

Mindfulness Predicts Growth Belief and Positive Outcomes in Social Relationships

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**Abstract**

Prior research demonstrates that growth belief, or the implicit view that relationships are successful as a function of effort and cultivation, is associated with a variety of positive relational outcomes. Mindfulness, similarly, predicts a host of positive relationships outcomes, yet the mechanisms by which mindfulness has this positive influence are currently unclear. This study bridges research on implicit theories of relationships and mindfulness by arguing that individuals with greater mindfulness are also more likely to endorse growth belief, which then has a positive influence on relationships. Across two independent studies ( $N = 96$  in Study 1 and 139 in Study 2), results demonstrate that people with greater mindfulness are also more likely to endorse growth belief, and that this mediates the association between mindfulness and positive relationship outcomes. Results suggest that people with greater mindfulness tend to think about and approach their relationships in a more growth-minded way, which has positive implications for feelings of satisfaction and connectedness.

*Keywords:* mindfulness, implicit theories, relationship satisfaction.

### **Mindfulness Predicts Growth Belief and Positive Outcomes in Social Relationships**

Consider your answers to the following questions: Do you believe that a successful relationship depends on working through challenges and difficulties, and growing with your partner? Or, does a successful relationship primarily depend on finding a compatible partner? The answer to these questions, which ascertain social cognitive beliefs called *implicit theories of relationships*, have important implications for relationship outcomes (Knee, 1998; Knee & Petty, 2013; Mattingly, McIntyre, Knee & Loving, 2018). In particular, people with greater growth belief – those who believe successful relationships depend on working through difficulties and growing with their partner – demonstrate a variety of positive relationship outcomes, such as better responses to conflict (Knee, Patrick, Vietor, & Neighbors, 2004), and greater relationship satisfaction (Franiuk, Cohen & Pomerantz, 2002).

Despite the benefits associated with growth belief, no studies have examined its determinants. What factors might influence people to endorse a growth belief? One theoretically relevant variable is mindfulness, or the tendency to pay attention to present moment experiences in a non-judgmental way (Brown & Ryan, 2004). Buddhist and psychological authors argue that individuals who are high in mindfulness tend to non-judgmentally observe the changing nature of all phenomena, including their relationships (Maezumi, 2002; Ryan & Rigby, 2015). Having observed how their relationships tend to change, it is theoretically likely that individuals high in mindfulness would adopt an implicit theory that emphasizes the importance of adapting to and growing in the face of change. As such, the first goal of this study was to examine whether individuals who were high in trait mindfulness were more likely to endorse a growth belief with respect to their relationships.

Additionally, mindfulness, on its own, has been linked to a number of positive relationship outcomes, such as greater relationship satisfaction, more secure attachment, and enhanced responses to conflict (Barnes, Brown, Krusemark, Campbell & Rogge, 2007; Laurent, Laurent, Hertz, Egan-Wright & Granger, 2013; Pepping, Davis & O'Donovan, 2013). Yet, it is currently unclear as to the mechanisms by which mindfulness promotes positive relationship outcomes (Karremans, Schellekens & Kappen, 2017). Given that mindfulness may promote growth belief, and that growth belief, in turn, is associated with relational benefits, the second aim of this study was to examine whether greater growth belief could act as a mediator between mindfulness and beneficial relationships outcomes.

### ***Implicit Theories of Relationships and the Benefits of Growth Belief***

Implicit theories of relationships were proposed by Knee (1998), and refer to the idea that people have social cognitive beliefs about what makes for successful relationships. Implicit theories of relationships were developed based on research demonstrating that people hold implicit beliefs about the nature of things like intelligence, personality, and morality, and that these beliefs have important implications for behavior and psychological outcomes in these domains (e.g., Dweck, Chiu & Hong, 1995). People with greater *growth belief* feel that successful relationships depend upon resolving differences, working through challenges, and growing together as a couple. According to this view, relationship partners are capable of change, resolution of conflicts and differences is viewed as a fundamental part of relationships, and even if a relationship does not begin perfectly, through work, time, and effort, a relationship can thrive. People with greater *destiny belief* tend to feel that success in relationships depends on compatibility, or finding the right partner. People with high levels of this belief tend to feel that relationship partners are either right or wrong, and tend to look for cues as to whether or not the

individual they are dating is a good long-term fit. Importantly, prior research has demonstrated that these two beliefs exist separately (as opposed to two sides of the same continuum), and that someone can be high or low in both beliefs (Knee, 1998; Knee et al., 2003).

Although Knee and Petty (2013) note that the function of growth and destiny belief depend on the situation (i.e., neither of the beliefs are universally harmful or beneficial), a number of studies demonstrate that people with greater levels of growth belief experience a variety of positive relationship outcomes (Knee, 1998; Knee, Nanayakkara, Vietor, Neighbors, & Patrick, 2001; Knee, Patrick, Vietor, & Neighbors, 2004; Mattingly, McIntyre, Knee, & Loving, 2018). For instance, people with greater growth belief are less negatively influenced by conflicts with their relationship partner, probably because people with greater growth belief tend to see conflict as a fundamental part of relationships (as opposed to those with lower growth belief, who tend to see it as a threat to the success of the relationship; Knee et al., 2004). Knee et al. (2001) have also demonstrated that growth belief plays a role in the impact of ideal standards on relationship outcomes. Generally speaking, people report lower relationship satisfaction when their partner does not meet their ideal standards, however this association is mitigated when the person is high in growth belief and low in destiny belief (Knee et al., 2001). In other words, people with greater growth belief, when they are also low in destiny belief, tend to be more satisfied when their partner is less than perfect.

The benefits of growth belief are clear, and yet, no prior studies have examined the factors that make some people more likely to endorse growth belief. Because growth belief promotes positive relationship outcomes, it is important to identify factors that make individuals more likely to adopt this growth-oriented outlook on their relationships. Prior research and theory suggest mindfulness is one potential factor.

### *Mindfulness in Relationships*

Mindfulness is frequently defined as the tendency to direct attention to present moment experiences in a non-judgmental and accepting way (Baer, 2003; Bishop et al., 2004; Brown & Ryan, 2004; Karremans et al., 2015). Mindfulness has a host of benefits for individual well-being, including increases in psychological well-being (Brown & Ryan, 2003), improvements in attention and cognition (van Vugt, 2015), and positive implications for physical health (Carlson, Speca, Faris, & Patel, 2007; Creswell & Lindsay, 2014). Importantly, while mindfulness can be cultivated through meditation, trait-level differences also exist in the extent to which people are generally mindful in their daily lives (Brown & Ryan, 2003), and these trait-level differences have been assessed through self-report measures (Bergomi, Tschacher, & Kupper, 2013; Quaglia, Brown, Lindsay, Creswell, & Goodman, 2015).

A developing body of research demonstrates that, in addition to the personal benefits of mindfulness, it also has positive implications for social relationships (see Karremans et al., 2017 for a review). For example, a number of studies demonstrate that individuals who are higher in self-reported, trait mindfulness (such as assessed through the Mindfulness Attention Awareness Scale or the Five Facet Mindfulness Scale; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Brown & Ryan, 2003) experience greater satisfaction in their intimate relationships (e.g., Barnes et al., 2007; Jones, Welton, Oliver, & Thoburn, 2011; Wachs & Cordova, 2007). Additionally, in one controlled trial, couples who were randomly assigned to a mindfulness-based intervention experienced benefits in relationship outcomes, including relationship satisfaction, closeness, and acceptance of their partner across time (Carson, Carson, Gil & Baucom, 2004). Thus, the growing literature suggests that mindfulness has a positive influence on intimate relationships based on a diverse range of studies, with preliminary evidence of casual influence.

Why, exactly, might mindfulness<sup>1</sup> contribute to the development of growth belief in relationships? Theoretical sources provide at least two potential reasons: a) people with greater mindfulness tend to be more aware and accepting of *impermanence*, and b) people with greater mindfulness tend to be more present-focused and non-judgmental than those who are low in mindfulness.

In Buddhist thought, impermanence – or the idea that all worldly things are subject to continuous change, flux, and eventual decline – is believed to be a fundamental characteristic of existence (Keown, 2004; Ryan & Rigby, 2015). According to Buddhist writings, even seemingly permanent things actually consist of constant change, and one of the benefits of mindfulness is that people become familiar with, and accepting of, the constantly changing nature of all phenomena (e.g., Maezumi, 2002; Ryan & Rigby, 2015), including the variety of feelings associated with one's relationships. Relationships involve a constant flow of feelings such as feelings of attachment, relationship satisfaction, sadness, and anger; mindfulness – at its very core – is about observing one's internal and external experiences in a non-judgmental way. Thus, the changes in feelings associated with one's relationship, such as shifts in feelings of relationship satisfaction across the transition to parenthood (Doss, Rhoades, Stanley, & Markman, 2009), daily fluctuations in feelings of attachment security (La Guardia, Ryan, Couchman, & Deci, 2000), or feelings of anger in a conflict (Johns, Allen, & Gordon, 2015) are likely to be noticed by people high in mindfulness, because (although relationships are dyadic) these feelings are experienced internally by each person in the relationship. As such, someone who endorses the item “*I watch my feelings without getting lost in them*” on the FFMQ, or scores low on the item “*I could be experiencing some emotion and not be conscious of it until some time*

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<sup>1</sup> Because the focus of the current study is on trait mindfulness (as assessed by self-report measures), hereafter the word mindfulness refers to this conceptualization of the construct unless otherwise noted.

*later*” on the MAAS is the type of person likely to recognize their feelings of relationship satisfaction, attachment, or anger shift. This leads to the hypothesis that these individuals are more likely to be aware of the impermanent nature of their feelings in relationships, but also non-judgemental of these changes, and therefore more likely to adopt a growth belief.

In addition, Knee, Patrick, and Lonsbury (2003) argue that growth belief, fundamentally, represents an experiential, present-focused orientation towards one's relationships. Whereas the primary motive for people high in destiny belief is future-focused, aimed at evaluating the partner with respect to their long-term compatibility, people with greater growth belief are present-focused, and motivated to enjoy the relationship and partner in the moment for their own sake. A heightened focus on the present is fundamental for people high in mindfulness, and provides further reason to suspect mindfulness promotes greater growth belief in intimate relationships.

Although the extant empirical literature has not explicitly tested these ideas, other studies support the idea that mindfulness and growth belief may be linked. For instance, a key outcome of growth belief is more positive responses to relationship conflict (e.g., Knee et al., 2004). Prior research demonstrates that individuals high in mindfulness also tend to respond to conflict with greater forgiveness (Johns, et al., 2015; Oman, Shapiro, Thoresen, Plante, & Flinders, 2008), less aggression (Barnes et al., 2007), and lower stress (Hertz, Laurent & Laurent, 2014). Similar to people high in growth belief, people high in mindfulness also remain committed to relationship partners when circumstances are less than perfect, such as when attachment anxiety is high (Saavedra, Chapman & Rogge, 2010). Thus, although prior research has not directly examined the link between mindfulness and growth belief, a number of studies suggest people high in mindfulness and growth belief tend to behave in similar ways in their intimate relationships.

***Growth Belief as a Mediator between Mindfulness and Relationship Outcomes***

Given that growth belief and mindfulness may be linked, it is possible that growth belief can help to fill an important gap in the literature: understanding the mechanisms by which mindfulness influences positive relationship functioning. Although it is clear that mindfulness is generally associated with relational benefits, few studies have explicitly examined *why* this is the case (Karremans et al., 2017). Explicating the mediators between mindfulness and positive relationship outcomes is important, because it contributes to the theoretical understanding of how mindfulness influences positive relationship outcomes, and lays important groundwork for improving relationship interventions based on mindfulness. As such, this study expanded upon prior research by examining whether growth belief mediated the well-established positive association between mindfulness and greater relationship satisfaction (Karremans et al., 2017).

It is important to note, although there is a burgeoning literature demonstrating the benefits of mindfulness to intimate relationships, few studies have examined whether mindfulness promotes better outcomes across all relationships, or for people who are not engaged in intimate relationships (see Pratscher, Rose, Markovitz & Bettencourt, 2017 for an exception). Indeed, while intimate relationships are a crucial source of social connectedness, relatedness need satisfaction refers to whether people feel a general sense of social inclusion, connection with others, and intimacy, and is considered a basic psychological need that is fundamental to healthy psychological functioning (Deci & Ryan, 2000). Based on the theoretical literature describing the benefits of mindfulness to intimate relationship outcomes (Karremans et al., 2017), mindfulness should promote greater relatedness need satisfaction regardless of whether an individual is currently engaged in a romantic relationship. Similarly, in the case that mindfulness does promote greater growth belief – as hypothesized above – it should also

indirectly promote greater relatedness need satisfaction through greater growth belief. As such, an important goal of this study was to expand upon prior research by examining whether mindfulness was linked with relatedness need satisfaction through greater growth belief.

### ***What about Destiny Belief?***

The association between mindfulness and destiny belief is not the focus of this research, because there is not strong theoretical reason to believe that mindfulness would predict destiny belief. On the one hand, destiny belief represents a future-focused orientation, whereby the individual evaluates the partner as they relate to the long-term success of the relationship (Knee & Petty, 2013). This type of future-focused orientation seems incompatible with the present-focused, accepting attention characteristic of people high in mindfulness (Brown & Ryan, 2004). On the other hand, mindfulness may promote greater destiny belief when people are accurately aware of actual incompatibilities in potential relationship partners. People low in mindfulness, conversely, may be unable or unwilling to pay honest attention to real incompatibilities, and therefore remain in unhealthy relationships. Indeed, some have argued that one of the benefits of mindfulness is an honest ability to let go of unhealthy relationship partners (e.g., Hodgins & Knee, 2002). In light of the fact that it is unlikely to be associated with mindfulness, no predictions were generated regarding destiny belief. However, prior research suggests it is important to simultaneously consider both growth and destiny belief when examining the influence of implicit theories on relationship behaviors and outcomes (e.g., Knee et al., 2001). Thus, although destiny belief was not central the hypotheses of the current study, it was included as an alternative mediator in all analyses.

### ***Measurement of Mindfulness***

There is some controversy in the literature over the best way to assess trait mindfulness. While a number of different measures have demonstrated numerous types of reliability and validity (Quaglia, et al., 2015), some measures utilize different operational definitions of the construct. This may present problems for studies aiming to draw conclusions about mindfulness utilizing self-report measures, because if findings are specific to a particular measure it is not possible to generalize about the influence of mindfulness more broadly (Van Dam et al., 2018).

Both the Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006) and the Mindfulness Attention Awareness Scale (MAAS; Brown & Ryan, 2003) have been frequently utilized as self-report assessments of mindfulness in prior research examining the benefits of mindfulness to relationship functioning (e.g., Barnes et al., 2007; Jones, et al., 2011; Wachs & Cordova, 2007). Both of these measures are consistent with the operation definition of mindfulness utilized in this study, because they both assess the extent to which people pay attention to present moment experience with a non-judgmental awareness (Baer et al., 2006; Bergomi et al., 2013).<sup>2</sup> As such, major study hypotheses were tested using each of these measures to ensure any results were not specific to one self-reported assessment of mindfulness, but were instead robust across two operationalizations of the construct.

### ***The Current Study***

The goal of the current study was to test two primary hypotheses. First, based on psychological and Buddhist writings which suggest that mindfulness promotes growth belief, *Hypothesis 1* was that people with greater mindfulness would be more likely to endorse a growth belief in their relationships. The second aim of this study was to explore whether growth belief could partially explain the association between mindfulness and positive relationship outcomes.

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<sup>2</sup> See Bergomi et al., (2013) for a discussion of how the MAAS, while generally focusing on acting with awareness, also encapsulates non-judgment of present-moment experiences.

As such, *Hypothesis 2* was that higher levels of growth belief would partially mediate the well-established association between mindfulness and positive relationship outcomes, including relatedness need satisfaction and relationship satisfaction.

To test these ideas, data from two independent studies conducted via Amazon's Mechanical Turk (MTurk) was utilized. Study 1 drew upon a sample of 96 people who completed standardized assessments of mindfulness, growth belief, and relatedness need satisfaction. Study 2 replicated these results of Study 1 using a sample of 139 individuals in which participants completed standardized assessments of mindfulness, growth belief, relationship satisfaction, and relatedness need satisfaction. Results were then meta-analyzed across the two studies to examine whether the tests of major study hypotheses were robust.

Finally, although prior research has not fully explicated the link between mindfulness and positive relationship outcomes, research has demonstrated that individuals higher in mindfulness also tend to report lower attachment insecurity (Pepping, Davis, & O'Donovan, 2013; Shaver, Lavy, Saron, & Mikulincer, 2007).<sup>3</sup> Indeed, although prior research has scarcely identified mediators to explain the positive association between mindfulness and positive relationship outcomes, one exception is that mindfulness has been linked to better relationship outcomes through lower attachment insecurity (Hertz et al., 2015). As such, it is possible that attachment avoidance and anxiety are alternative mediators, which should be accounted for when testing the indirect effect of mindfulness on positive relationship outcomes through growth belief. Thus, ancillary mediation analyses – which included attachment avoidance and anxiety as alternative mediators – were conducted, and the results were examined to determine whether the substantive tests of *Hypotheses 1* and *2* were altered in any major way.

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<sup>3</sup> The directionality of this association is potentially bi-directional, as Ryan, Brown, and Creswell (2007) have argued that history of responsive, secure attachment provides the secure base needed to promote the honest, accepting awareness associated with mindfulness.

## STUDY 1

### Method

#### *Participants*

Participants were recruited from Amazon's Mechanical Turk as part of a larger study.<sup>4</sup> Ninety-eight people initially participated in the study. In order to ensure participants were adequately paying attention to the questionnaire, 4 items were included as checks of attention (e.g., "For this question, please mark 3 as the answer."; e.g., Mattingly et al., 2018). If participants incorrectly answered any of the attention check items, their data was removed from subsequent analyses. Two participants did not answer 1 or more of the items correctly, and they were therefore removed from subsequent analyses, resulting in a final sample of 96. Of these 96 individuals, 43 (44.8%) were male and 53 (55.2%) were female. With respect to race, the majority of individuals identified as White (84.4%), with others identifying as African-American (6.3%), Hispanic or Latino (6.3%), Asian (2.1%), or another race (1%). On average, participants were 36.13 years old, but there was a wide age range of people who participated in the study ( $SD = 11.29$ ; range = 33 - 69). Because of the large age range in the sample, and the potential for generational differences in how people conceptualize their relationships, age was included as a covariate in all subsequent analyses.

#### *Procedure and Materials*

On Amazon's Mechanical Turk website, participants selected this study from a list of possible tasks. They were then directed to an informed consent form, and a series of questionnaires, which included the following measures.

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<sup>4</sup> In the larger study, participants completed an initial survey, and then daily diary surveys for the six subsequent days. All of the measures used Study 1 were assessed during the initial survey.

**Mindfulness.** Mindfulness was assessed using 13 items from the Mindfulness Attention Awareness Scale, which was developed by Brown and Ryan (2003). The MAAS has demonstrated excellent convergent, discriminant, and predictive validity, as well as internal consistency and test-retest reliability in prior research (Quaglia, et al., 2015). Participants completed the items (e.g., “*I find it difficult to stay focused on what’s happening in the present.*”) on a scale from 1 = *almost always* to 6 = *almost never*, and the scale demonstrated excellent internal consistency ( $\alpha = .91$ ).

**Growth and Destiny Belief.** Growth and destiny belief were assessed using Knee’s (1998) measure of implicit theories of relationships. Participants responded to eight items, four of which assessed growth belief (“*The ideal relationship develops gradually over time*”; “*Challenges and obstacles in a relationship can make love even stronger*”; “*A successful relationship evolves through hard work and resolution of incompatibilities*”; “*A successful relationship is mostly a matter of learning to resolve conflicts with a partner*”;  $\alpha = .68$ ) and four of which assessed destiny belief (e.g., “*Potential relationship partners are either compatible or they are not.*”;  $\alpha = .70$ ). Both destiny and growth belief were assessed on a scale from 1 = *Strongly disagree* to 7 = *Strongly agree*.

**Relatedness Need Satisfaction.** Relatedness need satisfaction was assessed using a scale developed to measure feelings of social connectedness and overall relatedness in daily life (Deci & Ryan, 2000; Gagné, 2003). Participants responded to 9 items (e.g., “*I really like the people I interact with*”; 1 = *not at all true*, 7 = *very true*), and the scale demonstrated good internal consistency ( $\alpha = .87$ ).

**Attachment insecurity.** Attachment avoidance and attachment anxiety were assessed using the Experiences in Close Relationships Scale – Short Form (ECR-S; Wei, Russell,

Mallinckrodt & Vogel, 2007), which is a well-validated and reliable measure of attachment insecurity (Ravitz, Maunder, Hunter, Sthankiya & Lancee, 2010). Participants responded to 6 items assessing attachment anxiety (e.g., “*I need a lot of reassurance that I am loved by my partner.*”;  $\alpha = .89$ ) and 6 items assessing attachment avoidance (e.g., “*I try to avoid getting too close to my partner.*”;  $\alpha = .80$ ), both of which were assessed on a scale from 1 = *Strongly disagree* to 7 = *Strongly agree*.

## Results

Bivariate correlations for major study variables are presented in Table 1. Gender, relationship length, and age were all included in bivariate correlations to examine whether they were associated with variables included in the hypothesized model. At the bivariate level, gender and age were not statistically significantly associated with any of the major study variables (all  $p$ 's > .05). At the bivariate level, results supported major study hypotheses: mindfulness was positively associated with greater growth belief and relatedness need satisfaction, and growth belief was associated with greater relatedness need satisfaction. Destiny belief was not associated with mindfulness or relatedness need satisfaction. Additionally, attachment avoidance and anxiety were both significantly associated with lower levels of growth belief and mindfulness.

**Power Analyses.** To ensure sample size was adequate, post-hoc power analyses were conducted for all paths included in the final mediation model. To determine the power achieved for each path tested within the larger mediation model (i.e., Paths A and B) Monte Carlo simulations in Mplus (Muthen & Muthen, 2012) were conducted based on 10,000 draws, the effect size for each coefficient of interest (see Table 2), and the final sample size for the analysis (96). To test the power of the indirect effects, the recommendations of Shoemann, Boulton and

Short (2017) were followed, who suggest also utilizing Monte Carlo simulation when examining the power of indirect effects.

Based on 10,000 Monte Carlo draws, the effect size achieved for each coefficient of interest, and the final sample of 96 people, the association between mindfulness and growth belief was underpowered at 0.65, while the association between mindfulness and relatedness need satisfaction was adequately powered at 0.90. Based on 20,000 Monte Carlo draws, the indirect effect in Study 2 was underpowered at 0.54.

***Mediation Analyses.*** A bootstrapped test of multiple mediation using the PROCESS macro (Hayes, 2016) was conducted to simultaneously examine *Hypotheses 1* and *2*. Results are presented in Table 2. In support of *Hypotheses 1*, individuals with greater mindfulness reported greater growth belief, and the size of the effect was approaching moderate ( $r = .24$ ). Growth belief also predicted greater relatedness need satisfaction, and the size of this association was moderate ( $r = .34$ ). In support of *Hypothesis 2*, there was a statistically significant indirect effect<sup>5</sup> of mindfulness on relatedness need satisfaction through growth belief, such that individuals with greater mindfulness reported greater relatedness need satisfaction via the mechanism of greater growth belief. Mindfulness was not associated with destiny belief, destiny belief did not predict relatedness need satisfaction, and there was no indirect effect of mindfulness on relatedness need satisfaction through destiny belief.

An additional model was tested which included attachment anxiety and avoidance as alternative mediating mechanisms explaining the association between mindfulness and relatedness need satisfaction. In this model, mindfulness remained a significant predictor of growth belief ( $B = .13, r = .25, p = .02$ ), and growth belief was a significant predictor of

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<sup>5</sup> The word “effect” is used here to remain consistent with the language generally used in mediation analyses, and is not intended to imply causality.

relatedness need satisfaction ( $B = .03, r = .22, p = .04$ ). The indirect effect of mindfulness on relatedness need satisfaction was marginally statistically significant ( $B = .003, Bootstrapped SE = .003, 95\% CI [-0.006, 0.01], p < .10$ ). The indirect effects of mindfulness on relatedness need satisfaction through attachment avoidance ( $B = .01, Bootstrapped SE = .005, 95\% CI [0.003, 0.02]$ ), and attachment anxiety ( $B = .01, Bootstrapped SE = .005, 95\% CI [0.003, 0.02]$ ) were both statistically significant in this model.

### **Discussion**

Study 1 generally supported major study hypotheses. Mindfulness was associated with greater growth belief (*Hypothesis 1*), and this mediated the relationship between mindfulness and better relatedness need satisfaction (*Hypothesis 2*). These results were generally robust even when controlling for age, and examining destiny belief, attachment avoidance, and attachment anxiety as alternative mediators. Although the indirect effect became marginally significant in the model including attachment insecurity as alternative mediators, mindfulness was still significantly associated with growth belief, and growth belief was still significantly associated with relatedness need satisfaction. These results suggest that trait mindfulness is associated with approaching relationships with a more growth-oriented mindset, which ultimately has beneficial implications for overall feelings of social connectedness.

### **STUDY 2**

The goal of Study 2 was to replicate and expand upon the results of Study 1 in numerous ways. First, two of the paths tested in Study 1 were underpowered, and as such, Study 2 drew upon a larger sample in order to ensure all of the paths tested were adequately powered. Second,

Study 2 also assessed relationship satisfaction among those participants who were engaged in an intimate relationship at the time of the survey, in order to examine whether major study hypotheses were also significant when examined in the context of relationship satisfaction. Finally, because there is some debate about the most valid and reliable self-report measure of mindfulness (Quaglia, et al., 2015), Study 2 utilized a different measure of mindfulness, to ensure that any findings in Study 1 replicated across a different self-report assessment of mindfulness.

## **Method**

### ***Participants***

Participants were recruited from Amazon's Mechanical Turk, where people voluntarily agree to complete tasks in return for compensation. A total of 142 people participated in the survey, and 97 of these people were engaged in a committed, monogamous relationship at the time of the study. With respect to gender, 61 (43.9%) participants were male and 78 (56.1%) participants were female. With respect to race, the majority of individuals identified as White (82.0%), with others identifying as Black or African-American (3.6%), Hispanic or Latino (5.8%), Asian (7.2%), or another race (1.4%). On average, participants were 39.34 years old, but there was a wide range of people who participated in the study in terms of age ( $SD = 13.37$ ; range = 19 - 75). Age was again included as a covariate in all analyses. Similar attention check items were included as in Study 1, and three participants did not accurately complete one of the items, so their data was therefore removed from subsequent analyses. This resulted in a final sample of 139 individuals, 95 of which were in an intimate relationship at the time of the study.

### ***Procedure and Materials***

On Amazon's Mechanical Turk website, participants selected a task from a list of possible tasks. They were then directed to an informed consent form, and a series of questionnaires, which included the following measures.

***Mindfulness.*** Mindfulness was assessed using the short-form of the Five Facet Mindfulness Questionnaire (FFMQ; Bohlmeijer, Ten Klooster, Fledderus, Veehof, & Baer, 2011). The FFMQ, including the short form, has demonstrated excellent validity and reliability in prior research (Bohlmeijer et al., 2011; Quaglia, et al., 2015). Participants responded to 24 items (e.g., “*I’m good at finding the words to describe my feelings.*.”; 1 = *Never or rarely true*, 5 = *Very often or always true*;  $\alpha = .86$ ).

***Growth and Destiny Belief.*** Growth and destiny belief were again assessed using Knee's (1998) scales. Both 4-item measures again demonstrated adequate internal consistency in this study (growth  $\alpha = .70$ ; destiny  $\alpha = .65$ ).

***Relatedness Need Satisfaction.*** Relatedness need satisfaction was assessed using the same scale used in Study 1 (Gagné, 2003). Participants responded to 9 items (e.g., “*I really like the people I interact with.*.”; 1 = *not at all true*, 7 = *very true*), and the scale again demonstrated good internal consistency ( $\alpha = .88$ ).

***Relationship Satisfaction.*** Among the sub-sample of 95 individuals who were involved in an intimate relationship at the time they completed the survey, relationship satisfaction was assessed using the 4-item version of the Couples Satisfaction Index (CSI), which was designed using item response theory, and is a reliable and valid measure (Funk & Rogge, 2007). Items assessed the extent to which participants felt satisfied in their relationship with their romantic partner (e.g., “*I have a warm and comfortable relationship with my partner.*.”; 0 = *not at all true*, 5 = *completely true*;  $\alpha = .78$ ).

**Attachment insecurity.** Attachment avoidance and attachment anxiety were again assessed using the short form of the ECR-S (Wei, et al., 2007). Internal consistency for both subscales was good (avoidance  $\alpha = .88$ ; anxiety  $\alpha = .75$ ).

## Results

Bivariate correlations across all measures are presented in Table 1. With respect to demographics, gender and relationship length were not statistically significantly associated with any of the major outcomes of interest (all  $p$ 's  $> .05$ ). Age was statistically significantly associated with mindfulness, such that older people reported being more mindful.

With respect to major study variables, as hypothesized, people with greater mindfulness reported greater growth belief, and people with greater growth belief reported higher levels of relationship satisfaction. Contrary to prior research, individuals higher in mindfulness did not report greater relationship satisfaction at the bivariate level ( $r = .04, p = .69$ ), however they did report greater relatedness need satisfaction ( $r = .48, p < .001$ ). Destiny belief was not associated with mindfulness, relationship satisfaction, or relatedness need satisfaction. Attachment avoidance was statistically significantly associated with lower levels of growth belief and mindfulness. Attachment anxiety was associated with lower mindfulness, but was not significantly associated with growth belief.

**Power Analyses.** Post-hoc power analyses were conducted in the same manner as described in Study 1. In Analysis 1 (with a total sample size of 139), the association between mindfulness and growth belief (Path A1) was adequately powered at 0.96. The association between growth belief and relatedness need satisfaction (Path B) was also adequately powered at 0.79. Finally, based on 20,000 Monte Carlo draws, the indirect effect of mindfulness on relationship satisfaction through growth belief (Path C) was also adequately powered at 0.79.

In Analysis 2 (with a total sample size of 95), the association between mindfulness and growth belief (Path A1) was adequately powered at 0.82. The association between growth belief and relationship satisfaction (Path B) was also adequately powered at 0.91. Finally, based on 20,000 Monto Carlo draws, the indirect effect of mindfulness on relationship satisfaction through growth belief (Path C) was also adequately powered at 0.74. Thus, all of the major paths tested in Study 2 were adequately powered.

**Mediation Analyses.** To simultaneously examine Hypotheses 1 and 2 while controlling for age, two bootstrapped tests of mediation were conducted using the Process Macro for SPSS provided by Hayes (2016). One of these analyses specified relatedness need satisfaction as an outcome, and one these analyses specified relationship satisfaction as an outcome. Results are presented in Table 3, and supported major study hypotheses.

**Analysis 1: Does Mindfulness Predict Greater Relatedness Need Satisfaction through Greater Growth Belief?** First, relatedness need satisfaction was tested as an outcome, and in this analysis the total sample size was 139 people. In support of *Hypothesis 1*, mindfulness was associated with growth belief, such that individuals with greater mindfulness reported greater growth belief. The size of this association was moderate ( $r = .32$ ). Growth belief, in turn, was associated with greater relatedness need satisfaction, and this effect approached moderate size ( $r = .25$ ). In support of *Hypothesis 2*, there was a statistically significant indirect effect of mindfulness on relatedness need satisfaction through growth belief. Mindfulness was not associated with destiny belief, destiny belief did not predict relatedness need satisfaction, and there was no indirect effect of mindfulness on relatedness need satisfaction through destiny belief.

The above model was also tested while controlling for attachment anxiety and attachment avoidance as alternative mediators. This analysis included four total mediators of the association between mindfulness and relatedness need satisfaction: growth belief, destiny belief, attachment anxiety, and attachment avoidance. In this model, there was a significant indirect effect of mindfulness on greater relatedness need satisfaction through lower avoidant attachment ( $B = .24$ ,  $SE = .10$ ,  $p < .05$ ). The indirect effect of mindfulness through greater growth belief was marginally significant in this model ( $B = .11$ ,  $SE = .08$ ,  $p < .10$ ); although the association between mindfulness and growth belief was still highly significant ( $B = .65$ ,  $SE = .17$ ,  $p < .001$ ) when including attachment avoidance and anxiety in the model, the association between growth belief and relatedness need satisfaction was slightly reduced, rendering it ( $B = .17$ ,  $SE = .10$ ,  $p = .06$ ), and the indirect effect, only marginally significant.

***Analysis 2: Does Mindfulness Predict Greater Relationship Satisfaction through Greater Growth Belief?*** Next, the same analysis was conducted with relationship satisfaction specified as the outcome, and Table 3 (right side) provides the results of these analyses. In support of *Hypothesis 1*, mindfulness was associated with growth belief, such that individuals with greater mindfulness reported greater growth belief. The size of this association was moderate ( $r = .30$ ). Growth belief, in turn, was associated with greater relationship satisfaction, and the size of the association was again moderate ( $r = .35$ ). In support of *Hypothesis 2*, there was a statistically significant indirect effect of mindfulness on relationship satisfaction through growth belief. Mindfulness was not associated with destiny belief, destiny belief did not predict relationship satisfaction, and there was no indirect effect of mindfulness on relatedness need satisfaction through destiny belief.

An additional model was again tested which included attachment avoidance and attachment anxiety as mediators of the relationship between mindfulness and relationship satisfaction, along with growth and destiny belief. In this model, the indirect effect of mindfulness on relationship satisfaction through growth belief remained statistically significant (*indirect effect* = .18, *bootstrapped SE* = .11,  $p < .05$ ), even controlling for attachment avoidance, attachment anxiety, and destiny belief. In this model, attachment avoidance also statistically significantly mediated the association between mindfulness and relationship satisfaction, such that individuals higher in mindfulness reported lower levels of attachment avoidance, which had beneficial implications for relationship satisfaction (*indirect effect* = .29, *bootstrapped SE* = .12,  $p < .01$ ). Attachment anxiety and destiny belief did not statistically significant mediate the relationship between mindfulness and relationship satisfaction in this model (both  $p$ 's  $> .05$ ).

### **Discussion**

The results of Study 2 generally replicated the findings of Study 1. As in Study 1, Study 2 provided support for Hypothesis 1, by demonstrating that mindfulness positively predicted growth belief in both sets of analyses, and that the size of this effect was moderate. With respect to Hypothesis 2, Study 2 replicated Study 1, demonstrating that mindfulness had a positive, indirect influence on relatedness need satisfaction and relationship satisfaction, through the mechanism of greater growth belief. Including attachment avoidance and anxiety as alternative mediators only slightly altered the results of the indirect effect of mindfulness on relatedness need satisfaction through growth belief, whereas it did not influence the indirect effect of mindfulness on relationship satisfaction through growth belief.

### **Meta-Analysis of Effects across Studies 1 and 2**

Results across Studies 1 and 2 were consistent, and provided robust support for major study hypotheses. Despite this, it is important to note that there were differences in power, such that all of the major paths tested in Study 2 were adequately powered, but that some of the paths tested in Study 1 were underpowered. To ensure the consistency of the paths tested across the two studies, a meta-analysis of effects was therefore conducted (Goh, Hall, & Rosenthal, 2016). Meta-analytic procedures for estimated weighted  $r$  values assuming random component models as outlined by Lipsey and Wilson (2001) were followed. To compare the similar analyses from each study, the results of the analyses examining relatedness need satisfaction as an outcome (i.e., results from Study 1 and results from Analysis 2 from Study 2) were meta-analyzed.<sup>6</sup> Results of these analyses are reported in Table 4, and confirmed the overall findings of Study 1 and Study 2. Specifically, when testing across both studies using a combined sample of 235 people, the association between mindfulness and growth belief was moderate in size and highly significant. Similarly, the association between growth belief and relationship outcomes was also moderate in size and highly significant when testing across both studies.

The same meta-analysis was conducted using the estimates from both studies while including attachment anxiety and avoidance as alternative mediators. Estimates across the two studies demonstrated that even when including attachment in the models, mindfulness was still a significant predictor of growth belief ( $r = .29$ , 95% CI [.16, .40],  $p = <.001$ ), and growth belief was still a significant predictor of relatedness need satisfaction as an outcome ( $r = .21$ , 95% CI [.08, .33],  $p = .001$ ).

## General Discussion

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<sup>6</sup> In order to ensure there were no discrepancies, a meta-analysis was also conducted in which results from Study 2, Analysis 2 (which predicted relationship satisfaction as an outcome) were combined with results from Study 1. The overall conclusions of this meta-analysis were nearly identical to the meta-analyzed results presented in Table 4, and supported the hypotheses presented in the introduction.

Growth belief has a host of benefits for interpersonal relationships, yet prior research had not examined the individual difference factors associated with endorsing this implicit theory of relationships. Moreover, many studies had previously demonstrated that mindfulness is beneficial for relationships, but few studies had examined the mechanisms by which mindfulness has a positive influence on relationships. Across two independent studies, the current research provided support for two novel hypotheses, which help to fill these gaps in the literature. First, results demonstrated that individuals with greater self-reported, trait mindfulness are more likely to endorse growth belief. Second, results demonstrated that growth belief mediated the association between mindfulness and positive relationship outcomes (relatedness need satisfaction in Study 1, and relatedness need satisfaction and relationship satisfaction in Study 2), such that mindfulness was indirectly associated with better relationships in part due to its association with greater growth belief. Results were generally robust even when examining destiny belief, attachment anxiety, and attachment avoidance as alternative mediators, controlling for age, and utilizing two different self-report measures of mindfulness. The implications of these findings are discussed below.

### ***Mindfulness Promotes Growth Belief in Relationships***

One of the primary findings of this study is that individuals with greater trait mindfulness are more likely to endorse growth belief with respect to their relationships. This association helps to confirm an important theoretical assumption underlying growth belief – namely, that growth belief represents a present-focused, experiential orientation towards relationships. Theorists have argued that endorsing growth belief means individuals are engaged in the relationship for its own sake, and for enjoying each moment with the partner, rather than focusing on a future outcome (Knee et al., 2003; Knee & Petty, 2013). Yet, no prior studies had explicitly tested this

assumption by linking growth belief to a global, trait-like variable directly related to a present-focused and experiential orientation. Buddhist and psychological scholars have long argued that mindfulness represents an experiential, present-focused, and non-judgmental approach to the world (e.g., Brown & Ryan, 2003; Maezumi, 2002). People with greater levels of mindfulness tend to accept and approach all types of experiences – even those that might be considered uncomfortable or difficult (e.g., social stressors or thoughts of their own death; Brown et al., 2012; Niemiec et al., 2010). Thus, by linking mindfulness and growth belief, this research provides direct empirical support for prior theoretical work in this area.

This study also sheds light on who might be predisposed to *not* endorsing growth belief. Low mindfulness represents a tendency to view experiences more judgmentally, and to avoiding experience of the present moment, especially when it is uncomfortable. A relationship conflict is the type of experience that people who are low in mindfulness are likely to react to with judgment and negativity (Barnes, et al., 2007). This study suggests that people who are low in mindfulness tend to hold the implicit belief that conflict is a fundamental threat to the relationship, and this implicit belief is likely related to their discomfort with approaching all types of experiences non-judgmentally. As such, one potential way to improve an individual's approach and outlook towards conflict (i.e., create a more growth-oriented approach more generally) would be to cultivate mindfulness.

Although destiny belief was not the focus of this paper, it was included in all mediation analyses. In accordance with expectations, destiny belief was not associated with mindfulness, and did not play a role in the indirect association between mindfulness and relationship outcomes. It appears that, although destiny belief theoretically means people tend to be focused on the future, it is not wholly incompatible with the present-focused outlook of people high in

mindfulness (because the two variables were not negatively associated). Based on the orthogonality of destiny and growth belief, it is possible that some people high in mindfulness may be honestly looking for accurate cues as to whether their partner is compatible, while simultaneously focused on the present moment. As such, it is likely that other factors better predict destiny belief, and future research should more thoroughly examine this question.

### ***Implications for the Mindfulness Literature***

This study also has important implications for the broad literature examining how mindfulness influences social relationships. Prior research has linked mindfulness to relationship outcomes a number of times, but only a few studies examined the mechanisms by which this association occurs (Karremans, et al., 2017). This study suggest that trait mindfulness influences the way that people think about their relationships, which then has positive implications for relationship functioning. Moreover, theoretical sources suggested that mindfulness has benefits for a wide variety of social relationships (e.g., Parker et al., 2015), but this assumption had scarcely been tested in prior research. Results of Study 2 demonstrate that mindfulness, through its positive influence on growth belief, helps to promote feelings of social connectedness, even when including individuals not engaged in a romantic relationship.

Even more broadly, this study is the first to demonstrate that mindfulness is a predictor of implicit theories. Given that other types of implicit theories – such as intelligence and personality – contribute to behavior and outcomes in academic and other settings (e.g., Burnette, O'Boyle, VanEpps, Pollack & Finkel, 2013), an important future direction is examining how mindfulness may contribute to peoples' implicit theories in other domains.

### ***Limitations and Future Directions***

It is important to note a few limitations. First, both studies were cross-sectional, meaning future research is needed to establish the casual ordering of the variables of interest, especially in the case of mediation analyses. Similarly, although a number of covariates were examined in this study, it is possible that other unaccounted for third-variables may have acted as confounds in this cross-sectional study. Second, the samples examined were all drawn from Amazon's MTurk, and were also homogenous in terms of demographic characteristics. Future research should look to replicate these results with more varied, heterogeneous samples and methodologies. Third, sample size is an important limitation. Specifically, in Study 1, the association between mindfulness and growth belief was underpowered, which is also likely the reason that the test of mediation in Study 1 was underpowered. Importantly, however, all findings in Study 1 were consistent with Study 2, and the meta-analysis helps to confirm that the major paths tested within the mediation model are robust in a larger sample. Fourth, although the assessments of mindfulness administered in this research well-validated, short-forms were used in order to reduce the length of the surveys administered to participants, meaning future research is needed to replicate these results with full versions of these measures. Similarly, because self-report questionnaires were used in this study, it is possible that people are not fully aware of how mindful they are in terms of actual their behavior. Finally, this study would have benefited from dyadic data. It is possible that having a partner with high levels of mindfulness may influence a person's own growth belief, and future research should extend and replicate these findings using data obtained from couples.

***Conclusion***

People who hold a growth belief tend to experience a variety of benefits in their relationships, yet prior research had not examined the determinants of growth belief. This research drew upon theoretical writings from Buddhism and psychology to argue that mindfulness was likely an important contributor to greater growth belief. In two studies, results demonstrated that mindfulness predicts greater growth belief, and that this association mediates the relationship between mindfulness and positive relationship outcomes. These results suggest that the present-focused, accepting awareness characteristic of mindfulness is associated with a growth-oriented approach to relationships, which then predicts positive outcomes. As such, this study extends the growing list of studies which suggest a mindful, growth-oriented outlook towards one's relationships tends to be particularly healthy and satisfying.

**Table 1. Bivariate Correlations for Study Variables.**

Variable	1	2	3	4	5	6	7	8	9	10
1. Gender		0.09	n/a	-0.2	0.18	0.04	0.05	n/a	-0.26*	0.02
2. Age	0.08	-	n/a	0.07	-0.09	-0.12	0.13	n/a	-0.17	-0.02
3. Relationship Length	0.17	0.47**	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a
4. Mindfulness	0.09	0.24*	0.19	-	0.24*	0.11	0.36**	n/a	-0.34**	-0.49**
5. Growth Belief	0.16	0.01	0.11	0.30**	-	0.45**	0.39**	n/a	-0.39**	-0.31**
6. Destiny Belief	-0.11	-0.01	-0.14	-0.02	-0.23*	-	0.14	n/a	-0.23*	-0.26*
7. RNS	0.14	0.11	0.10	0.48**	0.35**	-0.10	-	n/a	-0.61**	-0.55**
8. RS	0.10	-0.19	0.02	0.03	0.32**	0.11	0.43**	-	n/a	n/a
9. Attachment Avoidance	-0.21*	-0.07	-0.15	-0.31**	-0.35**	0.07	-0.50**	-0.49**	-	0.56**
10. Attachment Anxiety	-0.14	-0.23**	-0.31**	-0.31**	0.00	-0.03	-0.26*	-0.22**	0.27*	-

*Note.* \*\*  $p < .01$ . \*  $p < .05$ . *RS* = Relationship Satisfaction. *RNS* = Relatedness Need Satisfaction. Results to the top of the diagonal refer to Study 1, whereas results to the bottom of the diagonal refer to Study 2. Relationship length and satisfaction were not assessed in Study 1.

**Table 2. Results of mediation analyses predicting relatedness need satisfaction in Study 1.**

	<i>B</i>	<i>SE</i>	<i>t</i>	95 % CI		<i>r</i>
				<i>Low</i>	<i>High</i>	
<b>Path A1: Mindfulness → Growth Belief</b>						
Mindfulness	<b>0.62**</b>	<b>0.21</b>	<b>3.00</b>	<b>0.21</b>	<b>1.02</b>	<b>.30</b>
Age	-0.01	0.01	-0.75	-0.02	0.01	.08
<b>Path A2: Mindfulness → Destiny Belief</b>						
Mindfulness	-0.05	0.27	-0.18	-0.59	0.50	.02
Age	-0.01	0.01	-0.04	-0.02	0.02	.01
<b>Path B: Implicit Theories → Relatedness Need Satisfaction</b>						
Growth Belief	<b>0.42**</b>	<b>0.12</b>	<b>3.63</b>	<b>0.19</b>	<b>0.66</b>	<b>.35</b>
Destiny Belief	0.17	0.08	1.93	-0.01	0.34	.20
Mindfulness	-0.07	0.24	-0.32	-0.54	0.39	.03
Age	-0.02	0.01	-1.82	-0.03	0.01	.19
<b>Path C: Mindfulness → Implicit Theories (Destiny or Growth Belief) → Relatedness Need Satisfaction</b>						
Indirect Effect Through Growth Belief	<b>0.25**</b>	<b>0.13</b>	-	<b>0.08</b>	<b>0.60</b>	-
Indirect Effect Through Destiny Belief	-0.01	0.06	-	-1.58	0.09	-

Note. \* $p < .05$ . \*\* $p < .01$ . CI = confidence interval. Effect sizes ( $r$ ) were computed using Rosenthal and Rosnow's (2007) formula:  $r = \sqrt{t^2 / t^2 + df}$ .

Significant hypothesized paths are highlighted in bold.

**Table 3. Results of mediation analyses predicting relationship outcomes in Study 2.**

	Analysis 1						Analysis 2					
	<i>B</i>	<i>SE</i>	<i>t</i>	95 % CI		<i>r</i>	<i>B</i>	<i>SE</i>	<i>t</i>	95 % CI		<i>r</i>
				<i>Low</i>	<i>High</i>					<i>Low</i>	<i>High</i>	
<b>Path A1: Mindfulness → Growth Belief</b>												
Mindfulness	<b>0.65**</b>	<b>0.17</b>	<b>3.88</b>	<b>0.32</b>	<b>0.99</b>	<b>.32</b>	<b>0.62**</b>	<b>0.21</b>	<b>3.00</b>	<b>0.21</b>	<b>1.02</b>	<b>.30</b>
Age	-0.01	0.01	-1.93	-0.02	0.01	.16	-0.01	0.01	-0.75	-0.02	0.01	.08
<b>Path A2: Mindfulness → Destiny Belief</b>												
Mindfulness	-0.18	0.22	-0.84	-0.61	0.25	.07	-0.05	0.27	-0.18	-0.59	0.50	.02
Age	-0.01	0.01	-0.04	-0.02	0.02	.01	-0.01	0.01	-0.04	-0.02	0.02	.01
<b>Path B: Implicit Theories → Relationship Outcome<sup>a</sup></b>												
Growth Belief	<b>0.27**</b>	<b>0.09</b>	<b>2.89</b>	<b>0.08</b>	<b>0.44</b>	<b>.24</b>	<b>0.42**</b>	<b>0.12</b>	<b>3.63</b>	<b>0.19</b>	<b>0.66</b>	<b>.35</b>
Destiny Belief	-0.02	0.07	-0.22	-0.16	0.13	.02	0.17	0.08	1.93	-0.01	0.34	.20
Mindfulness	0.95	0.18	5.13	0.58	1.32	.40	-0.07	0.24	-0.32	-0.54	0.39	.03
Age	-0.01	0.01	-0.31	-0.02	0.01	.03	-0.02	0.01	-1.82	-0.03	0.01	.19
<b>Path C: Mindfulness → Implicit Theories (Destiny or Growth Belief) → Relationship Outcome</b>												
Indirect Effect Through Growth Belief	<b>0.18**</b>	<b>0.07</b>	-	<b>0.06</b>	<b>0.35</b>	-	<b>0.25**</b>	<b>0.13</b>	-	<b>0.08</b>	<b>0.60</b>	-
Indirect Effect Through Destiny Belief	-0.01	0.06	-	-1.58	0.09	-	-0.01	0.06	-	-1.58	0.09	-

Note. \* $p < .05$ . \*\* $p < .01$ . CI = confidence interval. <sup>a</sup>In Analysis 1, the relationship outcome was relatedness need satisfaction,

whereas in Analysis 2 the outcome was relationship satisfaction.  $N = 139$  for analysis 1 and 95 for analysis 2. Effect sizes ( $r$ ) were computed using Rosenthal and Rosnow's (2007) formula:  $r = \sqrt{(t^2 / t^2 + df)}$ . Significant hypothesized paths are highlighted in bold.

**Table 4. Meta-Analysis of Effects across Studies 1 and 2.**

	Average Effect Size <i>r</i>	95% CI		<i>z</i>	<i>p</i>
		Low	High		
<b>Path A1: Mindfulness → Growth Belief</b>					
Mindfulness	<b>.31</b>	<b>0.19</b>	<b>0.42</b>	<b>4.87</b>	<b>&lt;.001</b>
Age	.13	-0.01	0.25	1.94	.19
<b>Path A2: Mindfulness → Destiny Belief</b>					
Mindfulness	.05	-.08	.18	0.75	.45
Age	.01	-.11	.15	0.24	.81
<b>Path B: Implicit Theories → Relatedness Need Satisfaction</b>					
Growth Belief	<b>.29</b>	<b>.16</b>	<b>.40</b>	<b>4.43</b>	<b>&lt;.001</b>
Destiny Belief	.09	-.04	.22	1.42	.16
Mindfulness	.23	-.10	.52	1.35	.18
Age	.10	-.03	.22	1.44	.15

Note. CI = confidence interval. Significant hypothesized effects are highlighted in bold. Total  $N = 235$ .

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