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Distinguishing the Correlates of Being Mindfully vs. Mindlessly Coupled: Development and Validation of the Attentive Awareness in Relationships Scale (AAIRS)

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Abstract

Objectives: The current study developed a psychometrically optimized measure of mindful attentive relationship awareness.

Methods: Items of existing scales (e.g., the Relationship Awareness Scale; RAS; the Relationship Mindfulness Measure; RMM) were combined with items written by the authors to create a pool of 54 items given to online samples of 2,109 and 1,752 participants. Using correlational analyses and item response theory, we developed the Attentive Awareness in Relationships Scale (AAIRS).

Results: Results suggested that the AAIS measured the construct of relationship awareness, comprised of two distinct facets: attentive awareness and inattention/distraction. The AAIRS demonstrated convergent and discriminant validity with existing measures (e.g., relationship communication/talk, trait mindfulness) and offered researchers higher precision and power for detecting differences among individuals. The AAIRS demonstrated adequate internal consistency across a wide range of demographic subgroups and displayed strict measurement invariance across genders, relationship stages, and current meditation frequencies. Bifactor analyses highlighted that the subscales of the AAIRS shared a large proportion of common variance, supporting the use of a total score to represent mindful attentive relationship awareness. However, the bifactor analyses also revealed unique variance associated with each subscale and longitudinal analyses suggested that those facets of relationship awareness changed fairly independently across time and were both uniquely linked to corresponding change in relationship satisfaction, suggesting the possibility that each of the AAIRS subscales might also contribute novel explanatory variance (i.e., incremental validity).

Conclusions: The AAIRS offers researchers and clinicians a psychometrically-optimized tool for assessing the construct of relationship awareness.

Keywords: Mindfulness, Couples, Measurement Development, Item Response Theory, Relationship Satisfaction

A small but growing number of studies have begun to study the impact of the individual process of mindfulness on relationships (e.g., Barnes et al. 2007; see Daks and Rogge 2020 for a meta-analytic review). For example, couples researchers have shown that mindfulness is associated with relationship quality both in basic research studies (e.g., Barnes et al. 2007; Wachs and Cordova 2007), and in intervention studies (e.g., Carson et al. 2004). The majority of this work has made use of measures assessing individual attentive awareness (e.g., the Mindful Attention Awareness Scale; MAAS; Brown and Ryan 2003), and has linked that to higher relationship satisfaction and stability (e.g., Khaddouma and Gordon 2018; see Kozlowski 2013 for a review). Recent work has demonstrated that novel insights can be gained by shifting from trait mindfulness to examining mindfulness within specific interpersonal contexts. For example, the Interpersonal Mindfulness in Parenting scale (Duncan 2007) has highlighted the central roles that various forms of mindfulness play within families (e.g., Beer et al. 2013). It is likely similar insights could be gained within models of relationship functioning by shifting from trait mindfulness to conceptualizing attentive awareness and inattention/distraction specifically toward one's romantic relationship as contextually-focused, dynamic (state-like) relationship processes in their own rights.

To refine and clarify the conceptualization of relationship awareness, commonly used theoretical and operational principles of individual mindfulness were used. The MAAS (Brown and Ryan 2003) has offered researchers a convenient method of assessing one highly specific facet of this construct, attentive awareness (or more accurately, general inattention/distraction, given the negative direction of its items). Baer et al. (2006) then built on that work creating the Five-Facet Mindfulness Questionnaire (FFMQ; Baer et al. 2006). As the process of cultivating mindfulness is likely even more complex than what is assessed with the MAAS and the FFMQ (see Grossman and Van Dam 2011 for a discussion), the term "mindfulness" will serve as an

umbrella term to refer to a broader set of inter-related processes in individuals' lives allowing them to approach situations and experiences with a non-judgmental, open and accepting awareness (e.g., Rogge and Daks 2020). The phrase "attentive awareness" will be used to refer to one facet of that process, namely individuals' abilities to mindfully attend to the present moment in their daily lives. More recently, the Multidimensional Psychological Flexibility Inventory (MPFI; Rolffs et al. 2018) expanded the repertoire of available mindfulness measures by offering two 5-item, Item Response Theory (IRT)-optimized subscales of inattention/distraction (mapping onto the content of the MAAS; e.g., "I did most things on automatic with little awareness of what I was doing") and attentive awareness (e.g., "I was attentive and aware of my emotions"), which demonstrated clear discriminant validity from one another (r_{men} = -.36, r_{women} = -.21), suggesting that they were sufficiently distinct to be treated as separate constructs (Rolffs et al. 2018).

Among the first researchers to propose a conceptual definition of relationship awareness, Acitelli (1992) identified it as the process of thinking about patterns of interacting, relating to, and communicating with one's partner about their relationship. Expanding upon this, Snell (1988; 2002) developed and validated the Relationship Awareness Scale (RAS), a self-report measure with a relationship-consciousness subscale that measures mindful attentive relationship awareness (e.g., "I was very aware of what was going on in my romantic relationship"). More recently, Kimmes et al. (2017) developed a 5-item Relationship Mindfulness Measure (RMM). This scale specifically examines inattention/distraction to the moment when spending time with one's partner (e.g., "When my partner and I are together, it seems I am 'running on automatic' without much awareness of what I'm doing."). Thus, the RMM assesses inattention and distraction within relationships from a distinct conceptual perspective. Building on the conceptual approaches underlying the MPFI and RAS scales, the AAIRS was developed as a measure of "mindful attentive relationship awareness." This overarching construct includes

"relationship attentive awareness," a facet of mindfulness focused on remaining present, attentive and aware of one's relationship (e.g., subtle shifts in feelings, mood, and relationship dynamics) on a moment-to-moment basis. To build on the growing body of mindfulness-based intervention research and to pivot away from trait-based conceptualizations like that used by the MAAS, relationship attentive awareness was conceptualized as a contextual (focused on one's relationship; see Vallerand 1997) and dynamic process that could change over time (either naturally occurring or in response to interventions).

The current definition also included a separate facet of "relationship inattention/distraction," being distracted and out of touch with one's romantic relationship during the course of everyday life. Although the two dimensions of mindful attentive relationship awareness were expected to show moderate negative correlations, they could have also shown meaningful independence from one another, as an individual could simultaneously be mindful of their relationship in some areas or situations/contexts and be generally inattentive and distracted from other areas/situations/contexts. For example, an individual could be fairly attentive and aware of the sexual aspects of their relationship and yet simultaneously inattentive and distracted from underlying emotional dynamics within the relationship that might exist below the surface.

In addition to aligning with recent work on the MPFI, this conceptualization built on recent work on the Positive-Negative Relationship Quality scale (PN-RQ; Rogge et al. 2017), a measure designed to extend the conceptualization of relationship quality beyond a simple unidimensional scale. In developing and validating this scale, Rogge et al. (2017) not only demonstrated that assessments of the positive and negative qualities of relationships could change independently of one another over time, but also that those two constructs yielded different results in response to a self-guided intervention, underscoring their distinctiveness and strongly supporting that two-dimensional conceptualization. Thus, to build on that recent

empirical and conceptual work, attentive awareness was distinguished from relationship inattention/distraction when conceptualizing mindful attentive relationship awareness, each of which would likely: (1) show distinct patterns of association with relationship processes and outcomes, (2) change independently over time, and (3) offer unique clinical information (i.e., showing differential responses to interventions). Therefore, when referring to mindful attentive relationship awareness, that will serve as a broad term that encompasses two distinct facets, relationship attentive awareness and relationship inattention/distraction.

Mindfulness as envisioned within Buddhist teachings represents an ongoing practice of cultivating an open-hearted awareness of experiences from moment to moment in daily life (e.g., Hanh 1998), thus helping individuals to develop and foster a non-judgmental and accepting orientation toward life and toward their own experiences (see Grossman and Van Dam 2011). These processes then facilitate individuals' abilities to decenter, or objectively investigate their own experiences without judgement or reactivity (see Bodhi 1994 as well as Crane et al. 2017 for discussions). From this perspective, the facets of mindful attentive relationship awareness conceptualized for the AAIRS represent just two small facets of mindfulness. Thus, the dimensions of the AAIRS would likely serve as lenses (e.g., Rogge and Daks 2020), allowing individuals to begin engaging the process of developing mindfulness in their lives by helping them to more clearly observe the dynamics in their relationships. Maintaining attentive relationship awareness could help individuals create space between events within their relationships and their responses to those events (i.e., decentering from relationship triggers or conflict), thereby allowing individuals to find kinder and more loving and compassionate responses to relationship triggers or conflict.

A number of existing scales measure closely related, yet distinct constructs to the current definition of mindful attentive relationship awareness. These scales were included in the

development of the AAIRS as key conceptual boundary measures that allowed empirical validation of the proposed boundaries of the definition. The Relationship Talk Measure (Acitelli 1988) focuses on talking with a romantic partner (e.g., "how often did you reveal very intimate things about yourself or your personal feelings?"). The Positive Affect Thinking subscale of the Relationship Thinking Scale (Cate et al. 1995) assesses thoughts about positive relationship feelings (e.g., "I reflect on how much I love my partner"). Five items measured reminiscing (e.g., "I think about all of the fun my partner and I have had together"). The study also included: (1) the two remaining subscales of the RAS, (2) the MPFI subscales of individual present moment awareness and inattention/distraction from the present moment, and (3) a measure of self-awareness (the Self Consciousness Scale – Private subscale; SCS-PrSC; Fenigstein et al. 1994).

Relationship attentive awareness was hypothesized to be a dynamic relationship process that may fluctuate over the course of a relationship and may be sensitive to interventions. Consistent with this, analyses in cross-sectional samples of 737 and 431 undergraduate students (respectively) demonstrated that higher relationship awareness was associated with greater intimacy-related coping behaviors (Pollina and Snell 1999) and greater self-reported hypothetical willingness to discuss relational topics with a couple's counselor (Snell et al. 1992). Extending these results, newlywed couples in a self-guided intervention aiming to increase relationship awareness (discussing couples in movies to help ease into discussions of their own relationships) demonstrated significantly lower rates of divorce over the first 3 years of marriage than a group not engaging in a relationship-enhancing intervention (Rogge et al. 2013). That same intervention – now termed the Promoting Awareness, Improving Relationships (PAIR) program – has also been shown to lead to immediate pre-post gains in relationship functioning (Rogge et al. 2017). Taken together, these results suggest that mindful attentive relationship awareness might have a marked impact on relationship functioning and quality.

The current study sought to develop mindful attentive relationship awareness as a distinct relationship process and to distinguish it from general attentive awareness within individuals. Building on recent measurement work, this study conceptualized relationship attentive awareness and relationship inattention/distraction as distinct facets of mindful attentive relationship awareness. Analyses in Sample 1 focused on the development, validation, and predictive utility of the AAIRS. Toward that end, a pool of 54 items was given to an online sample of 2,109 adults currently in romantic relationships. Analyses in Sample 2 (N = 1,752) then cross-validated the factor structure and evaluated the discriminant validity of the AAIRS.

Method

Participants

Sample 1included a total of 2,109 respondents, age 18 and above, currently in a relationship, who completed an online survey from March to October of 2018: 50% dating exclusively (together for an average of 2.3 years, *SD* = 2.5), 6% engaged (together an average of 4.7 years, *SD* = 3.5), and 40% married (together an average of 13.5 years, *SD* = 9.6, married an average of 5.4 years, *SD* = 8.8). In the full sample, 59% were living with their partners, 26% were dissatisfied in their relationships, 62% were female, and 82% were Caucasian, with 6% African American, 7% Asian, and 5% other/multiracial. The mean age was 32 years old (*SD* = 12.1) with average incomes of $42,382 per year (*SD* = $32,523). Approximately 36% of respondents had completed some college or trade school, 34% held a bachelor's degree, 21% completed graduate degrees, and 9% had a high school education or less. Roughly 52% reported never meditating, 28% reported infrequently meditating (i.e., less than once per week), and 20% reported frequently meditating (i.e., once per week if not more often).

Sample 2 included a total of 1,752 respondents in romantic relationships, age 18 and above, who completed an online survey from August 2018 to February of 2019: 18% dating

exclusively (together for an average of 1.9 years, *SD* = 2.4), 3% engaged (together an average of 5.2 years, *SD* = 3.8), 66% married (together an average of 22.0 years, *SD* = 15.1, married an average of 19.1 years, *SD* = 15.2), 13% long-term committed partnership (together an average of 8.1 years, *SD* = 8.4), 80% living together, and 35% were currently dissatisfied in their relationships. The participants predominantly identified as female (67%), and Caucasian (84%), with 5% African American, 5% Asian, and 6% other/biracial. Respondents were on average 43 years old (*SD* = 17) with average incomes of $58,913 per year (*SD* = $34,525). Roughly 25% of respondents completed some college or trade school, 33% had bachelor's degrees, 37% completed graduate degrees, and 5% had high school educations or less.

Procedure

Procedures for each sample were approved by the University of Rochester Research Subjects Review Board before data collection. Although Sample 2 was open to all adults, we limited our analyses to the subset of respondents who were currently in romantic relationships. The surveys were hosted online via SurveyGizmo.com and offered participants individualized feedback as the main recruitment incentive. Mechanical Turk participants received $0.40 of store credit for Amazon.com, and those recruited from an undergraduate research pool received extra credit toward their psychology courses as additional incentives.

The survey used in Sample 1 was advertised as "The Experiences of Relationships Study." Participants were recruited through: ResearchMatch (40.6%), Amazon.com's Mechanical Turk service (27.7%), an undergraduate psychology research pool (12.6%), Facebook posts (7.3%), websites listing psychology research studies (10.6%; e.g., University of Hanover, Socialpsych.org), and postings on forums (1.3%; e.g., reddit, LinkedIn). Respondents from Sample 1 providing an email addresses upon initial assessment were sent up to three emails inviting them to participate in a 6-month follow-up. Of the 2,054 (97%) respondents providing

email addresses, 998 provided follow-up (47%) data. The survey used in Sample 2 was advertised as "The Mindfulness in Life Study." Participants were recruited through: ResearchMatch (71%), Amazon.com's Mechanical Turk service (17%), an undergraduate psychology research pool (9%), and other methods (3%).

Measures

Unless otherwise indicated below, the items in the survey: (1) were written in the past tense, (2) were focused on the last two weeks, and (3) were presented with a common 6-point response scale ("*Never*," "*Rarely*," "*Occasionally*," "*Often*," "*Very often*," "*All the time*"). With the exception of the Patient Health Questionnaire-9 (PHQ-9) and the Couples Satisfaction Index (CSI) which were totaled, scores were created for scales by averaging responses in the direction of the predominant type of item so that higher scores reflected greater amounts of that construct.

The pool of 27 relationship awareness items administered to Sample 1 included the 9-item RAS-C ($\alpha = .87$) and an additional 18 items assessing attentive awareness of relationship dynamics (e.g., "I was in tune with my romantic relationship from moment to moment.") written by the authors. The pool of 27 relationship inattention/distraction items given to Sample 1 included the 5 items of the RMM ($\alpha = .87$) and another 22 items assessing inattention/distraction from relationships (e.g., "I was distracted and did not pay much attention to my romantic relationship."). In writing items, the authors paired terms more broadly triggering the context of individuals' romantic relationships with terms referring to attentive awareness and separately, inattention/distraction. We specifically avoided language probing levels of attentive awareness to more specific relationship processes (e.g., negative conflict, emotional support) to avoid confounding those items with distinct constructs in the relationship literature.

To assess the discriminant validity of the measures of mindful attentive relationship awareness, we included scales assessing closely related constructs that we considered to be conceptually distinct from relationship awareness.

Multidimensional Psychological Flexibility Inventory (MPFI). We used the 5-item present moment awareness subscale (α = .92) and the 5-item inattention/distraction to the present moment subscale (α = .91) of the MPFI to assess those two constructs (Rolffs et al. 2018).

Self-Consciousness Scale. We used the 10-item private self-consciousness subscale of the Self Consciousness Scale (SCS-PrSC; Fenigstein et al. 1994) to assess an individual's ability to reflect on their cognitive, emotional, behavioral, and motivational states (e.g., "In general… I reflect about myself a lot," α = .76).

The Mindful Attention Awareness Scale (MAAS). The MAAS (Brown and Ryan 2003) is a 15-item measure of individual's inattention throughout their daily lives (α = .92).

The Five-Facet Mindfulness Questionnaire (FFMQ). We used the FFMQ (Baer et al. 2006) to assess nonreactivity (α = .92), observing sensations (α = .91), describing thoughts and feelings (α = .90), acting with awareness (α = .92), and nonjudging (α = .94).

All of the MAAS items as well as all of the items of the FFMQ acting with awareness and non-judgment subscales are worded in a negative direction. To maintain maximum clarity, when talking about existing measures like these, we will refer to them as measures of the construct represented by the original direction of the items. We therefore characterize the MAAS as a measure of inattentive unawareness rather than as a measure of mindful attentive awareness.

Relationship Thinking Scale (RTS). We used the 3-item Positive Affect Thinking subscale of the RTS (Cate et al. 1995; e.g., "I reflect on how much my partner loves me;" α = .80) to assess participants' degree of thinking about love/sex.

Relationship Talk Measure (RTM). The 10-item RTM (Badr and Acitelli 2005; e.g., "In general, how often do you talk about your relationship with your spouse," $\alpha = .90$) was used to assess relationship focused communication.

Relationship Awareness Scale (RAS). The Relationship Anxiety and Monitoring subscales of the RAS (Snell; 1988; 2002) provided seven internally consistent items assessing relationship anxiety (e.g. "I felt quite anxious about my romantic relationship;" $\alpha = .87$) and eight internally consistent items assessing relationship monitoring (e.g., "I have been concerned about the way my romantic relationship is presented to others;" $\alpha = .89$).

Reminiscing about one's relationship. We included five items to assess reminiscing about positive memories in one's relationship (e.g., "I thought about all of the experiences that my partner and I have shared together" $\alpha = .94$).

Couples Satisfaction Index (CSI-8). The CSI-8 (Funk and Rogge 2007) is an 8-item measure of relationship satisfaction (e.g., "Please indicate the degree of happiness, all things considered, of your relationship"). Items were rated on the original 6 and 7-point response scales developed for that measure ($\alpha = .96$).

Dedication. We used 4 items from the dedication subscale of the Revised Commitment Inventory (RCI; Owen et al. 2012) to assess dedication (e.g., "My relationship with my partner is more important to me than almost anything else in my life" rated on). These items were rated on a 7-point response scale ("*Strongly disagree*" to "*Strongly Agree*;" $\alpha = .88$).

Emotional Support. We used 6 items assessing emotional support from a romantic partner from the Support in Intimate Relationships Rating Scale (SIRRS; Dehle et al. 2001; e.g., "When I was feeling upset, stressed or hassled by some problem or difficult situation, my partner… expressed confidence in my ability to handle a situation," $\alpha = .91$).

Perceived Partner Responsiveness & Insensitivity. We included the 4-item partner responsiveness subscale (e.g., "My partner really listened to me," $\alpha = .94$) and the 4-item insensitivity subscale (e.g., "My partner seemed to ignore the things that were most important to me," $\alpha = .91$) of the Perceived Responsiveness-Insensivity scale (PRI; Crasta et al. 2019).

Physical Affection. Five items were used to assess physical affection (e.g., In the last 2 weeks, how often did you and your partner…. "Cuddle," "Hug," "Kiss," "Hold hands;" $\alpha = .95$).

Negative Conflict. We used 6 items to assess negative conflict behaviors in a romantic relationship (e.g., When discussing a problem with your partner, how often did you… "Yell or scream at your partner," "Do something to spite your partner," $\alpha = .85$).

Vitality. We used 16 items to assess vitality (e.g., "I felt alive and vital;" $\alpha = .97$). Responses were rated on a 7-point scale ("*Not at all*" to "*Extremely*").

Satisfaction with Life Scale (SWLS). The SWLS (Diener et al. 1985) is a 5-item measure of global life satisfaction (e.g., "In most ways my life is close to my ideal;" $\alpha = .95$). Responses were rated on 7-point scale ("*Strongly Disagree*" to "*Strongly Agree*").

Depressive Symptoms. We used the Patient Health Questionnaire-9 (PHQ-9; Kroenke et al. 2001) to assess depressive symptoms ($\alpha = .90$). Items were rated on the original 4-point scale ("*Not at all*" to "*Nearly every day*").

Data Analyses

We used traditional measure development analyses and IRT analyses to: (1) develop an IRT-optimized measure of relationship awareness, (2) ground it within the existing mindfulness literature, and (3) test its ability to detect meaningful change over time in relationships. Exploratory (in Samples 1 and 2) and confirmatory factor analyses (in Sample 2) examined the factor structure of the AAIRS. Item response theory analyses were used to optimize the

information, precision and power provided by the resulting scales. Discriminant and convergent validity were determined by examining the correlation results between the AAIRS and close conceptual boundary scales. Generalizability and measurement invariance analyses examined the properties of the AAIRS across subpopulations. Lastly, hierarchical regressions examined the unique validity of the AAIRS subscales for predicting change in relationship satisfaction over 6 months. To allow for the possibility that the two facets of mindful attentive relationship awareness might represent distinct constructs, we allowed the items to retain their original directions across a majority of the analyses, only reverse coding responses to the negative items when creating total scores on the AAIRS.

Results

A preliminary EFA identified pools of unidimensional items in Sample 1 for further IRT analysis. The EFA examined a set of 69 items: 54 items in the pool of potential items, the negatively worded items of the RMM and newly written positively worded items using the RMM format, and the RAS monitoring and relationship anxiety subscales (to filter out items that may be measuring distinct relationship processes). The EFA used principal axis factoring with direct oblimin rotation (allowing the factors to correlate). Both the Kaiser-Guttman criteria and the scree plot suggested 7 factors accounting for 62% of the variance, identifying a pool of 22 negatively worded items and a separate pool of 13 positively worded items (loading $\geq .6$ on their respective factors). The EFA also identified 5 additional factors which served as conceptual boundaries for screening out potentially confounded items within the item pool.

Separate IRT analyses on each set of items identified items within each set that provided optimal information for assessing each construct. Specifically, we modeled the response patterns of our Likert response items with the Graded Response Model (GRM; Samejima 1997) using Multilog 7.0 (Thissen et al. 2002), allowing us to generate item information curves quantifying

the quality of information offered by each item across a wide range of the underlying construct (from 3 *SD*s below the mean to 3 *SD*s above the mean), illuminating not only the quantity of information offered by individual items but also the breadth of information provided. The item information curves revealed the items providing the greatest amounts of information across the broadest possible range of each construct, allowing us to select the 8 items optimally assessing relationship attentive awareness (creating the AAIRS-attentive awareness subscale) and the 8 items optimally assessing relationship inattention/distraction (creating the AAIRS-inattention/distraction subscale). This 16-item version of the AAIRS offers researchers with a scale offering high levels of information for distinguishing differences between people without being excessively long or difficult to accommodate. We also identified the 4 items within each subscale that could be used as shortened versions of those subscales (creating an 8-item version). Finally, although it is generally ill-advised to use just 2 items to assess a construct, we identified the 2 most effective items within each subscale to allow researchers to include the AAIRS with as few as just 2-4 items if their studies simply cannot accommodate scales of longer lengths (e.g., national phone surveys, daily diary studies, ecological momentary assessment studies).

EFA and CFA analyses run in separate random sample halves of Sample 2 cross-validated the factor structure of the AAIRS (see Fabrigar et al. 1999). The Kaiser-Guttman criteria, scree plot, and a parallel analysis converged to indicate a 2-factor solution as most appropriate (1^{st} eigenvalue = 9.24, 2^{nd} eigenvalue = 1.89, 3^{rd} eigenvalue = 0.55) accounting for 70% of the variance within an EFA using principal axis factoring extraction with direct oblimin rotation on the 16 items of the AAIRS within 896 respondents from Sample 2. As shown in Table 1, the items of the AAIRS-attentive awareness and AAIRS-inattention/distraction subscales loaded strongly on their respective factors. CFAs on the 16 items of the AAIRS in the other half of Sample 2 were run using Mplus 7.11 (Muthén and Muthén 2012) with full

information maximum likelihood (FIML) estimation. A 2-factor model in which the items of the subscales loaded on separate latent factors demonstrated excellent fit ($\chi^2(103) = 282.57$ $p < .001$; CFI = .982; SRMR = .025; RMSEA = .045; 95%CI LL = .039, UL = .051). In contrast, a model specifying a single latent factor demonstrated notably poor fit ($\chi^2(104) = 2691.95$, $p < .001$; CFI = .742; SRMR = .112; RMSEA = .170; 95%CI LL = .165, UL = .176), suggesting that relationship attentive awareness and relationship inattention/distraction represent distinct facets. The items of the AAIRS continued to load strongly on their respective factors within the two-factor CFA (Table 1). The EFA and CFA results revealed subscale correlations ranging from -.64 to -.69, suggesting that the two facets shared 41 to 48% of their variance.

A bifactor model on the items of AAIRS in Sample 1 quantified the amounts of shared and unique variance on the subscales, yielding acceptable fit: $\chi^2(88) = 140.92$, CFI = .998, RMSEA = .017, 90% CI LL = .012, UL = .022, SRMR = .010. The explained common variance (ECV) estimated was .69, comparing favorably to the bifactor ECV's of other clinical scales demonstrating both a shared common factor as well as meaningful subscales (e.g., the SCL-90-R and the BSI: ECV = .84; Urbán et al. 2014). Although this suggested meaningful amounts of shared variance, that ECV failed to exceed the suggested thresholds of ECV ≥ .85 for exclusively unidimensional scales suggested by Stucky et al. (2014) and by Stucky and Edelen (2015) and the preferred threshold of ≥ .75 for unidimensional scales suggested by Reise et al. (2013). In fact, both the percent of uncontaminated correlations (.53 for the AAIRS) and the ECV (.69 for the AAIRS) fell below the suggested threshold of ≥ .70 for essentially unidimensional scales suggested by Rodriguez et al. (2016). Thus, the AAIRS could likely be meaningfully multidimensional, and treating it as an exclusively unidimensional scale might risk obscuring meaningful results (see Hammer and Toland 2016). Consistent with this, 40% of the variance on the relationship inattention/distraction subscale and 17% of the variance on the relationship

attentive awareness subscale were completely unique to those subscales after removing all conceptually shared variance (as evidenced by their omega-s values).

As shown in Figure 1A, test information curves from an IRT on the AAIRS and RAS-C items suggested that the 8-item AAIRS-attentive awareness subscale (highest dashed line) offers greater amounts of information for discerning differences between individuals than the 9-item RAS-C (solid line). In fact, the 4-item version of the AAIRS awareness subscale offers only slightly less information than the 9-item RAS-C despite being less than half as long.

To evaluate the precision of the AAIRS-attentive awareness subscale, we arranged participants into 20 groups (of roughly equal size) based on their IRT-derived latent relationship attentive awareness (θ) scores. Since respondents in each group had similar levels of relationship awareness, any variability in their scores would be primarily due to measurement error or noise in the scale used. Figure 1B therefore presents pairs of boxplots to present the distributions of the 8-item AAIRS-attentive awareness scores and the 9-item RAS-C scores. As seen in Figure 1B, the AAIRS-attentive awareness subscale (darkly shaded boxplots) demonstrated markedly tighter distributions of scores within each group than the RAS-C subscale of comparable length (i.e., tighter distributions or smaller boxplots), suggesting higher precision for that AAIRS subscale.

To examine the power offered by the AAIRS-attentive awareness subscale for detecting subtle group differences, we calculated Cohen's *d* effect sizes contrasting the mean scores between each mindful attentive relationship awareness group and the group adjacent to it (i.e., the next higher group). We therefore calculated a set of Cohen's *d* estimates for the 8- and 4-item versions of the AAIRS-attentive awareness and for the 9-item RAS-C. As shown in Figure 1C, the 8-item AAIRS-attentive awareness subscale yielded markedly strong effects for adjacent group differences, yielding 13 large effect sizes (greater than .75) out of the 19 estimated.

To statistically test for differences in these effect sizes across scales, we converted the Cohen's *d*s into correlations and then tested those dependent correlations for significant differences (using equations from Meng et al. 1992). The 8-item AAIRS-attentive awareness subscale yielded stronger between group effects than the RAS-C on 17 of the 19 contrasts, suggesting that the attentive awareness subscale of the AAIRS offers greater power for detecting differences between groups of individuals with slightly different levels of relationship awareness. The 8-item AAIRS-attentive awareness subscale also yielded greater effect sizes than the 4-item AAIRS-attentive awareness subscale on 18 of the 19 contrasts. This suggests that using the longer version of the subscale (if possible) would likely offer researchers greater power for detecting differences. Notably, despite containing half as many items, the 4-item AAIRS-attentive awareness subscale provided significantly stronger effect sizes than the RAS-C on 10 out of 19 of the comparisons assessed, suggesting that even the 4-item version of the AAIRS-attentive awareness subscale offers comparable if not greater power for detecting meaningful differences between individuals than the RAS-C.

To assess how the various AAIRS subscales would function across a broad range of demographic subgroups, Cronbach α's were estimated for the AAIRS subscales in those subsamples. As shown in Supplemental Table S1, the 8-item and 4-item AAIRS subscales were robustly internally consistent across 32 specific subgroups (α's ranging from .78 to .94) splitting the sample across 9 demographic variables: gender, race, ethnicity, age, education level, income, relationship stage, cohabitation, and sexual orientation.

Measurement invariance (MI) analyses examined the AAIRS across genders (male vs female), relationship stages (married/engaged vs dating), meditation levels (never vs infrequent vs frequent), and sources of recruitment (ResearchMatch vs Mturk vs other) using a series of nested multigroup models outlined by Vandenberg and Lance (2000). As shown in Supplemental

Table S2, the models testing configural, metric, scalar, full-uniqueness and structural invariance across these various groups not only demonstrated adequate if not excellent fit across the sets of nested MI models, but they also demonstrated only slight increases in the Comparative Fit Indices as the models became increasingly strict. Taken as a set, these analyses suggested that the AAIRS demonstrated both measurement and structural invariance across those groups, suggesting that the AAIRS functions nearly identically within those various types of respondents, thereby allowing scores on the AAIRS to be directly compared across those groups.

The AAIRS-attentive awareness subscales (i.e., 8, 4 and 2-item subscales) demonstrated appropriately strong convergent validity correlations with the RAS-C subscale (ranging from .73 to .84 across men and women; Table 2). The AAIRS-attentive awareness subscales also demonstrated a similar pattern of correlations to the RAS-C with the nomological net of distinct constructs surrounding mindful attentive relationship awareness. Taken together these results suggest that the AAIRS-attentive awareness subscales are likely assessing the same construct as the RAS-C. By demonstrating only low to modest correlations with scales assessing other constructs, the AAIRS-attentive awareness subscales also demonstrated excellent discriminant validity, suggesting that, attentive awareness of one's relationship is a conceptually distinct construct from similar relationship processes (bottom half of Table 2), individual trait mindfulness (top half of Table 3), and other relationship processes (bottom half of Table 3).

Notably, the AAIRS-inattention/distraction subscales (i.e., 8, 4 and 2-item subscales) correlated between -.52 to -.68 with the AAIRS-attentive awareness subscales, sharing only 27% to 46% of their variance and suggesting that they could potentially represent distinct dimensions of mindful attentive relationship awareness. As shown in Tables 2 and 3, the AAIRS-inattention/distraction subscales demonstrated only low to moderate correlations with all of the other scales in the study in a pattern of associations distinct from the AAIRS-attentive awareness

subscales. For example, the 8-item AAIRS inattention/distraction subscale demonstrated strong correlations with global inattention as assessed by the MAAS and FFMQ (r = .55 and .53 respectively) whereas the 8-item AAIRS attentive awareness subscale only demonstrated weak associations with those same constructs (r = -.17 and -.21 respectively). Similarly, although the AAIRS attentive awareness subscales showed low to moderate positive associations with the general tendencies to be observant and non-reactive toward experiences (r = .34 and .25 with the 8-item subscale respectively), the AAIRS inattention/distraction subscales demonstrated only nominal associations with those same constructs (r = -.08 and -.01 respectively). Notwithstanding the possibility that shared method variance might have driven these differing results, the correlations presented in Tables 2 and 3 therefore support the potential discriminant validity of the two AAIRS subscales, suggesting that, though correlated, they might represent conceptually and empirically distinguishable constructs that could therefore yield meaningfully distinct patterns of results in models of relationship functioning.

To examine change over time, we first evaluated the longitudinal data within Sample 1 for possible attrition biases. ANOVA and χ^2 analyses suggested that participants providing follow-up data were: (1) slightly more satisfied in their relationships at baseline (M = 31.9; *95% CI: LL* = 31.4, *UL* = 32.4) than those not completing the follow-up survey (M = 30.9; *95% CI: LL* = 30.4, *UL* = 31.4; $F(1,2107) = 7.943$, $p = .005$), (2) reported slightly more years of education (M = 15.7; *95% CI: LL* = 15.6, *UL* = 15.9) than those not completing the follow-up survey (M = 14.8; *95% CI: LL* = 14.6, *UL* = 14.9; $F(1,2106) = 90.332$, $p < .001$), (3) were older (M = 34.4; *95% CI: LL* = 33.7, *UL* = 35.2) than those not completing the follow-up survey (M = 30.5; *95% CI: LL* = 29.9, *UL* = 31.2; $F(1,2092) = 57.678$, $p < .001$), (4) were more likely to be female (69.9%; *95% CI: LL* = 66.9%; *UL* = 72.8%) than those not completing the follow-up survey (56.2%; *95% CI: LL* = 53.2%; *UL* = 59.1%; $\chi^2(1) = 42.00$, $p < .001$), and (5) were more likely to

be Caucasian (86.3%; *95% CI: LL* = 84.0%; *UL* = 88.4%) than those not completing the follow-up survey (78.6%; *95% CI: LL* = 76.1%; *UL* = 81.0%; $\chi^2(1) = 21.04$, $p < .001$).

To evaluate change across the 6 months of the study, we created raw change scores on the AAIRS subscales and on our measure of relationship satisfaction (the CSI). Consistent with our conceptualization of relationship awareness and relationship inattention/distraction as distinct processes, we found that 6-month change scores on those subscales only moderately correlated (r = -.518), sharing just 26.8% of their variance over time. Using Minimal Detectible Change indices (MDC_{95}; Stratford et al. 1996; representing the number of points an individual's score must change on a measure between two assessments for that change to be statistically significant) values for the AAIRS subscales, we classified respondents into significant improvement, no change, and significant deterioration groups based on their AAIRS change scores.

As shown in the top half Table 4, although relationship awareness and relationship inattention/distraction occasionally changed in similar directions (74 individuals reporting significant deterioration on both and 47 significant improvement on both), more often those dimensions changed independently of one another. Specifically, 168 of the respondents giving follow-up data reported significant deterioration on just one of the AAIRS subscales, and 159 reported significant improvement on just one of the subscales. This same independence was further illustrated in a regression in which 6-month change scores on the AAIRS subscales were allowed to predict corresponding relationship satisfaction change scores. As shown in the bottom half of Table 4, change on relationship awareness and on relationship inattention/distraction both uniquely predicted corresponding 6-month changes in relationship satisfaction. Although shared method variance remains an alternative hypothesis for these findings, it seems less likely that shared method variance alone could account for independent change over time on the AAIRS

facets (particularly as such negative method variance is likely to be fairly stable and trait-like across time). Thus, these longitudinal results provide additional evidence to suggest that the two facets of the AAIRS might represent meaningfully distinct relationship processes.

Discussion

Building on a wealth of research linking individual mindfulness and psychological flexibility to the dynamics and quality of close relationships (see Daks and Rogge 2020 for a meta-analytic review), the current study developed and validated the AAIRS, a psychometrically optimized measure of mindful attentive relationship awareness. The AAIRS was designed with the specific goal of offering researchers and clinicians a tool to examine mindful attentive awareness within specific relationships as a key dynamic process helping to shape the nature and course of those relationships. Our EFA and CFA results suggested that mindful attentive relationship awareness consists of two facets: attentive awareness and inattention/distraction within relationships. Although some analyses highlighted that the AAIRS subscales might represent meaningfully distinct constructs, the current analyses also demonstrated a large amount of shared variance between the subscales, supporting the use of the AAIRS as a unidimensional scale (i.e., reverse scoring the negatively worded items and then averaging responses across all items into a single score).

Consistent with our expectations, the AAIRS-attentive awareness subscale demonstrated strong convergent validity with the RAS-C and displayed a highly similar (albeit somewhat stronger) pattern of correlations with the other measures in the study, suggesting that the AAIRS assesses a common construct with the RAS-C. As expected, both the AAIRS- attentive awareness and AAIRS- inattention/distraction subscales showed excellent discriminant validity with one another and with a broad range of conceptually distinct constructs from the mindfulness, individual functioning and couples literatures, suggesting that the AAIRS subscales

represent novel and distinct constructs from those conceptually related scales. The AAIRS exhibited internal consistency across 32 demographic subgroups and stringent measurement invariance across 10 demographic groups large enough to support those analyses, providing strong support for use across a diverse range of future samples.

The results demonstrated that in direct comparison to the RAS-C, the AAIRS-attentive awareness subscales represented more precise scales, offering greater ability to detect very slight but meaningful cross-sectional differences between adjacent mindful attentive relationship awareness groups. This suggests that the AAIRS would likely offer greater power to detect differences in mindful attentive relationship awareness between treatment groups, experimental conditions, or populations of individuals (e.g., men vs. women; dating vs. married). That additional power could offer researchers a critical edge in studies making use of smaller sample sizes (e.g., treatment studies). These results are consistent with findings using other IRT-optimized measures (e.g., Funk and Rogge 2007), which have even demonstrated enhanced abilities to detect treatment effects over time (e.g., Rogge et al. 2013; Shaw and Rogge 2016).

The two subscales of the AAIRS demonstrated moderate correlations with one another, (30% of shared variance in men and 46% in women), highlighting the possibility of both shared and unique variance for the subscales. The two AAIRS subscales also demonstrated differing patterns of association with closely related constructs from the nomological net. These results are consistent with recent findings from the psychological flexibility and mindfulness literatures suggesting that global attentive awareness represents a distinct construct from inattention/distraction (e.g., Rolffs et al. 2018). The longitudinal analyses further highlighted that the two AAIRS subscales changed independently across time, and that change on each of the subscales was uniquely linked to corresponding change on relationship satisfaction (demonstrating unique explanatory variance). These findings are consistent with findings

contrasting change in sexual satisfaction and dissatisfaction across time (Shaw and Rogge 2016). These results begin to suggest attentive awareness and inattention/distraction in relationships, though related, can be somewhat independent of one another, implying that people could be high on both dimensions at the same time – possibly attentive and aware of some aspects of the relationship (or on certain days) and yet generally inattentive to, or distracted from other aspects of the relationship (or on other days). For example, an individual could be relatively attentive and aware of their sex life with their partner and yet fairly distracted and out of touch with unspoken tensions and emotional dynamics that might be brewing below the surface.

An alternative possibility would be that the differences observed between the facets of AAIRS is largely due to shared method variance among the negatively-worded items (e.g., DiStephano and Motl 2006; Urbán et al. 2014). Future work directly measuring response biases to negatively worded items and trait negativity may help quantify the degree to which shared method variance is driving the seeming uniqueness of the AAIRS inattentive-distracted subscale, both cross-sectionally and over time. For example, demonstrating in future studies that the AAIRS inattention/distraction subscale offers significant explanatory variance in models of relationship functioning, even after controlling for sources of shared method variance on the negative items, would more robustly suggest that relationship inattention/distraction represents a meaningfully distinct relationship process from relationship awareness.

The bifactor modeling revealed that the two AAIRS subscales share a large proportion of common variance, highlighting that the two AAIRS subscales assess a common underlying construct of mindful attentive relationship awareness. This was consistent with the correlations observed between the AAIRS subscales, as well as with the EFA and CFA results. Thus, the current findings robustly support averaging the responses across all items of the AAIRS (after

reversing the direction of responses to the negatively worded items) to create a scale total that represents overall mindful attentive relationship awareness.

As most couples interventions involve examining and discussing how one's own behavior and that of one's partner impacts the relationship, mindful attentive relationship awareness might represent a common factor accounting for the increases in relationship functioning seen in couples interventions. The current results begin to suggest that interventions aimed at enhancing mindful relationship awareness could potentially yield different outcomes than interventions striving to decrease inattention to the relationship, as changing one dimension would not necessarily result in corresponding changes in the other dimension. As mentioned above, Rogge et al. (2013) engaged newlywed couples in a self-directed intervention aimed at increasing relationship awareness which was successful in lowering the rate of divorce over the first three years of marriage. That same program also led to immediate gains in relationship quality in a separate online sample (Rogge et al. 2017). Given that relationship awareness was one of the main mechanisms of action posited for that intervention, the results suggest that the AAIRS would provide a critical tool for future work on such interventions. As primary couples interventions (e.g., Integrative Behavioral Couples Therapy; Jacobson and Christensen 1996) and secondary preventive interventions (e.g., the PREP program of Markman and colleagues; Markman et al. 2001) could be expected to increase levels of relationship awareness, the current results suggest that the AAIRS could serve as a critical tool for assessing the contribution of that common factor to observed treatment effects across a range of couples interventions.

In line with prior measurement development (Funk and Rogge 2007; Rolffs et al. 2018), our results indicated that longer scales typically offer increased precision in comparison to shorter scales. Thus, we recommend that researchers implement the longest version of the AAIRS possible in their studies as that will yield greater precision (See Figure 1B) and power for

detecting differences between individuals (see Figure 1C) and can translate into stronger treatment effects for outcome measures (e.g., Rogge et al. 2017). As we understand that it will not always be possible to accommodate the full 16-item version of the AAIRS within a specific study, we developed and validated a shorter 8-item version (comprised of two 4-item subscales), and a 4-item version (comprised of two 2-item subscales). Whenever possible and particularly in studies with smaller sample sizes or in which mindful attentive relationship awareness is a key construct, we recommend researchers use the longer, 16-item version of the scale. However, in larger samples, in studies not examining mindful relationship awareness as a central construct, or in studies constrained by shorter lengths, we recommend using the 8-item version of the AAIRS. In studies extremely constrained in length (e.g., national telephone surveys, daily diary studies, Ecological Momentary Assessment (EMA) studies), they may consider using the 4-item version. Although it would also be possible to use just a 2-item version of one of the AAIRS subscales, we would caution against that as measures with so few items are far less precise, yielding far less variance, and potentially offering poorer psychometrics as a result.

Limitations and Future Research

Though our results offer strong initial support for the efficacy and validity of the AAIRS, our results are coupled by some limitations. First, our surveys were completed online. Although this allowed for widespread dissemination to a large sample (necessary for IRT analyses), participants needed a device equipped with internet access to respond to our survey, potentially creating a barrier to access for individuals from extremely low socio-economic statuses. Second, the sample was predominantly Caucasian. Although the large-scale of the study still afforded hundreds of respondents from various demographic groups (see Supplemental Table S1) to extend our validation analyses, future studies should continue to seek diverse samples to ensure that the AAIRS continues to function well across a wider range of demographic groups. Third,

only one partner from each dyad responded to our survey, thereby restricting our ability to examine associations of relationship awareness across partners. Future studies should assess the AAIRS within dyadic samples to more fully model how mindful attentive relationship awareness might function within romantic relationships, fully exploring its interdependent associations between partners. Fourth, the current study examined a community sample in contrast to a clinical sample. The IRT results strongly suggested that the AAIRS would provide high levels of information for people with markedly low levels of awareness (as far as 3 standard deviations below the mean), suggesting that it could be expected to function well in a population of distressed couples. Despite this, future work should validate the use of the AAIRS in clinical populations.

Fifth, the study relied solely on self-report data to measure the construct of mindful attentive relationship awareness. Future work should aim to develop more diverse methodologies of examining this construct (e.g., behavioral coding, indirect assessments, experimental paradigms), as these methods may offer researchers more objective measures of relationship awareness, potentially yielding stronger effects as a result. Sixth, participants were offered individualized feedback on a handful of the scales as a recruitment incentive. Although this has proven to be an effective low-cost incentive, it might have shifted the test taking attitudes of respondents. Thus, future studies could extend the current results by collecting data without such an incentive. Finally, although we based the conceptual definition of the AAIRS on the most widely examined facet of mindfulness (attentive awareness), the AAIRS only measures one pair of facets of mindfulness. Measurement work in the mindfulness field (e.g., Baer et al. 2006) and traditional definitions of mindfulness within the teachings of the Buddha (see Grossman and Van Dam 2011 for a discussion) suggest that mindfulness is a complex and multidimensional process (e.g., Rogge and Daks 2020). Future work could explore additional dimensions of mindfulness

that might function as distinct processes within romantic relationships to extend the current findings (e.g., Daks and Rogge 2020). Despite these limitations, the results of the current study provided strong initial support for the AAIRS, thereby offering an initial framework for couple's researchers to incorporate mindful attentive relationship awareness into their studies and into their models of relationship functioning.

Data Availability Statement: All study materials and data are available upon request at the Open Science Framework (https://osf.io/kxj98/).

Compliance with Ethical Standards: The studies and all of their materials were evaluated and approved by the University of Rochester's IRB, and the study was conducted following those ethical guidelines. Informed consent was obtained on the first webpage of the survey via an information letter. IRB materials for the study have been made available at (https://osf.io/kxj98/) and data is available there upon request.

Conflicts of Interest: The authors declare that they have no conflicts of interest.

Author Contributions: JD and RR developed the study concept together and collaborated on the study design, IRB approval, online implementation, and recruitment of the sample. FF helped collect data from another university to diversify the sample. JD and RR performed the data analyses together and JD drafted the manuscript. All authors provided critical revisions, approved the final version of the manuscript for submission, and are responsible for its content. All authors agree to the order of authorship.

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Table 1

Results of exploratory and confirmatory factor analyses of the AAIRS in separate random halves of Sample 2

Subscale		EFA Pattern Coefficients in first random sample half (n = 896)		CFA Standardized Path Coefficients in second random sample half (n = 856)		
	Item Text	Attentive Awareness Factor	Inattention/ Distraction Factor	Standardized Beta	SE	p
Relationship Awareness Subscale						
**	I paid attention to my romantic relationship	.73	-.15	.86	.010	< .001
**	I was in tune with my romantic relationship from moment to moment	.81	.04	.79	.014	< .001
*	I was in touch with the overall mood in my romantic relationship	.80	.00	.75	.016	< .001
*	I was very aware of what was going on in my romantic relationship	.79	.00	.76	.016	< .001
	I strived to remain mindful and aware of my romantic relationship	.72	-.05	.78	.015	< .001
	I was in touch with the ebb and flow of feelings in my romantic relationship	.78	.04	.76	.016	< .001
	I was in tune with the day to day dynamics of my romantic relationship	.84	.01	.83	.012	< .001
	I was attentive to the nature of my romantic relationship	.79	-.01	.84	.011	< .001
Relationship Inattention/Distraction Subscale						
**	I found it difficult to stay focused on my partner or our relationship	.10	.90	.79	.014	< .001
**	I was distracted and did not pay much attention to my romantic relationship	-.07	.83	.83	.012	< .001
*	I was running on autopilot in my relationship	-.13	.65	.76	.016	< .001
*	I let my romantic relationship drift out of my focus	-.03	.85	.85	.011	< .001
	I wasn't paying much attention to my relationship	-.03	.80	.85	.011	< .001
	I was easily distracted from my romantic relationship	.06	.86	.84	.012	< .001
	I was somewhat inattentive to my relationship	-.02	.78	.78	.015	< .001
	I was generally out of touch with my romantic relationship from moment to moment	-.02	.81	.79	.014	< .001
Eigen Values		9.239	1.892			
Correlation between Factors		-.687		-.626		

EFA = Exploratory Factor Analysis run in SPSS 23.0 using principal axis factoring with direct oblimin rotation (to allow the factors to correlate). CFA = Confirmatory Factor Analysis run in Mplus 7.11 and demonstrating excellent fit: $\chi^2(103) = 288.03$, $p < .001$, CFI = .982, SRMR = .025, RMSEA = .045, 95%CI LL = .039, UL = .051). The EFA and CFA were run in separate random sample halves so as to confirm the correlational structure of the AAIRS. The single asterisks identify the items on the 4-item versions of each AAIRS subscale, the double asterisks identify the items on the 2-item versions of each AAIRS subscale. Both EFA and CFA analyses were run in the Sample 2 baseline dataset, thereby cross-validating the factor structure of the AAIRS. The items were presented with the stem, "In the last 2 weeks…" and the response options: "Never," "Rarely," "Occasionally," "Often," "Very Often," "All the time."

Table 2

Descriptives and correlations among the scales examined

		Range	In Men		In Women		Gender diff t-test	Cohen's *d*	α	MDC 95	Correlations among the scales in the baseline data											
			M	SD	M	SD					1	2	3	4	5	6	7	8	9	10	11	12
Convergent Validity with the RAS																						
Mindful-attentive awareness of one's relationship																						
1	Relationship Awareness (RAS-consciousness)	1-6	3.89	0.91	4.09	0.88	4.89*	0.22	.87	0.89		.84	.80	.73	-.35	-.33	-.32	.67	-.17	.63	.61	.58
2	AAIRS-Aware (8)	1-6	4.15	0.96	4.36	0.92	4.87*	0.22	.92	0.73	.78		.96	.90	-.55	-.53	-.51	.88	-.32	.61	.61	.60
3	AAIRS-Aware (4)	1-6	4.22	0.99	4.43	0.93	4.70*	0.21	.86	0.99	.73	.96		.93	-.55	-.52	-.51	.86	-.32	.59	.59	.58
4	AAIRS-Aware (2)	1-6	4.21	1.05	4.33	1.05	2.63*	0.12	.78	1.35	.68	.91	.94		-.53	-.51	-.51	.81	-.29	.59	.58	.59
Inattention / distraction toward one's relationship																						
5	AAIRS-Inattention (8)	1-6	2.26	0.95	2.11	0.89	-3.62*	-0.16	.93	0.67	-.42	-.68	-.68	-.69		.97	.91	-.88	.63	-.36	-.35	-.34
6	AAIRS-Inattention (4)	1-6	2.24	1.01	2.11	0.94	-3.05*	-0.14	.87	0.96	-.42	-.67	-.66	-.67	.97		.94	-.85	.63	-.34	-.34	-.32
7	AAIRS-Inattention (2)	1-6	2.19	1.01	2.07	0.96	-2.81*	-0.13	.79	1.24	-.38	-.63	-.63	-.63	.91	.93		-.81	.58	-.32	-.32	-.30
COMPOSITE																						
8	AAIRS-Composite (16)	1-6	4.45	0.84	4.63	0.83	4.77*	0.22	.94	0.57	.65	.92	.90	.87	-.92	-.89	-.84		-.56	.59	.56	.54
Discriminant Validity with Anchor Scales from the Nomological Net																						
-- Closest conceptual boundaries																						
9	Inattention during time with partner (RMM)[A]	1-6	2.49	1.00	2.27	0.91	-3.89*	-0.24	.87		-.16	-.39	-.40	-.39	.62	.58	.53	-.56		-.15	-.16	-.13
10	Thinking about love/sex in relationship (RTS)	1-6	4.31	1.10	4.37	1.06	1.19	0.05	.80		.57	.62	.60	.59	-.52	-.53	-.48	.59	-.22		.81	.68
11	Reminiscing about relationship	1-6	4.32	1.10	4.4	1.07	1.65	0.07	.94		.52	.57	.55	.55	-.48	-.49	-.45	.56	-.17	.80		.60
12	Relationship-focused communication (RTM)	1-6	4.11	0.98	4.32	0.97	4.64*	0.21	.90		.47	.54	.52	.50	-.45	-.45	-.41	.54	-.27	.64	.55	

NOTE: These analyses were run in Sample 1. Within the correlations presented, correlations in men are presented above the diagonal and correlations in women below the diagonal. * indicates a significant gender difference. A: The RMM was added to the survey after the first 907 respondents had participated, yielding a sample size of N = 1,202 for those correlations. All correlations above .05 were statistically significant at $p < .05$. Given small amounts of missing data, the degrees of freedom for those t-tests ranged from 2037 to 2087 (with the exception of the RMM, which had a df = 1125). Similarly, correlations with absolute values above .70 have been bolded. All analyses presented in Table 4 were run in the Sample 1 baseline dataset. MDC-95 = Minimal detectable change estimates based on the reliable change index of Jacobson & Truax (1991), these indicate the number of points an individual's scores must change between assessments for that change to be statistically significant.

Table 3

Correlations of mindful attentive relationship awareness with individual trait mindfulness and relationship functioning measures

		Correlations among the scales in the baseline data									
		Relationship Attentive Awareness				Relationship Inattention / Distraction			AAIRS composite scores		
		RAS-C	AAIRS 8-item	AAIRS 4-item	AAIRS 2-item	AAIRS 8-item	AAIRS 4-item	AAIRS 2-item	16	8	4
Individual Trait Mindfulness											
S1	Self-Awareness (SCS-PrSC)	.46	.39	.35	.32	-.16	-.14	-.13	.30	.28	.25
S1	Present Moment Awareness (MPFI)	.49	.60	.56	.52	-.38	-.36	-.35	.55	.51	.49
S1	Lack of Present Moment Awareness (MPFI)	-.20	-.38	-.36	-.33	.51	.50	.45	-.49	-.48	-.43
S2	Inattention (MAAS)		-.17	-.17	-.13	.55	.53	.52	-.41	-.40	-.37
S2	Inattention (FFMQ-awareness)		-.21	-.20	-.16	.53	.52	.50	-.41	-.41	-.38
S2	Observing sensations (FFMQ-observing)		.34	.33	.30	-.08	-.09	-.06	.23	.23	.21
S2	Describing thoughts/feelings (FFMQ-describing)		.28	.27	.22	-.22	-.23	-.23	.28	.28	.25
S2	Judging thoughts/feelings (FFMQ-non-judging)		.03	.03	.08	.24	.24	.24	-.12	-.12	-.10
S2	Non-reactivity (FFMQ-non-reactivity)		.25	.24	.20	-.01	-.02	-.02	.14	.14	.13
Distinct Relationship Outcomes & Processes											
S1	Relationship Satisfaction	.20	.47	.46	.47	-.49	-.48	-.45	.53	.53	.52
S1	Perceived partner responsiveness	.31	.50	.49	.49	-.45	-.45	-.43	.53	.53	.51
S1	Emotional Support	.31	.47	.45	.45	-.38	-.38	-.36	.47	.47	.46
S1	Affection	.26	.40	.39	.40	-.36	-.36	-.34	.42	.42	.42
S1	Dedication to relationship	.18	.35	.34	.33	-.41	-.40	-.38	.42	.42	.40
S1	Relationship Anxiety	.13	-.18	-.19	-.19	.47	.46	.43	-.36	-.37	-.35
S1	Perceived partner insensitivity	-.09	-.31	-.31	-.31	.48	.48	.45	-.44	-.44	-.42
S1	Negative Conflict	-.12	-.27	-.26	-.24	.38	.36	.34	-.36	-.35	-.32
S1	Relationship Monitoring	.36	.18	.16	.17	.08	.08	.08	.05	.04	.06
Links to Current Individual Functioning											
S1	Vitality	.19	.32	.31	.32	-.27	-.26	-.26	.33	.32	.33
S1	Satisfaction with Life	.10	.26	.25	.25	-.24	-.23	-.24	.28	.27	.28
S1	Depressive symptoms	.00	-.18	-.18	-.17	.29	.29	.28	-.26	-.26	-.25

RAS-C = Relationship Awareness Scale – Consciousness subscale; AAIRS = Attentive Awareness in Relationships Scale; S1 = correlation estimated within Sample 1 baseline dataset (N = 2,109); S2 = correlation estimated in Sample 2 (N = 1,752) dataset. All correlations above .05 were statistically significant at $p < .05$.

Table 4

Examining change over 6 months

Numbers of individuals classified into AAIRS change groups				
		Significant individual change on AAIRS inattention/distraction		
		Deterioration	no change	Improvement
Significant individual change on AAIRS attentive awareness	Deterioration	74	53	5
	No change	115	449	32
	Improvement	13	127	47

Regression predicting raw CSI change scores with raw AAIRS change scores				
Predictor	B	SE	β	p
Constant	-1.072	.262		< .001
AAIRS attentive awareness change	2.293	.336	.237	< .001
AAIRS inattention / distraction change	-2.642	.347	-.265	< .001

Significant change groups for the two AAIRS subscales were created using the MDC_{95} estimates for each subscale (i.e., the number of points an individual must change on that subscale for it to represent statistically significant change - based on the Reliable Change Index of Jacobson & Truax, 1991).

Figure 1

Information, precision, & power afforded by the AAIRS- Attentive Awareness and RAS-Consciousness Scales. IRT analyses were all run in the sample 1 baseline dataset.