlowski (2012)
2 Barnes, Brown, Krusemark, Campbell, & Rogge (2007) – Study 1	82	MAAS	DAS & IMS	No	Published	Kozlowski (2012)
3 Barnes, Brown, Krusemark, Campbell, & Rogge (2007) – Study 2	57	MAAS	DAS	No	Published	Kozlowski (2012)
4 Michaels (2007)	24	KIMS	DAS	Yes	Dissertation	PsycINFO
5 Wachs & Cordova (2007)	62	IRI	DAS	No	Published	Kozlowski (2012)
6 Saavedra, Chapman, & Rogge (2010)	1702	MAAS	MAT	No	Published	Google Scholar
7 Giolzetti (2011)	328	FFMQ	TLS	No	Dissertation	PsycINFO
8 Jones, Welton, Oliver, & Thoburn (2011)	104	FFMQ	DAS	No	Published	Google Scholar
9 Ormiston (2011)	300	MAAS	KMSS	No	Dissertation	PsycINFO
10 Wiggins (2012)	331	FFMQ	DAS	No	Dissertation	PsycINFO
11 Gambrel & Piercy (2014a)	32	FFMQ	CSI	Yes	Published	MRG website
12 Parent et al. (2014)	242	FFMQ	QMI	No	Published	MRG website

Coding Data

The search procedures produced 17 relevant articles, six of which could not be used. Five of these studies could not be used because they were reviews or qualitative research studies and one could not be used because it used the same data from the same participants as another study. We contacted two authors to gain the correlation coefficient for their study, and both replied back with relevant information. Therefore, 11 publications with 12 studies/samples provided data for 12 effect sizes. One study (Barnes et al., 2007) completed two studies within one publication; therefore, there are two effect sizes calculated from that paper. Further, Study 1 from the same article utilized two measures of relationship quality; therefore, we combined the correlations to obtain the effect size. Four of the studies used in this meta-analysis are dissertations that have not been currently published in academic journals.

Data from each study were extracted and entered into an Excel spreadsheet. Number of study participants, means and standard deviations for mindfulness scores and relationship outcome scores, and provided correlation were included in the spreadsheet. If correlation data were not

provided, other pertinent data such as regression coefficients, *F* statistics, and *t* statistics were recorded and converted. Additionally, the first author of this study contacted the authors of the study in question to obtain necessary data for the meta-analysis.

Measures

A strength of the meta-analytic technique is the ability to group concepts in order to statistically test for the magnitude of a relationship even though original studies use different scales and measures to assess the same concept. In this study, the measures used in the original studies varied for both mindfulness measures and relationship quality measures but were conceptually similar. Further, the data we examined were collected concurrently and not at two different time points. If the study was an evaluation of a mindfulness program, the data used from the publication for the purposes of this study were pre-intervention data to remove bias or influence of the intervention on the measures.

Mindfulness measures. Five of the twelve studies assessed mindfulness using the Five Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). This scale assesses mindfulness on four dimensions: observing, describing, acting with awareness, and accepting without judgment. Further, four of the twelve studies assessed mindfulness using the Mindful Attention Awareness Scale (MAAS; MacKillop & Anderson, 2007) which is a global measure of attention or awareness in the moment. The last study used personally-developed mindfulness scales. Burpee and Langer (2005) used the Langer Mindfulness Scale (LMS; Langer, 2004) that assesses four key concepts related to mindfulness: novelty seeking, novelty producing, flexibility, and engagement. On all scales, higher scores indicate higher levels of individual mindfulness.

Relationship satisfaction. Five of the ten studies utilized the Dyadic Adjustment Scale (DAS; Spanier, 1976), a valid measure of relationship quality. The Couple Satisfaction Index (CSI; Funk & Rogge, 2007), a scale that measures relationship satisfaction or happiness, was used in one of the studies. Another scale that was utilized was the Marital Adjustment Test (MAT; Locke & Wallace, 1959) which assesses relationship satisfaction. The Triangular Love Scale (TLS; Sternberg, 1997) was utilized in another study. It assesses intimacy, passion, and commitment which are Sternberg's (1997) components of a satisfying relationship. The final measure of relationship satisfaction was the Kansas Marital Satisfaction Scale (KMSS; Schumm et al., 1986) to assess intimacy and commitment. On all scales, higher scores indicate higher levels of relationship satisfaction.

Effect Size

In a meta-analysis, effect sizes are used to calculate the magnitude of a relationship. Selecting an effect size metric is an important endeavor and is based on the type of question being asked

(Rosnow & Rosenthal, 2003). For the purposes of this study, the effect size metric used is the Fisher's z score. This metric is calculated from two continuous variables and is interpreted similarly to a correlation. It was transformed from the Pearson's correlation coefficients from each study to reduce correlation-dependent variance (Fisher, 1915).

Publication Bias

Publication bias was addressed by using Rosenthal's fail safe number (Rosenthal, 1979) and by plotting a funnel graph with sample size and effect size. The fail-safe number indicates how many "nonsignificant" studies would need to be published to make the results of the meta-analysis in question null. This number is calculated in meta-analytic computer software through a logarithm. If the fail-safe number is greater than $5n + 10$ (n = number of studies included in the meta-analysis), the results can be considered robust (Rosenthal, 1979). If it is not, there may be some publication bias.

A funnel plot allows us to plot the relationship between effect size and sample size. Studies with statistically significant results have a greater probability of publication, which will skew, or hollow out, the funnel. Further, if the effect size decreases as the sample size increases, the true effect size is small to moderate or suggesting that nonsignificant results are not published (Duval & Tweedie, 2000).

Data Analysis

Comprehensive Meta-Analysis (CMA) software was used for all calculations and associated random effects models. A random effects model was utilized, rather than a fixed effects model, because a random effects model assumes and assesses different true effect sizes based on between-study differences, rather than estimating a one true effect size like a fixed effects model which assumes no study differences. Individual effect sizes were calculated before calculating the weighted grand mean effect. Heterogeneity was also calculated to understand variance within and between studies.

Results

Mean Effect Size

As seen in Table 2, the effect (Fisher's $z = .279$) of mindfulness on relationship satisfaction was small to moderate (small = .10; moderate = .30; large = .50; Cohen, 1988) but is significantly different than zero ($p = .000$), which indicates higher levels of mindfulness are related to higher levels of relationship satisfaction. The individual effect sizes for each study ranged from -.130 to .425. The test of heterogeneity, or across-study variation, was nonsignificant ($Q = 15.205$, $p =$

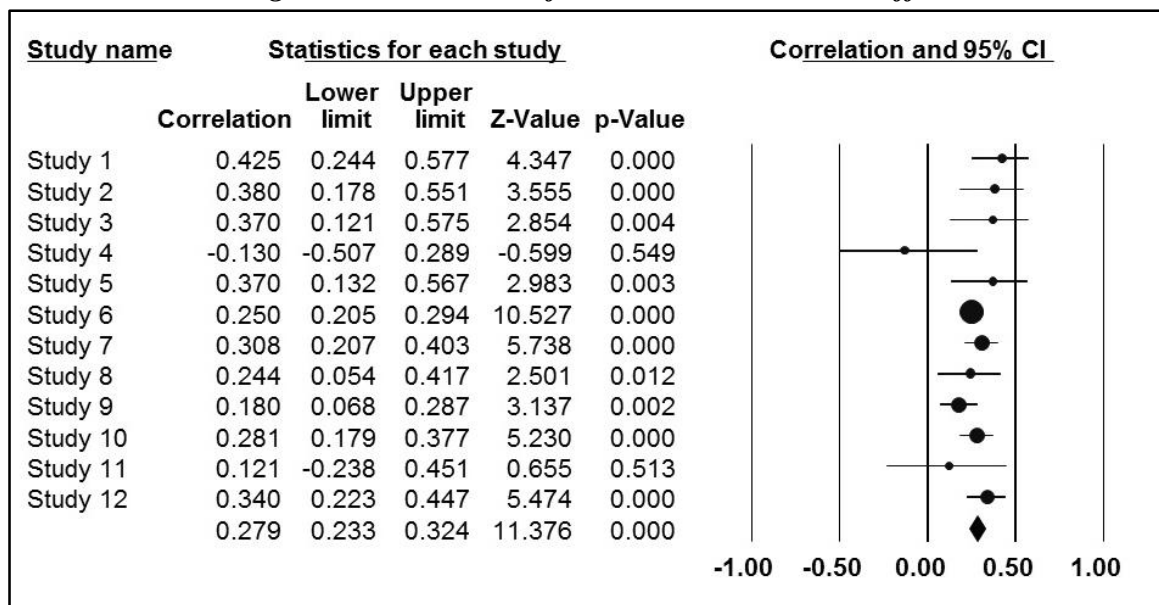
.173), indicating the true effect of mindfulness does not differ across studies, suggesting a robust relationship (Borenstein, Hedges, Higgins, & Rothstein, 2009; Higgins & Thompson, 2002).

Table 2. Results from the Random Effects Model of the Association Between Mindfulness and Relationship Satisfaction

	Effect Size and 95% CI			Significance		
	<i>k</i>	Fisher's <i>z</i>	Lower limit	Upper limit	<i>z</i>	<i>p</i>
Random Effects Model	12	.279	.233	.324	11.376	.000

Figure 1 shows the forest plot for the individual studies in the meta-analysis, as well as the overall mean effect for the association between mindfulness and romantic relationship satisfaction. A forest plot is a visual representation of the effect sizes and confidence intervals for each study, in addition to the overall effect and confidence interval. In sum, the association between mindfulness and relationship satisfaction was modest, but statistically significant.

Figure 1. Forest Plot of Individual and Overall Effect Size



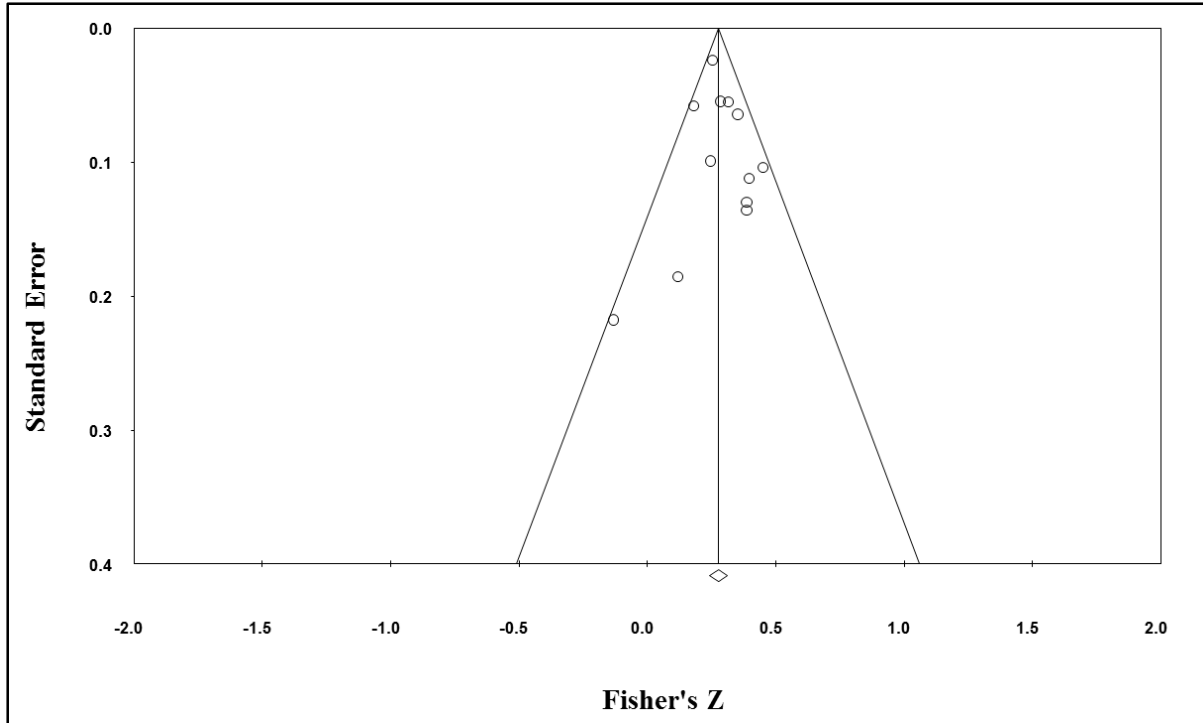
Note: Study number corresponds with studies included in Table 1.

Publication Bias

For the purposes of this study, the fail-safe number, calculated by the suggested equation $5n + 10$, is 70 (Rosenthal, 1979). The Rosenthal’s fail-safe number calculated in CMA was 63, suggesting there may be some publication bias. This may be because there are so few studies included in this meta-analysis. A funnel plot is a visual representation of the association between effect size and sample size. As shown in Figure 2, the funnel plot is relatively symmetric, which

is interpreted to mean no publication bias is present. Taken together, it appears that publication bias may not be a significant concern for this meta-analytic study.

Figure 2. Funnel Plot of the Standard Error and Fisher's z Effect Size



Discussion

The purpose of the present study was to determine the relationship between mindfulness and relationship satisfaction based on a meta-analysis of the available empirical evidence. Though mindfulness is an individual practice and is focused on experiencing one's own life in the present moment (Kabat-Zinn, 1990), there are elements of the practice that are relational and are expected to influence close relationships. The majority of the empirical work focused on the association between mindfulness and relationship satisfaction uses the principles of mindfulness and some relationship dynamic theory to serve as a reason to study the association. This study used empirical data from published and nonpublished sources to statistically assess the robustness of the link between mindfulness and relationship satisfaction. We find the association between mindfulness and relationship satisfaction is statistically significant, indicating when an individual is more mindful they are more satisfied in their romantic relationship.

This is noteworthy because as noted above, mindful practices are typically taught as an individual practice. There are, however, mindful practices that have an explicit focus on others, such as loving kindness meditations or aikido communication practices, which focus on caring

for others. In addition, mindfulness practice is about noticing many dimensions of the self, including feelings and thoughts related to relationships and interactions.

It may be that these aspects of other-oriented practices in Mindfulness Based Stress Reduction (MBSR) may serve to provide practical and attitudinal skills for addressing conflict more positively. In addition, the individual-focused elements of MBSR may positively influence the physical and mental health of the individual which may serve as a moderator of the stress response when in conflict with a partner, or the better physical or mental health outcomes (Grossman et al., 2004) may serve as a mediator of the relationship between mindfulness and relationship satisfaction. These are testable questions for future research. These results serve as further rationale for integrating mindfulness into relationship education or marital therapy to support other established efforts to improve the quality of the romantic relationship.

Implications

Newer applied work is combining mindfulness into relationship education programs. To date, there are four published studies assessing the effectiveness of a mindfulness-based relationship education programming on marital satisfaction or quality (Carson, Carson, Gil, & Baucom, 2004; Carson, Carson, Gil, & Baucom, 2007; Gambrel & Piercy, 2014a, 2014b). These studies focus on two separate programs, each developed independently. Carson and colleagues' (2004) program appears to improve levels of mindfulness and relationship satisfaction for nondistressed married couples. Further, Gambrel and Piercy's studies (2014a, 2014b) utilized a sample of expecting parents who reported improvements in mindfulness and relationship satisfaction, especially for men. Overall, the programs appear to positively impact the marital relationship in addition to improving levels of mindfulness.

To further support the marital relationship through mindfulness-based practices, practitioners can include more dyadic mindfulness practices, such as a loving kindness meditation or aikido communication. A loving kindness meditation allows participants to generate feelings of empathy, compassion, and gentleness towards another person while having a calming and stabilizing effect on the participants' minds (Kabat-Zinn, 1990). In recent work, it has been found that prayer for partner predicts greater relationship satisfaction and greater commitment to the relationship (Fincham, Beach, Lambert, Stillman, & Braithwaite, 2008), suggesting stating internally positive wishes or will for your partner can influence relational outcomes.

A more overt relational mindful practice is aikido communication whereby individuals within a dyad stop reactive and habitual reactions to conflict by uniting or blending with another's mind (Kabat-Zinn, 1990). One blends by listening, finding areas to agree, working together for a solution, and mutually agreeing on a compromise. This is done in a mindful and present manner to manage a conflictual situation in a healthy way. There may be other mindful practices that have a stronger emphasis on dyadic relationships.

Future Research

The current meta-analysis included 12 studies from 11 sources with useable data. Clearly, more research is needed to further validate this basic association. A larger empirical literature would also allow for tests of possible mediators or moderators of effects. Possible moderators may include gender, race/ethnicity, relationship status (i.e., married, engaged, dating, etc.), and previous exposure to meditation or mindfulness practices. Possible mediators may include emotion regulation skills, stress level, or physical and mental health.

Conclusion

In conclusion, this meta-analysis provides empirical evidence that the current literature on mindfulness and relationship satisfaction indicates more mindful individuals have higher relationship quality. This further validates the recent efforts to include mindfulness training in relationship education. Future basic and applied research to inform enhanced models of best practices for community education focused on promoting relational health is encouraged.

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* Indicates the studies that were included in the meta-analysis.

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