



Trait Mindfulness is Associated with Self-Disclosure and Responsiveness During Social Interactions with New Acquaintances

Sarah Ketay¹ · Katherine R. Thorson² · Ashlin R. K. Roy³ · Keith M. Welker⁴

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Abstract

Objectives We investigated whether trait mindfulness from both partners in a social interaction was associated with two critical relational processes—self-disclosure and responsiveness—during conversations between new acquaintances.

Method Participants ($n = 140$, 70 dyads) were randomly assigned to engage in a guided conversation with a high or low level of self-disclosure. The conversation was video-recorded and videos were coded by trained research assistants for the relational behaviors of self-disclosure (how much personal information was shared about oneself) and responsiveness (how much understanding, caring, and validation was demonstrated towards one's partner). Using a longitudinal actor-partner interdependence model, we analyzed the relationship between the five facets of mindfulness (Observing, Nonreactivity, Acting with Awareness, Describing, and Nonjudging) and self-disclosure and responsiveness. We also examined whether people's behaviors were associated with their own mindfulness and the mindfulness of their partners.

Results Two key findings emerged. First, people who were higher on the mindfulness facet of Observing were more likely to self-disclose and to be responsive. Second, people were also more likely to self-disclose and be responsive when they interacted with partners who themselves were higher on the mindfulness facet of Observing.

Conclusions These findings suggest that mindfulness plays a role in initial social interaction. Our results indicate that one's own trait mindfulness is linked with the relational processes of self-disclosure and responsiveness in conversations with new acquaintances and that even the mindfulness of people's interaction partners who they have just met may shape their own social behaviors.

Keywords Mindfulness · Social interaction · Self-disclosure · Responsiveness · New acquaintances

Social connections are deeply important to our health and well-being (Holt-Lunstad, 2018; Sun et al., 2020), and recent work suggests that mindfulness may play a role in how people form and maintain these connections. Mindfulness often refers to the awareness of being aware and has been translated from

Buddhist philosophy to mean how things “come to be” and how things “pass away” (Gethin, 2011). It is typically thought of as a state or a momentary level of awareness, and can also be conceptualized in its trait (or dispositional) form that reflects a stable characteristic (Pallozzi et al., 2017). As a meditation practice, mindfulness has been brought to Western culture as a way to cultivate the awareness that stems from focusing on the present moment, on purpose, non-judgmentally (McGill et al., 2016). A goal of mindfulness-based interventions is to increase state mindfulness and, with practice, increase levels of the trait. Trait mindfulness is linked with increased psychological well-being (see Tomlinson et al., 2018 for a review). Although most work on state or trait mindfulness has documented its intrapersonal benefits—such as better physical health, mental health, and overall well-being (Carpenter et al., 2019; Khoury et al., 2015; Querstret et al., 2020; Sala et al., 2020; Tomlinson et al., 2018)—it is now clear that there are

✉ Sarah Ketay
ketay@hartford.edu

¹ Department of Psychology, University of Hartford, 200 Bloomfield Avenue, West Hartford, CT 06117, USA

² Department of Psychology, Barnard College of Columbia University, New York, NY, USA

³ Department of Neurology, University of California San Francisco, San Francisco, CA, USA

⁴ Department of Psychology, University of Massachusetts Boston, Boston, MA, USA

interpersonal benefits to mindfulness as well. For example, increased feelings of connection, better communication, greater responsiveness, satisfaction with one's romantic partner, forgiveness, and improved response to relational rejection have all been linked with mindfulness (Adair et al., 2018a; Adair et al., 2018b; Barnes et al., 2007; Lindsay et al., 2019; McGill et al., 2016; Hafner et al., 2019; Karremans et al., 2017; Kappen et al., 2018; Khaddouma et al., 2015; Lenger et al., 2017; May et al., 2020; Quinn-Nilas, 2020).

Mindfulness is important to explore in the context of new social relationships as it has been positively linked with multiple interpersonal processes. Researchers theorized that mindfulness leads to greater relationship satisfaction through a number of mechanisms (for a meta-analysis see McGill et al., 2016). Studies have linked mindfulness with multiple factors that contribute to positive social relationships. For instance, mindfulness is associated with interpersonal synchronicity in relationships with new acquaintances (Haas & Langer, 2014). Multiple pro-relationship factors have been positively linked with mindfulness, such as increased empathy and response to conflict, higher romantic relationship satisfaction, and identifying and communicating emotions in intimate relationships (Bihari & Mullan, 2014; Hertz et al., 2015; McGill et al., 2016; Wachs & Cordova, 2007). Researchers theorize that mindful people are more aware of responsiveness when it occurs (see Adair et al., 2018b for a review). Mindfulness has also been theorized to increase responsiveness and attunement in romantic couples' daily interactions (Atkinson, 2013; Snyder et al., 2012), thereby increasing satisfaction. Thus, responsiveness and awareness may be a mechanism through which mindfulness influences relationship satisfaction.

To date, much of the knowledge about the role of mindfulness in social relationships has been gleaned from the study of established romantic couples (e.g., Lenger et al., 2019; Khaddouma et al., 2015; Quinn-Nilas, 2020). Much less work has addressed the potential associations of mindfulness in new social relationships. However, there is reason to believe that mindfulness might play a role in even the earliest stages of relationships. For example, some work has shown that mindfulness has been tied to relationship satisfaction in both early-stage and long-term romantic relationships (Khaddouma et al., 2015; Quinn-Nilas, 2020), and other work has demonstrated that relationship length does not moderate the association between mindfulness and relationship satisfaction (Lenger et al., 2019). Thus, although the associations between mindfulness and behavior in new relationships have not yet been studied, these findings lend support to the idea that mindfulness may be associated with relational processes even in the earliest stages. This is important to explore because interactions with new acquaintances are extremely common, and often provide a foundation for developing continued

relationships (Berscheid & Regan, 2005; Sprecher et al., 2013). Research has also demonstrated that social interactions with acquaintances contribute to increased subjective well-being and sense of belonging (Sandstrom & Dunn, 2014). Given the recent developments in mindfulness research indicating its positive role in social interactions across multiple contexts, from workplace interactions to romantic relationships (Don, 2020; Reina et al., 2022), it is worthwhile to explore its role in social interactions with new acquaintances. Together, this indicates that understanding the factors that are tied to interpersonal behaviors, such as mindfulness, is important for general knowledge about the elements that spark positive social connections.

The interpersonal process model of intimacy describes how closeness is established between people through the interplay of mutual self-disclosure and responsiveness (Reis & Shaver, 1988). Self-disclosure—revealing personal information about oneself—is a key aspect of relationship communication in both developing and established relationships (Collins & Miller, 1994; Laurenceau et al., 1998; Sprecher & Hendrick, 2004). Through mutual self-disclosure, acquainted people gradually reveal more thoughts, feelings, and facts about themselves over time. Self-disclosure can also be described as the sharing of one's thoughts, experiences, and feelings to someone viewed as supportive, and trustworthy, and is a vital aspect of new relationships (Hook et al., 2003; Sinclair & Dowdy, 2005). A multitude of positive outcomes are associated with self-disclosure in new relationships, including the development of closeness (e.g., Aron et al., 1997).

Importantly, responsiveness is a principal factor in the link between self-disclosure and relationship formation. As noted in the interpersonal process model of intimacy (Reis & Shaver, 1988), closeness is developed not through self-disclosure or responsiveness alone, but through the interplay of these two important behaviors in a reciprocal, iterative process of self-disclosure and responsiveness. Self-disclosure's benefits are increased when the listener is responsive—acting with support and validation (Shenk & Fruzzetti, 2011). In the study of relationships and well-being, responsiveness is thought to be an organizing theme and is linked with positive outcomes in romantic relationships (Reis & Clark, 2013; Reis & Patrick, 1996; Reis & Shaver, 1988). These processes are also involved in early-stage relationships with new acquaintances. For example, self-disclosure is associated with improved relational closeness and intimacy when interacting with a new acquaintance who is responsive (Altman & Taylor, 1973; Sprecher et al., 2013). Responsiveness is also linked with closeness and the desire to pursue a further relationship with a new acquaintance (Reis et al., 2011).

Trait mindfulness is most often conceptualized as a singular construct (Murphy et al., 2012), but it has been theorized to be multi-faceted (Baer et al., 2004, 2006; Dimidjian

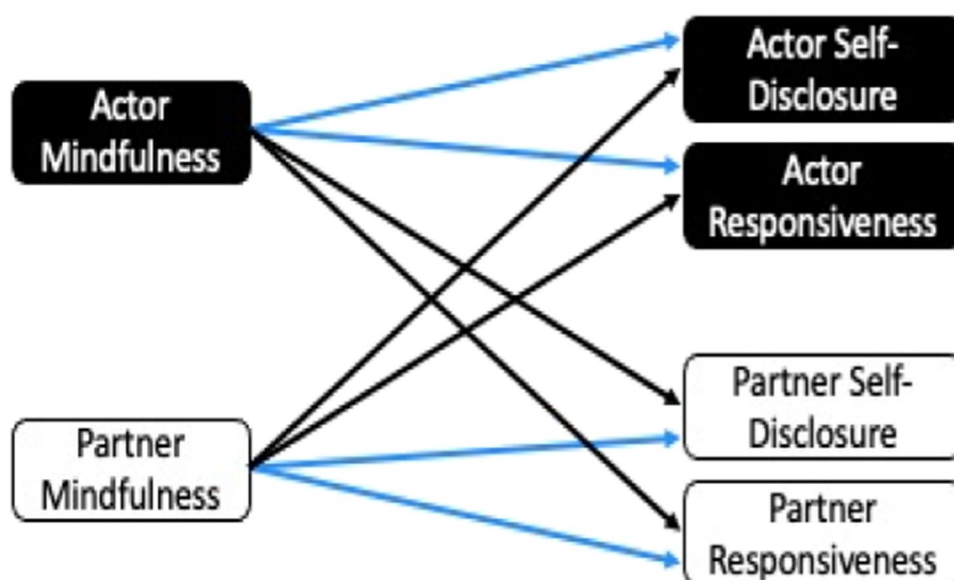
& Linehan, 2003; Karl & Fischer, 2020). A widely accepted conceptualization of the dimensions of mindfulness is found in the Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006). The five facets include Observing, Describing, Acting with Awareness, Nonjudging, and Nonreactivity. The facet of Observing is the tendency to notice internal and external experiences. The facet of Describing is associated with the tendency to describe internal experiences using words. Acting with Awareness means behaving with awareness of the present moment, and Nonjudging is the tendency to refrain from judging one's inner experiences. Lastly, the facet of Nonreactivity is allowing one's thoughts and feelings to pass without focusing or elaborating on them or getting lost in the story of one's thoughts and feelings. Together, these five factors contribute to an overall mindfulness factor and are meaningfully distinct. Factor analyses indicate support for the five facets of mindfulness in the FFMQ (Baer et al., 2006, 2008; Christopher et al., 2012; Gu et al., 2016; Williams et al., 2014). Overall, there is wide support for conceptualizing dispositional mindfulness as a multi-faceted rather than a one-dimensional construct.

In addition to the growing research that addresses how people's own mindfulness influences their behaviors and experiences within relationships, another area of expansion examines how the mindfulness of people's interaction partners might influence their own behaviors and experiences—for example, how a spouse's mindfulness is linked with one's own relationship satisfaction. The host of individual benefits that are associated with mindfulness interventions and trait mindfulness sparks the question of what is the role of *other people's* mindfulness on people's own outcomes. In contrast to the largely consistent research linking mindfulness with positive outcomes at the individual level, research on the influence of other people's mindfulness shows conflicting evidence. For example, several studies provide support for the idea that the mindfulness of one's partner can shape one's own evaluations of the relationship and communication within the relationship (Lenger et al., 2017; Schellekens et al., 2017; Williams & Cano, 2014). Some studies demonstrate that one spouse's mindfulness is associated with the other's perceived marital quality or satisfaction (Lenger et al., 2017; Zamir et al., 2017). In contrast, other studies found a lack of evidence for partner effects of mindfulness in aspects such as relationship quality and sexual satisfaction in romantic relationships (McGill et al., 2020; Stanton et al., 2021). These conflicting findings regarding partner effects of mindfulness suggest a need for further studies to explore the intrapersonal and interpersonal effects of mindfulness in relationships, ideally exploring if specific facets of mindfulness are at play. Trait mindfulness has recently been looked at in a dyadic context during interactions with strangers. Individuals with higher

trait mindfulness had more positive perceptions of the interaction and more positive impressions of the stranger, suggesting that trait mindfulness may shape perceptions of others in interpersonal interactions (van der Schans et al., 2022). A subset of interpersonal research on mindfulness examines specific facets associated with relational processes within the context of a romantic relationship. Iida and Shapiro (2019) found that women who had higher levels of Nonreactivity and Describing had male partners with more stable moods and that men with lowered levels of the mindfulness facets of Nonjudging had female partners with more stable moods. In another relevant study, the facet of Nonjudging was related to one's own satisfaction in a romantic relationship, while the facet of Nonreactivity predicted one's spouse's relationship satisfaction (Lenger et al., 2017). In line with the work that suggests mindfulness is linked with several prosocial behaviors, recent research suggests specific mindfulness facets may be implicated. For example, the facets of Observing and Describing were linked with empathy and active listening (Jones et al., 2019). These findings indicate that mindfulness shapes relational interactions and that facets of mindfulness may be linked with specific aspects of relationship outcomes and processes.

Overall, research to date suggests that mindfulness is linked with relationship outcomes, that specific facets of mindfulness may be in play in these outcomes, and that there is conflicting evidence in terms of interpersonal influences of mindfulness on relationships. Based on this research, the current study examined whether trait mindfulness was associated with behavior during a conversation between new acquaintances. Specifically, we examined observer-coded self-disclosure and responsiveness. We explored whether these behaviors were associated with people's own trait mindfulness and the trait mindfulness of their interaction partners. Based on a comprehensive literature search of English-language-published studies in this field, this was the first research to explore the five facets of mindfulness in conversations between new acquaintances and the first to investigate whether trait mindfulness of both interaction partners is associated with self-disclosure and responsiveness in new acquaintances (Fig. 1 illustrates a path diagram of potential relationships between these variables). Because self-disclosure and responsiveness are critical in new relationship formation, we measured both of these behaviors to understand the relationship between mindfulness and behavior in conversations between new acquaintances. In addition, because mindfulness is a multi-faceted construct, we investigated each of the five facets of mindfulness individually. Our first aim was to explore if a person's trait mindfulness was associated with their own self-disclosure during a conversation with a new acquaintance (i.e., were there actor effects of mindfulness

Fig. 1 Path diagram of potential relationships explored between actor and partner mindfulness, self-disclosure, and responsiveness



on self-disclosure)? Was the trait mindfulness of a person's interaction partner associated with their self-disclosure (i.e., were there partner effects of mindfulness on self-disclosure)? Our second aim was to investigate if a person's trait mindfulness was associated with their own responsiveness during a conversation with a new acquaintance (i.e., were there actor effects of mindfulness on self-responsiveness)? Was the trait mindfulness of a person's interaction partner associated with their responsiveness (i.e., were there partner effects of mindfulness on responsiveness)? We predicted that mindfulness would be linked to increased responsiveness in conversations with new acquaintances. Lastly, an exploratory aim of the present study was to see if any of these effects were linked to specific facets of mindfulness.

Method

Participants

A relatively diverse sample of 140 participants (ages 18–45) was recruited from a large city in the Northeast area of the USA through online advertisements, posted flyers, a University Psychology subject pool, and a university-wide student email notification system ($M_{\text{age}} = 22.94$, $SD = 6.27$; 45% male; 31.43% Caucasian/White, 24.29% East/Pacific/South Asian, 15.71% Hispanic/Latin American, 13.57% African American/Black, 2.86% Middle Eastern, 12.14% Other/Mixed Race). Participants were compensated with a \$30 Amazon.com gift card or class credit if they were recruited from the subject pool.

Procedure

An overview of the study methods and procedure is presented in the Supplementary Material in Figure S1. Participants completed a demographic survey and the *Five Facet Mindfulness Questionnaire* (Baer et al., 2006). Participants were randomly paired into 70 same-sex, new acquaintance dyads and randomly assigned to a high vs. low self-disclosure (i.e., being asked to divulge high or low levels of personal information) guided conversation. Once in the lab, participants were directed to an individual laboratory space where they were briefed on the study procedures and provided informed consent. Participants were then directed to our dyad interaction space where dyads met for the first time to complete an approximately 45-min interaction of either a high or low self-disclosure guided conversation.

Measures

Mindfulness

The Five Facet Mindfulness Questionnaire (Baer et al., 2006) is a 39-item questionnaire that measures total mindfulness ($\alpha = 0.74$) as well as five facets of mindfulness (Observing $\alpha = 0.81$; Describing $\alpha = 0.89$; Acting with Awareness $\alpha = 0.85$; Nonjudging $\alpha = 0.93$; and Nonreactivity $\alpha = 0.65$). Participants were asked to respond to each statement on a 5-point Likert scale from “never or very rarely true” to “very often or always true.” Example items for each facet include, “when I'm walking, I deliberately notice the sensations of my body moving” (Observing), “I'm good at finding words to describe my feelings” (Describing), “when I do things, my mind wanders off and I'm easily distraction” (Acting with

Awareness, reverse-scored), “I criticize myself for having irrational or inappropriate emotions” (Nonjudging, reverse-scored), and “I perceive my feelings and emotions without having to react to them” (Nonreactivity). Responses were summed for each facet. All five mindfulness facets were normally distributed. Correlations between different facets are presented in Table 1.

Dyad Interaction

Participants engaged in one of two types of guided conversational tasks designed to elicit either high or low levels of self-disclosure (Aron et al., 1997). These tasks are described below.

The high self-disclosure conversation (Aron et al., 1997) utilizes a laboratory-based task designed to increase interpersonal closeness rapidly between unacquainted people through a series of questions that facilitate high levels of self-disclosure. Over approximately 45 min, participants were given three sets of questions in envelopes (15 min per envelope) that gradually escalated in eliciting personal self-disclosure. Both participants answered every question but alternated in asking questions. The entire interaction was video recorded. Participants were unaware of the purpose of the questions. This paradigm has been reliable in increasing closeness in couples (Slatcher, 2010; Welker et al., 2014a) and increasing closeness between outgroup members who have just been acquainted (Welker et al., 2014b). An example question in each envelope: Envelope 1, “For what in your life do you feel most grateful?” Envelope 2, “What roles do love and affection play in your life?” Envelope 3, “Share a personal problem and ask your partner’s advice on how he or she might handle it. Also, ask your partner to reflect back to you how you seem to be feeling about the problem you have chosen.”

Participants who were assigned to the low self-disclosure conversation (Aron et al., 1997) took turns asking and answering mundane, non-emotional questions that were designed as a small-talk task and do not typically elicit high levels of self-disclosure. For consistency, the task followed the same procedure as the high self-disclosure conversation, in that participants were given three envelopes over 45 min (15 min per envelope). The types of questions did not differ

in levels of self-disclosure between each envelope in the low self-disclosure condition. The entire interaction was video recorded. An example question is, “What are the advantages and disadvantages of artificial Christmas trees.”

Behaviors

Two trained research assistants independently coded the recorded interactions for levels of self-disclosure and responsiveness. Coders provided judgments of each participant separately at three time points, after each 15-min interval of the conversation.

Self-Disclosure

Coders rated the extent to which participants revealed their (1) thoughts, (2) feelings, and (3) facts about themselves on a 1 (*Very Little*) to 7 (*A great deal*) scale. Interrater reliability was assessed using average-measures two-way random effects and absolute agreement ICCs, which were in the good range (ICC for revealed thoughts = 0.64; ICC for revealed feelings = 0.64; ICC for revealed facts about oneself = 0.61; Hallgren, 2012; McGraw & Wong, 1996). We averaged the ratings for items across the two coders and then averaged those three items at each time point (α values ranging from 0.93 to 0.96) to get one measure of behavioral self-disclosure per participant at each of three time intervals.

Responsiveness

Coders rated the extent to which participants (1) validated and (2) cared for each other on a 1 (*Very Little*) to 7 (*A great deal*) scale. Interrater reliability was assessed using average-measures two-way random effects, absolute agreement ICCs, which were in the good range (ICC for validated = 0.60; ICC for cared = 0.69; Hallgren, 2012; McGraw & Wong, 1996). We averaged the ratings for items across the two coders and then averaged those three items at each time point (α values ranging from 0.86 to 0.88) to get one measure of behavioral responsiveness per participant at each of three time intervals.

Table 1 Correlations between different mindfulness facets, as well as means and standard deviations

	1	2	3	4	<i>M</i>	<i>SD</i>
1. Observing					25.21	6.58
2. Describing	0.08				24.53	6.47
3. Acting with Awareness	−0.22*	0.44**			24.53	6.64
4. Nonjudging	−0.10	0.28**	0.54**		24.54	7.12
5. Nonreactivity	0.45**	0.21*	−0.05	−0.001	20.03	4.70

* $p < 0.05$. ** $p < 0.01$

Self-Reports

In addition to behaviorally coded self-disclosure and responsiveness, participants also gave self-reports of self-disclosure and perceived partner responsiveness. We analyzed whether the mindfulness facets were associated with self-reported self-disclosure and perceived partner responsiveness, and were interested in whether mindfulness facets predict self-reported self-disclosure and perceived partner responsiveness. We found significant associations between both actor and partner observing and responsiveness. Individuals who were higher on observing reported that their interaction partners understood, validated, and cared for them. Those who had an interaction partner who was high on observing also thought that their interaction partner was more responsive. Results can be found in the Supplementary Material.

Data Analyses

We used multilevel, actor-partner interdependence models (Cook & Kenny, 2005; Kenny et al., 2006) to examine the influence of mindfulness on behavior. Specifically, we examined actor effects (intraindividual effects; e.g., does partner A's mindfulness predict partner A's self-disclosure?) and partner effects (cross-partner effects; e.g., does partner B's mindfulness predict partner A's self-disclosure?) for each of the five mindfulness facets, which were all mean-centered. We modeled linear effects of time (centered at the first time interval), as well as interactions between time and each mindfulness facet. We also included the self-disclosure condition as a covariate.

We allowed the model intercept and the slope for time to vary from dyad to dyad (i.e., we included a random intercept and slope for time). We also modeled all between-person (within-dyad) and within-person covariances in the random intercept and slope, and we applied a first-order autoregressive structure to behaviors over time (meaning that the within-person residuals at adjacent time points were correlated; Bolger & Laurenceau, 2013; Bolger & Shrout, 2007). These covariance parameters are reported in the Supplementary Material. We report effect sizes for fixed effects as partial- R^2 s (R^2_{β} ; Edwards et al., 2008).

Finally, to understand the robustness of the effects reported here, we conducted five sets of sensitivity analyses (Thabane et al., 2013) for each outcome variable: (1) we centered time at different points (the second and third out of three intervals) to examine whether there were any differences in the main effects of the five mindfulness facets; (2) we tested whether there were any quadratic effects of time; (3) we tested whether the influence of actor mindfulness was dependent on partner mindfulness

and vice versa (i.e., we tested for actor-partner mindfulness interactions); (4) we tested whether there were any interactions between mindfulness facets and self-disclosure condition; and (5) we examined actor and partner effects of each facet in separate models to address whether collinearity between facets was influencing model results and interpretation. Almost all significant effects reported in the main text are significant across all sensitivity analyses. A few effects which are nonsignificant in the main text are significant in the sensitivity analyses, but none of these patterns was consistent. Additional methodological details are provided in the Supplementary Material.

Results

Self-Disclosure

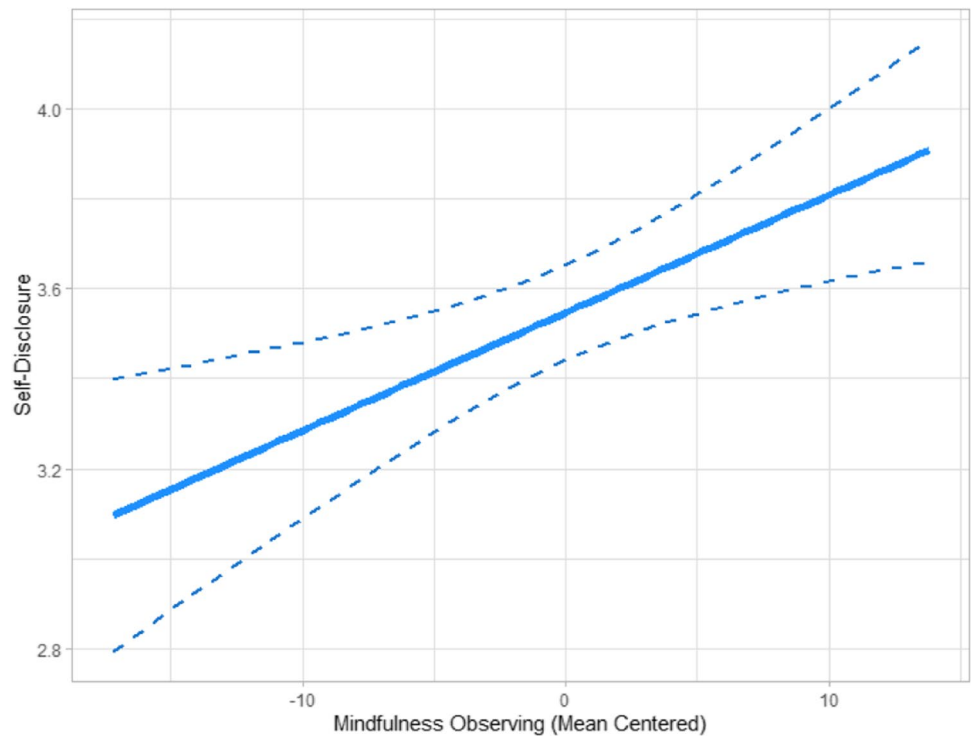
As expected, we found a significant effect of self-disclosure condition on self-disclosure behavior, $F(1, 61) = 13.27$, $p < 0.001$, $R^2_{\beta} = 0.18$: people in the high self-disclosure condition exhibited more behavioral self-disclosure ($M = 3.75$; $SD = 0.67$) than those in the low self-disclosure condition ($M = 3.36$; $SD = 0.57$). Note that we investigated whether there were any interactions between mindfulness facets and self-disclosure condition and did not find any (see Supplementary Material).

We observed significant associations between both actor and partner mindful observing and self-disclosure. The more mindful observing people reported, the more they self-disclosed, $b = 0.02$, $SE = 0.01$, $t(86.1) = 2.57$, $p = 0.01$, $R^2_{\beta} = 0.07$, 95% CI [0.01 to 0.04] (Fig. 2). The more mindful observing people's partners reported, they more they self-disclosed, $b = 0.03$, $SE = 0.01$, $t(86.1) = 3.38$, $p = 0.001$, $R^2_{\beta} = 0.12$, 95% CI [0.01 to 0.05] (Fig. 3). Neither of these effects interacted with time, p -values > 0.72 , R^2_{β} -values < 0.002 .

Partner mindful describing did interact with time to predict self-disclosure, $b = 0.01$, $SE = 0.004$, $t(102) = 2.26$, $p = 0.026$, $R^2_{\beta} = 0.05$, 95% CI [0.001 to 0.02]: the association between partner mindful describing and self-disclosure increased over time, but partner mindful describing did not significantly predict self-disclosure at any of the 15-min intervals in the study, p -values > 0.15 , R^2_{β} -values < 0.026 . This means that, although the association between partner mindful describing and self-disclosure changed across the three intervals, the association between partner mindful describing and self-disclosure was never actually significant at any of those intervals.

There were no significant effects of actor or partner acting with awareness, p -values > 0.43 , R^2_{β} s < 0.006 ; no significant effects of actor or partner mindful nonjudging, p -values > 0.20 , R^2_{β} s < 0.016 ; and no significant effects of actor or partner mindful nonreactivity, p -values > 0.43 , R^2_{β} s < 0.007 . None of these effects interacted with time, p -values > 0.12 , R^2_{β} -values < 0.025 .

Fig. 2 Actor effects of mindful Observing on self-disclosure. Note. The more mindful observing an actor reported, the more they self-disclosed, $b=0.02$, $SE=0.01$, $t(86.1)=2.57$, $p=0.01$, $R^2_{\beta}=0.07$, 95% CI [0.01 to 0.04]. Effects are graphed at the mean levels for all other variables in the model. Predicted values are collapsed across time

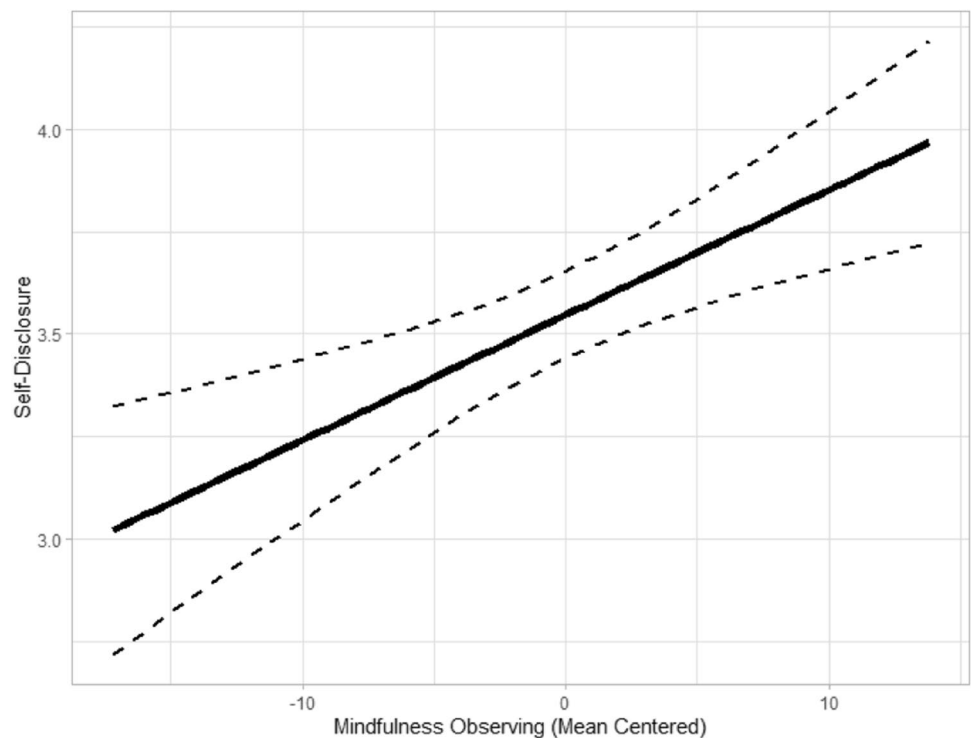


Responsiveness

We found a significant effect of self-disclosure condition on responsiveness behavior, $F(1, 61)=7.70$, $p=0.007$, $R^2_{\beta}=0.11$: People in the high self-disclosure condition exhibited more

behavioral responsiveness ($M=3.65$; $SD=0.66$) than those in the low self-disclosure condition ($M=3.29$; $SD=0.56$). Note that we investigated whether there were any interactions between mindfulness facets and self-disclosure condition and did not find any (see Supplementary Material).

Fig. 3 Partner effects of mindful Observing on self-disclosure. Note. The more mindful observing one's partner reported, the more they self-disclosed, $b=0.03$, $SE=0.01$, $t(86.1)=3.38$, $p=0.001$, $R^2_{\beta}=0.12$, 95% CI [0.01 to 0.05]. Effects are graphed at the mean levels for all other variables in the model. Predicted values are collapsed across time



We observed significant associations between both actor and partner mindful observing on responsiveness. The more mindful observing people reported, the more responsive they were, $b=0.02$, $SE=0.01$, $t(78)=2.27$, $p=0.026$, $R^2_{\beta}=0.06$, 95% CI [0.003 to 0.04] (see Fig. 4). The more mindful observing people's partners reported, the more responsive they were, $b=0.02$, $SE=0.01$, $t(78)=2.09$, $p=0.040$, $R^2_{\beta}=0.053$, 95% CI [0.001 to 0.04] (see Fig. 5). Neither of these effects interacted with time, p -values > 0.47 , R^2_{β} - values < 0.006 .

Actor and partner mindful describing did not have significant associations with responsiveness, p -values > 0.47 , R^2_{β} - values < 0.007 . Actor mindful describing did not interact with time to predict responsiveness, $p=0.41$, $R^2_{\beta}s=0.008$, but partner mindful describing did interact with time to predict responsiveness, $b=0.01$, $SE=0.004$, $t(91.4)=3.38$, $p=0.001$, $R^2_{\beta}=0.11$, 95% CI: 0.005 to 0.02. Partner mindful describing did not predict responsiveness during the first two intervals of the study, p -values > 0.28 , R^2_{β} - values < 0.01 , but it did predict responsiveness during the last interval, $b=0.02$, $SE=0.01$, $t(80.1)=2.43$, $p=0.017$, $R^2_{\beta}s=0.07$, 95% CI [0.004 to 0.04].

There were no significant effects of actor or partner acting with awareness, p -values > 0.49 , $R^2_{\beta}s < 0.005$; no significant effects of actor or partner nonjudging, p -values > 0.57 , $R^2_{\beta}s < 0.004$; and no significant effects of actor or partner mindful non-reactivity, p -values > 0.68 , $R^2_{\beta}s < 0.002$. None of these effects interacted with time, p -values > 0.22 , R^2_{β} - values < 0.014 . Additional results are provided in the Supplementary Material.

Discussion

How does mindfulness shape people's behaviors during conversations with new acquaintances? In the present study, we built on past work to examine whether and how all five facets of mindfulness are associated with two key relationship formation behaviors—self-disclosure and responsiveness—when people converse with new acquaintances. Two primary findings emerged. Firstly, we found that people who were higher on the mindfulness facet of Observing were more likely to self-disclose (i.e., to reveal personal thoughts, feelings, and facts about themselves) and to be responsive when interacting with a new acquaintance, as indicated by observer ratings. Secondly, we found partner effects of this mindfulness facet: people were also more likely to self-disclose and be responsive when they interacted with partners who themselves were higher on the mindfulness facet of Observing. Although we also found some evidence for a partner effect of Describing, this effect was not as strong: it was only limited to the last 15-min interval of participants' conversations and it was only associated with responsiveness and not self-disclosure.

Our data are in alignment with much of the previous literature on mindfulness and relational processes within established relationships. For example, the present study's findings support recent findings that being mindful is linked with positive outcomes such as relationship quality in romantic couples and that perceived responsiveness is an important mediator underlying the association between relationship-specific mindfulness, and relationship

Fig. 4 Actor effects of mindful Observing on responsiveness. Note. The more mindful observing the actor reported, the more responsive they were, $b=0.02$, $SE=0.01$, $t(78)=2.27$, $p=0.026$, $R^2_{\beta}=0.06$, 95% CI [0.003 to 0.04]. Effects are graphed at the mean levels for all other variables in the model. Predicted values are collapsed across time

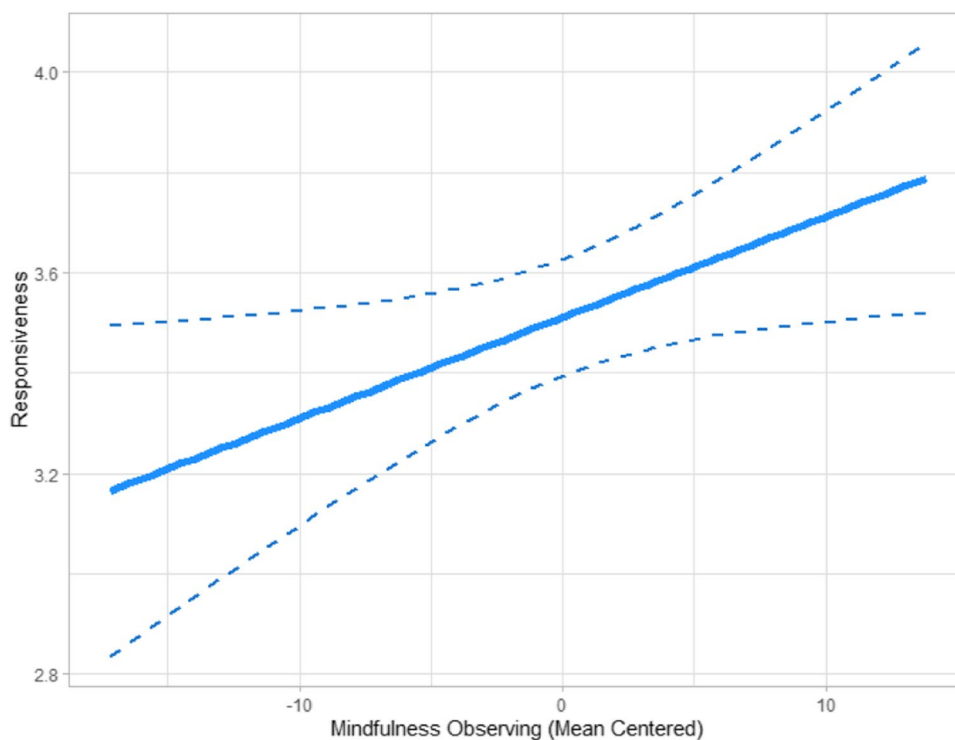
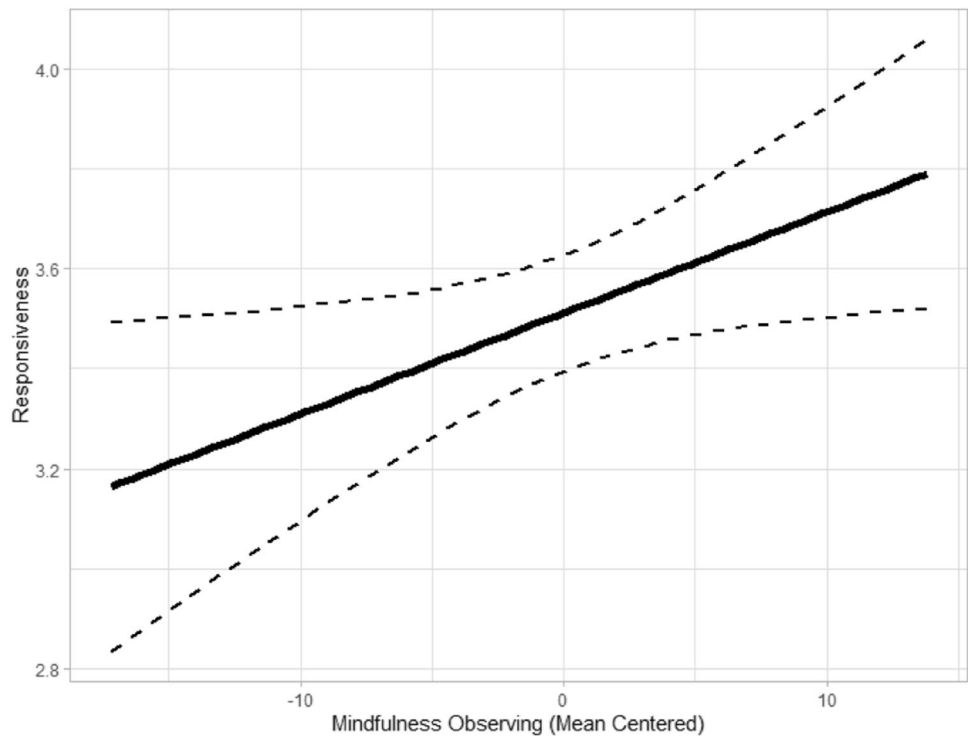


Fig. 5 Partner effects of mindful Observing on responsiveness. Note. The more mindful observing one's partners reported, the more responsive they were, $b=0.02$, $SE=0.01$, $t(78)=2.09$, $p=0.040$, $R^2_{\beta}=0.053$, 95% CI [0.001 to 0.04]. Effects are graphed at the mean levels for all other variables in the model. Predicted values are collapsed across time



quality (Stanton et al., 2021). Our findings suggest that the Observing facet of mindfulness is linked with higher self-disclosure and higher responsiveness at the individual level among new acquaintances. Further, those paired with a partner who was higher on Observing tended to self-disclose more and were more responsive. These findings are in line with research on the interpersonal effects of mindfulness facets in romantic relationships. For example, one study aimed to understand a possible mechanism linking mindfulness and relationship satisfaction in romantic relationships. In their research on trait mindfulness and satisfaction in romantic couples, Adair et al. (2018b) found that those higher in the Observing and Nonjudging facets of mindfulness thought that their partners were more responsive, which predicted relationship satisfaction.

Conflicting findings have been reported in the literature on the interpersonal effects of mindfulness in relationships. Several studies indicate that one's relationship partner's mindfulness is linked with the other's relationship outcomes but not all studies have supported this (Barnes et al., 2007; Iida & Shapiro, 2019; Lenger et al., 2017; McGill et al., 2020; Pakenham & Samios, 2013; Schellekens et al., 2016; Williams & Cano, 2014; Zamir et al., 2017). The discrepancy in this literature may be because mindfulness is typically measured broadly as a global rather than multi-dimensional concept. One of the few studies to look at specific dimensions of mindfulness—Nonreactivity and Nonjudgement—and their dyadic analysis found partner effects for certain facets but not others (McGill et al., 2020).

Why did we find that one partner's scores on to mindful observing was associated with the other's self-disclosure and responsiveness? The Interpersonal Process Model (Reis & Shaver, 1988) suggests that intimacy is developed through a transactional process through self-disclosure and partner responsiveness. In fact, it has been suggested that self-disclosure's significance in relationship building lies primarily in its ability to elicit partner responsiveness (Reis, 2017). The process of building relationships is both reciprocal and iterative. Having a responsive partner builds trust which in turn may lead to greater self-disclosure. This self-disclosure, in turn, provides more opportunity for partner responsiveness and invites partner self-disclosure, and may be the mechanism driving partner effects. Individuals high in the Observing facet of mindfulness find their romantic partners to be more responsive (Adair et al., 2018b). One possibility is that the Observing facet, which describes internal and external observations, leads to greater awareness of partner responsiveness in new acquaintances. This could begin the iterative process of self-disclosure and responsiveness in new relationships. However, more work is needed to identify how certain facets are linked with relational processes in the context of new acquaintances, and the mechanisms through which facets of mindfulness influence interpersonal behaviors. Together, this work points to the importance of examining facets of mindfulness in relationship processes.

One strength of this work is that we examined self-disclosure and responsiveness behaviorally. In much of the

literature, research on self-disclosure and responsiveness in relational contexts relies on self-report as the exclusive measure. The subjective nature of self-reports has the potential to be unreliable, as participants may not have the introspective ability to gauge how disclosures are coming across. For example, one may feel they are self-disclosing, but their acquaintance, friend, or romantic partner may feel they are holding back. The use of video-coded behavior, utilized in the present study, can address this gap and further reveal the role of self-disclosure in the formation of closeness. One limitation of the behavioral coding in the current study is that, though blind to the experimental hypotheses, the behavioral coders were not blind to the experimental design or the questions being asked during the interaction.

A majority of previous research on mindfulness and relationships has measured and conceptualized mindfulness as unidimensional. The present studies' examination of mindfulness as multi-faceted provides clarification of how mindfulness contributes to social-relational processes. Lastly, this is the first study to date that we are aware of that looks at the role of mindfulness in conversations with new acquaintances, providing a window into how mindfulness may be linked with processes at the earliest stages of relationship formation.

Limitations and Future Research

Potential relational outcomes such as relationship quality and satisfaction that may be associated with mindfulness, self-disclosure, and responsiveness were not examined in the current study. Therefore, we do not know if conversations with new acquaintances who are more mindful are more likely to lead to a continuing relationship. This would be worthwhile to investigate. Self-disclosure is considered a pathway to developing closeness, yet too much self-disclosure or disclosure that comes too early is associated with negative relationship outcomes (Weber et al., 2004). Though self-disclosure is typically valued in a close relationship, it may be seen as too personal by a new acquaintance. Future studies may address how much self-disclosure is appropriate in conversations of this nature. In a romantic relationship, individuals typically have a difficult time accurately guessing if there are equal or uneven levels of self-disclosure, and unequal levels of self-disclosure can lead to relationship difficulties (Sprecher & Hendrick, 2004). Mindfulness may increase the accuracy of self-knowledge (Carlson, 2013; Jankowski & Holas, 2014) and increase perceptual focus during a conversation (Kaplan et al., 2018). Thus, it may be worthwhile to explore the role of mindfulness on perceptions of self-disclosure and responsiveness during conversation to inform the process of building social connections.

In addition, given the large body of research demonstrating that mindfulness interventions can increase levels of mindfulness, it is worth investigating which individuals could benefit most from mindfulness in interpersonal processes. For instance, a secure attachment style has been shown to mediate the link between mindfulness and relationship satisfaction (Jones et al., 2011). Further research could explore the role of mindfulness facets and mindfulness training in anxiously and avoidantly attached individuals who may be less comfortable with appropriate self-disclosure and responsiveness. Perhaps mindfulness training could enhance the ability to self-disclose and be responsive in relationships. If mindful observing was increased, there may be greater awareness of one's internal experiences during an interaction, or increased awareness of others' self-disclosing and responsive behavior. Such interventions could be developed and tested.

Lastly, future research could further investigate both enacted responsiveness, as we have here in the current study, as well as perceptions of others' responsiveness. Interestingly, perceptions of partner responsiveness are just as important and potentially more important than actual (enacted) responsiveness (Debot et al., 2012). Here, as well, it is crucial to examine mindfulness facets as well as mindfulness as a whole. Adair et al. (2018b) found that those higher in the Nonjudging and Observing facets rated their romantic partners higher in responsiveness. This speaks to the usefulness of examining both enacted and perceived responsiveness, as well as potential mindfulness facets associated with these perceptions and behaviors.

Although it is clear that trait mindfulness has intraindividual benefits, here, we show that it is also linked with behaviors that are critical for forming new relationships with others: the self-disclosure of personal thoughts, feelings, and facts, and the degree to which one is responsive to others. Importantly, this work shows that people's own mindfulness—and the mindfulness of their interaction partners—can shape how people behave in social interactions. Moreover, in showing that these effects are primarily limited to the Observing facet of mindfulness only, this work reveals the importance of considering the individual facets of mindfulness when examining its ties to social behavior. Ultimately, this work extends our knowledge of mindfulness beyond intraindividual processes to the social sphere, lending insight into how our own mindfulness—and also the mindfulness of the people we interact with—may shape the behavioral building blocks of our social relationships.

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Author Contribution SK designed and executed the study, participated in the data analyses, wrote the initial draft of the manuscript, and contributed to manuscript revision. KT conducted the data analyses, wrote the initial draft of the manuscript, and contributed to manuscript revision. AR executed the study and collaborated in writing the final manuscript. KW designed and executed the study, conducted the data analyses, wrote the initial draft of the manuscript, and contributed to manuscript revision. All authors approved the final version of the manuscript for submission.

Data Availability Study data and analysis syntax are available at the Open Science Framework (OSF) (https://osf.io/36mbx/?view_only=9418aecdd16cd4b318ab0767f65e4517f).

Declarations

Ethics Approval All human studies have been approved by the University of Hartford IRB committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments.

Informed Consent Written informed consent was obtained from each participant prior to completing the study.

Conflict of Interest The authors declare no competing interests.

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