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Today You Care, Tomorrow You Don't: Differential Roles of Responsiveness Variability and Average Responsiveness in Romantic Attachment

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Abstract

Past work has shown that perceived responsiveness is a key predictor of relational outcomes. However, this work has focused solely on average levels of responsiveness and never studied the role of responsiveness variability (consistency of responsiveness) in intimate relationships. The present study addressed this gap by investigating the long-held but scarcely tested tenet that responsiveness variability and average responsiveness play differential roles in romantic attachment. New romantic couples ($N = 151$) reported partner-specific attachment anxiety and avoidance in six sessions. Every evening during the 3-week period in between the first two sessions, participants reported perceived partner responsiveness, allowing us to assess both average responsiveness and responsiveness variability. Our findings provided the first empirical evidence that responsiveness variability uniquely predicted increases in partner-specific attachment anxiety, whereas average responsiveness uniquely predicted decreases in partner-specific attachment avoidance. Average responsiveness and responsiveness variability continued to predict attachment orientations assessed about half a year later.

Keywords

perceived partner responsiveness, responsiveness variability, average responsiveness, adult attachment, romantic relationships

Harry has recently started dating Sally. Whenever they spend time together, Harry feels that Sally is moderately responsive to his needs. Consider an alternate scenario where Harry feels that Sally is very responsive on some days and very unresponsive on other days. In both scenarios, Sally demonstrates similar levels of responsiveness when we average across Harry's daily relationship perceptions. However, this approach—which has been used in past work showing that perceived partner responsiveness is a key predictor of intimacy (Reis et al., 2004), well-being (Selcuk et al., 2016), and health (Slatcher et al., 2017)—misses fluctuations in Harry's perceptions of responsiveness. We argue that gaining a deeper understanding of romantic attachment requires distinguishing between *average responsiveness* (On average, how responsive is my partner?) and *responsiveness variability* (How consistent is my partner's responsiveness?). Indeed, extant theorizing in adult attachment (Beckes et al., 2015; Mikulincer et al., 2003) made this distinction and argued that responsiveness variability is linked with anxious attachment (characterized by worries of rejection and abandonment) and average responsiveness with avoidant attachment (characterized by discomfort with closeness and inability to trust relationship partners). Surprisingly, these often taken-for-granted theoretical assumptions about the unique roles of responsiveness variability and average responsiveness in attachment orientations have never been tested in adult intimate relationships. The present research addressed this gap by investigating these predictions in fledgling romantic couples.

According to attachment theory, detailed information about close relationship partners is stored in memory as mental representations (Bowlby, 1973; Pietromonaco et al., 2000). Individuals possess generalized representations of how relationships are as well as representations of specific relationship partners—including romantic partners (Collins et al., 2004). Mental representations are thought to underlie attachment orientations, namely, attachment anxiety and avoidance. Romantic attachment orientations reflect the quality of early

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experiences with attachment figures (Fraley et al., 2013; Zayas et al., 2011) as well as current relationship experiences and perceptions—including perceptions of average responsiveness and responsiveness variability.

It is possible that responsiveness variability contributes to anxious romantic attachment. Infant research showed that inconsistent caregiver responsiveness was associated with anxious infant attachment (Ainsworth et al., 1978). Do these findings generalize to romantic relationships? There are reasons to expect so. When a romantic partner is sometimes responsive but sometimes not, support-seeking attempts are variably reinforced (Beckes et al., 2015), heightening attachment-related worries and bids for comfort (Mikulincer et al., 2003; Pietromonaco et al., 2013). Under these circumstances, individuals may desire greater interdependence in their relationship while fearing that their partner does not share this desire, contributing to greater partner-specific attachment anxiety (Arriaga et al., 2018).

Several studies investigated variability in relationship processes including commitment, satisfaction (Arriaga, 2001; Arriaga et al., 2006), relationship quality (Campbell et al., 2010), and attachment security (Girme et al., 2018). Although these studies showed that variability in relationship processes has adverse consequences from poor conflict resolution to greater relational distress to greater breakup likelihood, they did not study responsiveness variability nor did they test the attachment theoretical link between responsiveness variability and attachment anxiety. The only supportive evidence comes from a laboratory study using computer-mediated interactions (Beckes et al., 2016). When a stranger was inconsistently (vs. consistently) responsive to bids for support, participants developed positive implicit but negative explicit attitudes toward this individual coupled with heightened approach motivation. Although such ambivalent attitudes may indicate attachment anxiety, they do not capture heightened worries about rejection and abandonment that characterize anxious attachment in actual romantic relationships. Moreover, the inconsistently (vs. consistently) responsive stranger in this study had lower average responsiveness, leaving open the possibility that ambivalent attitudes did not result from responsiveness variability per se but also from low average responsiveness. So, it remains an unanswered question whether responsiveness variability predicts changes in attachment anxiety in intimate relationships.

If responsiveness variability is uniquely linked with attachment anxiety, what predicts avoidant romantic attachment? According to past work, low average responsiveness is one candidate. Infant research demonstrated that having consistently unresponsive caregivers is linked with avoidant attachment (Ainsworth et al., 1978; NICHD Early Child Care Research Network, 1997). In adult romantic relationships too, low average responsiveness is theorized to predict attachment avoidance. When a romantic partner is mostly unresponsive, support-seeking attempts are not reinforced—that is, the partner fails to alleviate distress (Beckes et al., 2015). So, instead of relying on their partner, individuals increasingly rely on themselves and desire independence in their relationship, contributing to greater partner-specific attachment avoidance (Arriaga et al., 2018; Mikulincer et al., 2003).

Recent theorizing integrating the burgeoning literature on attachment change (the Attachment Security Enhancement Model [ASEM]; Arriaga et al., 2018) also supports these predictions. According to the ASEM, experiences building intimacy alleviate attachment avoidance (Stanton et al., 2017). Therefore, perceiving one's partner as consistently unresponsive might lead to reduced intimacy (Reis et al., 2004) and ultimately to greater partner-specific attachment avoidance. The ASEM further proposes that experiences building self-confidence alleviate attachment anxiety (Arriaga et al., 2014). Perceptions of variable responsiveness might do the opposite of building self-confidence by fueling worries about the relationship and one's own worth as a partner and may ultimately contribute to greater partner-specific attachment anxiety.

To investigate the differential roles of responsiveness variability and average responsiveness in romantic attachment, the present study focused on partner-specific attachment orientations in fledgling couples for several reasons. According to interdependence theory, both expectations and specific relational events influence how individuals evaluate interpersonal relationships (Kelley, 1983). As relationship-specific expectations are newly forming in fledgling couples, relationship evaluations are proposed to be more sensitive to specific events (Arriaga, 2001). Similarly, normative frameworks of attachment formation propose that partner representations undergo major changes in the early stages of relationships (Zayas et al., 2015) when the attachment bond between partners is still in the making (Hazan et al., 1999). Therefore, attachment representations might be more sensitive to moment-to-moment changes in perceived responsiveness in fledgling relationships. Indeed, past empirical work indicated that variability in relationship perceptions (Totenhagen et al., 2016) and changes in attachment orientations (Fraley et al., 2011) were more readily observed in new relationships.

In the present work, fledgling couples reported partner-specific attachment anxiety and avoidance in two laboratory sessions 3 weeks apart and in four online follow-ups completed every 3 months following the second session. Between the first two sessions, participants reported in a 21-day diary how responsive they perceived their partner each day. We used the diary data to compute average responsiveness and responsiveness variability. We expected that responsiveness variability would uniquely predict increases in attachment anxiety, and average responsiveness would uniquely predict decreases in attachment avoidance from pre- to immediately post-diary.

The diaries measuring perceived responsiveness were administered solely at the beginning of the study (and not repeated at follow-ups). Given relationship perceptions more readily change in fledgling relationships (e.g., Totenhagen et al., 2016), responsiveness variability and average responsiveness captured during the diaries will likely change as participants experience new relationship events during follow-ups.

Therefore, the effect of initial responsiveness variability and average responsiveness on attachment orientations might be expected to decrease as follow-up attachment measurements are further removed from the diaries. To estimate until when initial responsiveness variability (average responsiveness) continued to predict attachment anxiety (avoidance), we utilized the yearlong attachment data and examined interactions of each type of responsiveness with time.

We also wanted to rule out alternative interpretations. Individual differences amplifying emotional instability (e.g., psychological disturbances) predict greater attachment anxiety (Davila et al., 1999). A symptom common to these individual differences is negative affect (Watson et al., 1995). Therefore, to show that the association between responsiveness variability and attachment anxiety is not accounted for by emotional instability, we included negative affect and its day-to-day variability as covariates. Given daily stressors were shown to predict greater attachment anxiety and avoidance (Davila et al., 2003), our analyses also controlled for average number of stressors across the diary period.

A final possibility is that any association between perceived responsiveness and attachment orientations might reflect general relationship evaluations. Individuals who experience low relationship quality might also experience high responsiveness variability and low average responsiveness coupled with insecure attachment. To account for this possibility, we used relationship quality as a covariate.

Method

Data, materials, and code are available at https://osf.io/vthns/?view_only=c6aa968ab24d4d829e7ccd7a5b584738.

Participants

The current data set is part of a longitudinal project on romantic relationships. We report in the current article all measures of interest to the research questions. The sample size was determined a priori based on the project's grant proposal. We aimed to recruit at least 150 heterosexual dating couples who were in a relationship for 1–3 months and completed the pre-diary, diary, and immediate post-diary sessions. We a priori decided to exclude couples from the study and not administer them the longitudinal follow-up measures if at least one partner failed to complete one of the first three sessions. One hundred sixty-five eligible couples enrolled in the study. Two couples who withdrew during the diary because they broke up, nine couples in which at least one partner left the study during the diary, and three couples in which at least one partner did not participate in the immediate post-diary session were excluded, leaving 151 couples in the final sample (*Mean relationship length* = 2 months, $SD = 0.5$ months; *Mean age* = 20.629, $SD = 2.128$). If a couple broke up during the follow-up period, their attachment data in waves prior to the breakup were still included in the analyses (see Online Supplemental Materials [OSM] for details on attrition during follow-ups).

We ran simulations to estimate minimum effect sizes that a replication study with the same sample size and the number of measurement waves would be sufficiently powered to detect (Lane et al., 2017; see OSM for details). The results revealed that a replication study would provide 80.7% power to detect an unstandardized association of .210 (35% less than the association observed in the present study) between responsiveness variability and change in attachment anxiety from pre- to immediately post-diary, and 80.6% power to detect an unstandardized association of .135 (51% less than the association observed in the present study) between average responsiveness and change in attachment avoidance from pre- to immediately post-diary.

Measures

Partner-specific attachment orientations. Participants completed the Experiences in Close Relationships–Revised Inventory (Fraley et al., 2000) with instructions and items reworded to refer to their current romantic partner (e.g., "I often worry that my partner does not really love me" for attachment anxiety, "I find it difficult to allow myself to depend on my partner" for attachment avoidance, 1 = *strongly disagree* to 7 = *strongly agree*). Within-person reliabilities were .79 and .86 for anxiety and avoidance, respectively. Between-person reliability of average of measures taken over six waves was .98 for both subscales (see Table S1 in OSM for descriptives at each wave). The average correlation between anxiety and avoidance across six measurement waves was .461 (range = 0.407 to 0.523).

Perceived partner responsiveness. Items adapted from past work (Selcuk et al., 2016) that addressed core features of responsiveness identified in past theorizing (Cutrona et al., 2017; Reis et al., 2004) were used to assess daily perceived responsiveness ("Today my partner made me feel understood," "Today my partner made me feel like they valued my abilities and opinions," and "Today my partner made me feel really cared for," 1 = *strongly disagree* to 7 = *strongly agree*). Within-person reliability was .92 and between-person reliability over 21 days was .99.

We quantified *average responsiveness* by computing the mean of perceived responsiveness across 21 days ($M = 5.296$, $SD = 1.002$). Following Arriaga et al. (2006), we quantified *responsiveness variability* by computing the standard deviation of multilevel modeling residuals corresponding to daily deviations from an individual's mean level of perceived responsiveness ($M = 1.218$, $SD = 0.533$, range = 0.01 to 2.62; see the Data Analytic Strategy section for details). The correlation between average responsiveness and responsiveness variability was −.534. Sample participants who experienced high versus low responsiveness variability are shown in Figure 1.

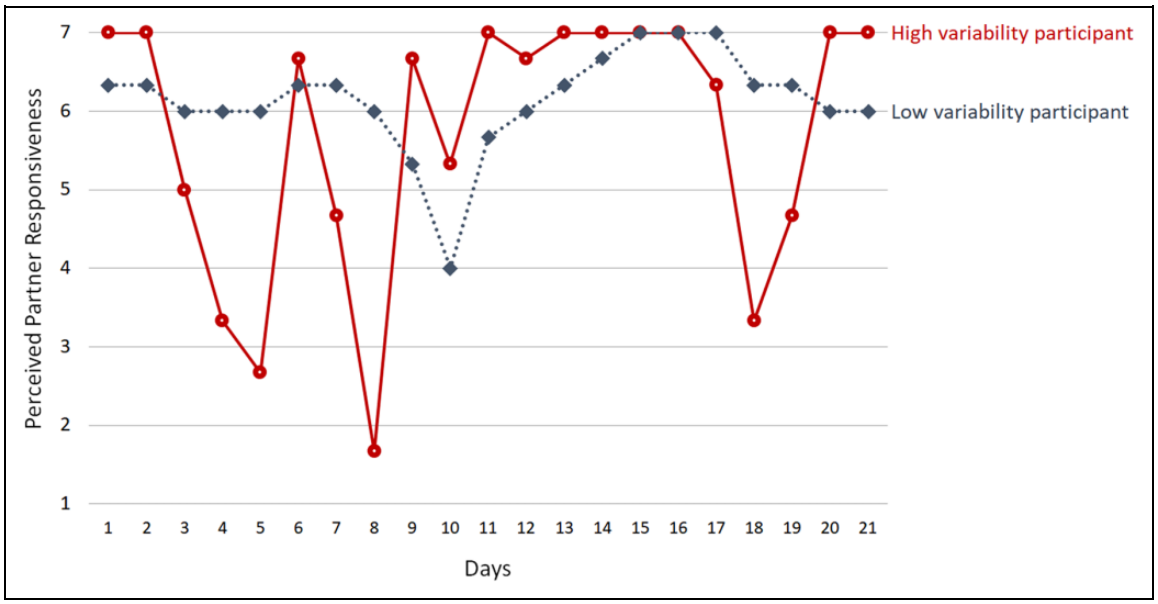

Figure 1. Two participants who scored above the mean on average responsiveness (5.71 vs. 6.14, respectively) but experienced high responsiveness variability (0.90 *SD* above mean) versus low responsiveness variability (1.08 *SD* below mean) over the 21-day diary period.

Covariates

Stressor exposure. Each day during the diary period, participants indicated whether they experienced an interpersonal conflict, a situation that could end in an argument but they decided to avoid, a problem at work, a problem at home, something bad happening to a close other, perceived discrimination, and any other stressors not covered by previous categories (Almeida et al., 2002). Mean number of stressors across 21 days was 0.952 ($SD = 0.616$).

Negative affect. Each day participants indicated the frequency with which they felt restless, nervous, worthless, sad, disappointed, and hopeless (1 = *not at all* to 7 = *a lot*), adapted from previous studies using a brief measure of negative affect (Selcuk et al., 2016). Within-person reliability was .90 and between-person reliability over 21 days was .99. We quantified *average negative affect* by computing the mean of negative affect ratings across 21 days ($M = 2.499$, $SD = 0.849$). We computed *negative affect variability* using the same approach as in responsiveness variability ($M = 1.157$, $SD = 0.444$).

Relationship quality. At the pre-diary assessment, participants were asked to evaluate their relationship on six items (Fletcher et al., 2000) capturing satisfaction, commitment, intimacy, trust, passion, and love (1 = *not at all* to 7 = *a lot*; $M = 6.028$, $SD = 0.936$, $\alpha = .878$).

Data Analytic Strategy

Given the nested structure of our data, we used multilevel modeling. Our models estimated fixed effects pooled across gender and separate random intercepts, slopes, and their covariance for each gender (see OSM for detailed justification).

Estimating variability in responsiveness and negative affect. Responsiveness variability was quantified by computing the standard deviation of multilevel residual estimates reflecting deviations from an individual's mean level of perceived partner responsiveness during the diary period. The model was:

$$\begin{aligned} \text{PPR}_{ij} = {} & \gamma_{00} + \gamma_{10}\text{day}_{ij} + \gamma_{20}\text{gender} + (\text{female})\, u_0 \\ & + (\text{male})\, u_0 + e_{ij}, \end{aligned} \quad (1)$$

where PPR = perceived partner responsiveness, i = person, j = time, day corresponded to the linear effect of time (centered on day 11, midway through the diary period). Gender was effect-coded (−1 = *male*, 1 = *female*). Dummy-coded male (0 = *female*, 1 = *male*) and female (0 = *male*, 1 = *female*) separated random intercept into two components for each gender. In this model, the residual term e_{ij} reflects the daily deviation of each participant from their mean level of perceived responsiveness. We obtained a responsiveness variability score for each participant by computing the standard deviation of their residuals. Controlling for the linear effect of day allowed us to distinguish relatively predictable variability resulting from a linear increase or decrease in perceived partner responsiveness from relatively unpredictable ups and downs that according to attachment theory are predictive of attachment anxiety.

Negative affect variability was estimated using the same approach except that the outcome was negative affect.

Estimating associations of average responsiveness and responsiveness variability with attachment orientations. The

multilevel model testing for the association between responsiveness variability and partner-specific attachment anxiety was:

$$\begin{aligned}\text{attachment anxiety}_{ij} = {} & \gamma_{00} + \gamma_{10}\text{prediary anxiety} \\ & + \gamma_{20}\text{time}_{ij} + \gamma_{30}\text{gender} \\ & + \gamma_{40}\text{average responsiveness} \\ & + \gamma_{50}\text{responsiveness variability} \\ & + \gamma_{60}\left(\text{time}_{ij}\right)\left(\text{responsiveness variability}\right) \\ & + (\text{female})\,u_0 + (\text{male})\,u_0 \\ & + (\text{female})\,(\text{time})\,u_1 + (\text{male})\,(\text{time})\,u_1 \\ & + e_{ij},\end{aligned} \tag{2}$$

where i = person, j = time, gender was effect-coded, and male and female were dummy-coded to separate the random intercept and time slope into two components for men and women. We centered time on the first assessment after diary completion, such that the five waves following diary completion were assigned the values of 0, 1, 2, 3, and 4. All other continuous variables were centered on their grand mean. Prior work showed that attachment anxiety is linked with more negative perceptions of partner support (Collins et al., 2004). Including pre-diary anxiety in the model helped rule out that the observed association of responsiveness variability with attachment anxiety was due to feelings of attachment anxiety before the diary period.

Given the correlation between average responsiveness and responsiveness variability, we included both in the model so that we could show that the association of responsiveness variability with attachment anxiety was independent of average responsiveness. The model also included the linear effect of time (γ_{20}) and its interaction with responsiveness variability (γ_{60}). Given pre-diary attachment anxiety was included as a predictor, the conditional effect of responsiveness variability (γ_{50}) reflected the association between responsiveness variability and *change* in attachment anxiety from pre- to immediately post-diary. The interaction with time helped estimate until when the association between responsiveness variability and change in attachment anxiety was significant. In all models, we probed significant interactions by running region of significance analyses (Preacher et al., 2006).

We repeated the model by adding the interaction of average responsiveness with time. The findings remained the same, and the interaction term was not significant (p = .690) so we did not include this term in the final model. There was also no evidence that the association between responsiveness variability and attachment anxiety was moderated by gender (p = .693). Finally, we checked whether there were any partner effects by including participants' own average responsiveness and responsiveness variability as perceived by their partner. Neither term significantly predicted attachment anxiety (ps > .676), so they were not included in the final model.

Similarly, the multilevel model estimating partner-specific attachment avoidance was:

$$\begin{aligned}\text{attachment avoidance}_{ij} = {} & \gamma_{00} + \gamma_{10}\,\text{prediary avoidance} \\ & + \gamma_{20}\,\text{time}_{ij} + \gamma_{30}\,\text{gender} \\ & + \gamma_{40}\,\text{average responsiveness} \\ & + \gamma_{50}\,\text{responsiveness variability} \\ & + \gamma_{60}\left(\text{time}_{ij}\right)\left(\text{average responsiveness}\right) \\ & + (\text{female})u_0 + (\text{male})u_0 \\ & + (\text{female})\,(\text{time})u_1 + (\text{male})\,(\text{time})\,u_1 \\ & + e_{ij}\end{aligned} \tag{3}$$

In this model, the conditional effect of average responsiveness (γ_{40}) corresponded to the association between average responsiveness and change in attachment avoidance from pre- to immediately post-diary. The interaction term γ_{60} helped estimate until when the association between average responsiveness and change in attachment avoidance was significant. Including pre-diary attachment avoidance as a predictor also allowed us to adjust for existing tendencies of avoidant individuals to perceive their partner as unresponsive (Beck et al., 2014). We repeated the analyses by adding the interaction of responsiveness variability with time, but this term was not significant (p = .099) and including it in the model did not change the findings. There was also no evidence that gender moderated the association between average responsiveness and attachment avoidance (p = .366). Also excluded from the final model were partner effects (i.e., participants' own average responsiveness and responsiveness variability as perceived by their partner) since neither term significantly predicted avoidance (ps > .325).

An alternative approach to analyze these data is to include pre-diary attachment scores in the outcome. When we repeated the analyses using this approach, the pattern of results remained the same (see OSM).

Controlling for alternative interpretations. We first examined whether each covariate was associated with attachment orientations by performing a multilevel model with partner-specific attachment anxiety (or avoidance) as the outcome; gender, covariate, time, and covariate by time interaction as fixed effects; and separate intercept and time slopes for males and females as random effects. We tested the associations of each covariate with attachment orientations separately. If a covariate or its interaction with time significantly predicted a given attachment orientation, we included its main effect (grand-mean centered) and its interaction with time in the final model (for a similar approach, see Leger et al., 2016).

Average negative affect, negative affect variability, stressor exposure, and relationship quality were all significantly associated with partner-specific attachment anxiety (p < .001). The interaction between time and negative affect variability was also a significant predictor (p = .012; remaining ps > .127).

Thus, we included all four covariates and their two-way interactions with time in the adjusted model. For partner-specific attachment avoidance, average negative affect, stressor exposure, and relationship quality were significant predictors (ps < .015; the interactions with time were not significant, ps > .433). Neither negative affect variability nor its interaction with time predicted attachment avoidance (ps > .115). Therefore, only the former three covariates and their interaction with time were included in the adjusted model (see OSM for equations of adjusted models). We also repeated the analyses by adding negative affect variability and its interaction with time into the model predicting attachment avoidance. The findings remained the same.

In a final set of supplemental analyses, models predicting attachment anxiety were repeated by adding pre-diary attachment avoidance as a predictor and those predicting attachment avoidance were repeated by adding pre-diary attachment anxiety as a predictor.

Results

Do Responsiveness Variability and Average Responsiveness Predict Attachment Orientations Pre- to Immediately Post-diary?

Responsiveness variability (but not average responsiveness) significantly predicted increases in partner-specific attachment anxiety from pre- to immediately post-diary ($\gamma_{50} = 0.321$, 95% CI [0.154, 0.488]; Model 1a of Table 1). Moreover, average responsiveness (but not responsiveness variability) significantly predicted decreases in partner-specific attachment avoidance from pre- to immediately post-diary ($\gamma_{40} = -0.277$, 95% CI [−0.422, −0.132]; Model 2a of Table 1).

To What Extent Do the Associations Hold Over Yearlong Follow-Ups?

There was a significant interaction between responsiveness variability and time in predicting attachment anxiety ($\gamma_{60} = -0.102$, 95% CI [−0.176, −0.028]), indicating that the effect of responsiveness variability on attachment anxiety decreased over time. In other words, the negative interaction term showed that responsiveness variability predicted weaker increases in attachment anxiety as follow-up measurements got further away from the diary period. Region of significance analyses showed that responsiveness variability during the diary period predicted increases in attachment anxiety until 4.5 months following diary completion (Figure 2A). After then, the association between responsiveness variability and attachment anxiety (adjusted for pre-diary levels) was not significant. (For illustrative purposes, Figure S1 in OSM shows estimated trajectories of attachment anxiety for individuals with high [+1 *SD* of mean] and low [−1 *SD* of mean] responsiveness variability.)

Similarly, there was a significant interaction between average responsiveness and time in predicting attachment avoidance ($\gamma_{60} = 0.056$, 95% CI [0.013, 0.099]). Region of significance analyses showed that average responsiveness during the diary period predicted decreases in attachment avoidance until 6.33 months following diary completion (Figure 2B). After then, the association between average responsiveness and attachment avoidance (adjusted for pre-diary levels) was not significant (see Figure S1 in OSM for estimated trajectories of attachment avoidance for individuals with high and low average responsiveness).

Testing for Alternative Interpretations

The association between responsiveness variability and increases in attachment anxiety held after adjusting for covariates ($\gamma_{50} = 0.306$, 95% CI [0.118, 0.494]; Model 1b of Table 1). The interaction between responsiveness variability and time was no longer significant ($\gamma_{60} = -0.060$, 95% CI [−0.133, 0.013]), suggesting that, after adjusting for covariates, the association between responsiveness variability and increases in attachment anxiety does not appreciably change across the yearlong follow-ups. However, this finding should be interpreted cautiously, given that the association did attenuate in the covariate-free model. We also repeated the analyses by entering pre-diary attachment avoidance into the models as a predictor. Both the main effect of responsiveness variability and the time by responsiveness variability interaction held in the model excluding covariates ($\gamma_{50} = 0.309$, 95% CI [0.133, 0.485] and $\gamma_{60} = -0.102$, 95% CI [−0.176, −0.028]), whereas only the main effect of responsiveness variability held in the covariate-included model ($\gamma_{50} = 0.302$, 95% CI [0.112, 0.492] and $\gamma_{60} = -0.060$, 95% CI [−0.131, 0.011]).

Including covariates in the models predicting attachment avoidance did not change the pattern of findings ($\gamma_{40} = -0.244$, 95% CI [−0.393, −0.095] and $\gamma_{60} = 0.052$, 95% CI [0.005, 0.099], for the main effect of average responsiveness and its interaction with time, respectively; Model 2b of Table 1). Repeating the analyses by entering pre-diary attachment anxiety into the models as a predictor did not change the pattern, either ($\gamma_{40} = -0.275$, 95% CI [−0.420, −0.130] and $\gamma_{60} = 0.056$, 95% CI [0.013, 0.099] in the covariate-excluded model; and $\gamma_{40} = -0.239$, 95% CI [−0.388, −0.090] and $\gamma_{60} = 0.051$, 95% CI [0.005, 0.097] in the covariate-adjusted model).

Discussion

The powerful organizational role of adult attachment in intra- and interpersonal functioning has been well-documented (Fraley, 2019). Surprisingly, there is a relative paucity of research on predictors of romantic attachment orientations. The present study addressed this gap by examining the role of daily perceived responsiveness in attachment orientations in actual, newly forming romantic relationships. Our findings provided the first empirical evidence that responsiveness variability and low average responsiveness uniquely predicted greater partner-specific attachment anxiety and avoidance,

Table 1. Multilevel Models Predicting Attachment Orientations.

	Outcome: Partner-Specific Attachment Anxiety							
	Model 1a. Without Covariates				Model 1b. With Covariates			
Fixed Effects	γ	*SE*	CI	*p*	γ	*SE*	CI	*p*
Intercept	3.395	.033	[3.330, 3.460]	<.001	3.395	.031	[3.334, 3.456]	<.001
Gender	−0.047	.032	[−0.110, 0.016]	.139	−0.052	.033	[−0.117, 0.013]	.114
Pre-diary anxiety	0.703	.038	[0.629, 0.777]	<.001	0.684	.041	[0.604, 0.764]	<.001
Time	−0.001	.017	[−0.034, 0.032]	.931	−0.009	.019	[−0.046, 0.028]	.645
Average PPR	−0.073	.045	[−0.161, 0.015]	.109	−0.049	.055	[−0.157, 0.059]	.378
PPR variability	**0.321**	**.085**	**[0.154, 0.488]**	**<.001**	**0.306**	**.096**	**[0.118, 0.494]**	**.002**
Time × PPR variability	**−0.102**	**.038**	**[−0.176, −0.028]**	**.008**	**−0.060**	**.037**	**[−0.133, 0.013]**	**.105**
Average NA	—	—	—	—	0.203	.057	[0.091, 0.315]	<.001
NA variability	—	—	—	—	−0.007	.090	[−0.183, 0.169]	.939
Relationship quality	—	—	—	—	0.076	.051	[−0.024, 0.176]	.139
Stressor exposure	—	—	—	—	−0.036	0.052	[−0.138, 0.066]	.488
Time × Average NA	—	—	—	—	0.029	0.031	[−0.032, 0.090]	.351
Time × NA variability	—	—	—	—	−0.115	0.049	[−0.211, −0.019]	.019
Time × Relationship quality	—	—	—	—	0.042	0.028	[−0.013, 0.097]	.139
Time × Stressor exposure	—	—	—	—	0.010	0.028	[−0.045, 0.065]	.734
Random effects			Variance				Variance	
Intercept (female)			.120				.111	
Intercept (male)			.092				.067	
Time slope (female)			.011				.012	
Time slope (male)			.016				.014	
	Outcome: Partner-Specific Attachment Avoidance							
	Model 2a. Without Covariates				Model 2b. With Covariates			
Fixed Effects	γ	*SE*	CI	*p*	γ	*SE*	CI	*p*
Intercept	2.279	.036	[2.208, 2.350]	<.001	2.278	.036	[2.207, 2.349]	<.001
Gender	−0.031	.028	[−0.086, 0.024]	.272	−0.038	.029	[−0.095, 0.019]	.181
Pre-diary avoidance	0.662	.059	[0.546, 0.778]	<.001	0.612	.065	[0.485, 0.739]	<.001
Time	0.025	.021	[−0.016, 0.066]	.244	0.028	.022	[−0.015, 0.071]	.205
Average PPR	**−0.277**	**.074**	**[−0.422, −0.132]**	**<.001**	**−0.244**	**.076**	**[−0.393, −0.095]**	**.002**
PPR variability	0.038	.094	[−0.146, 0.222]	.686	0.028	.089	[−0.146, 0.202]	.744
Time × Average PPR	**0.056**	**.022**	**[0.013, 0.099]**	**.010**	**0.052**	**.024**	**[0.005, 0.099]**	**.030**
Average NA	—	—	—	—	0.078	0.070	[−0.059, 0.215]	.272
Relationship quality	—	—	—	—	−0.063	0.060	[−0.181, 0.055]	.295
Stressor exposure	—	—	—	—	0.023	0.070	[−0.114, 0.160]	.722
Time × Average NA	—	—	—	—	−0.006	0.027	[−0.059, 0.047]	.832
Time × Relationship quality	—	—	—	—	−0.003	0.037	[−0.076, 0.070]	.927
Time × Stressor exposure	—	—	—	—	−0.011	0.031	[−0.072, 0.050]	.722
Random effects			Variance				Variance	
Intercept (female)			.096				.092	
Intercept (male)			.184				.183	
Time slope (female)			.020				.021	
Time slope (male)			.028				.030	

Note. Gender was coded as −1 (*male*) versus 1 (*female*); Time levels were 0, 1, 2, 3, and 4; all remaining continuous variables were grand-mean centered. Effects that are the focus of the present work are in boldface. PPR = perceived partner responsiveness; NA = negative affect; CI = 95% confidence interval.

respectively, consistent with infant research (Ainsworth et al., 1978) and past theorizing on adult attachment (Arriaga et al., 2018; Beckes & Coan, 2015; Mikulincer et al., 2003). Importantly, these associations held controlling for other significant predictors of attachment orientations (i.e., average negative affect, negative affect variability, stressor exposure, relationship quality), speaking to the robustness of the findings. Given that the current research focused on relationship-specific attachment, it is an open question whether different types of responsiveness might contribute to changes in global attachment orientations, perhaps through changes in partner-specific attachment orientations.

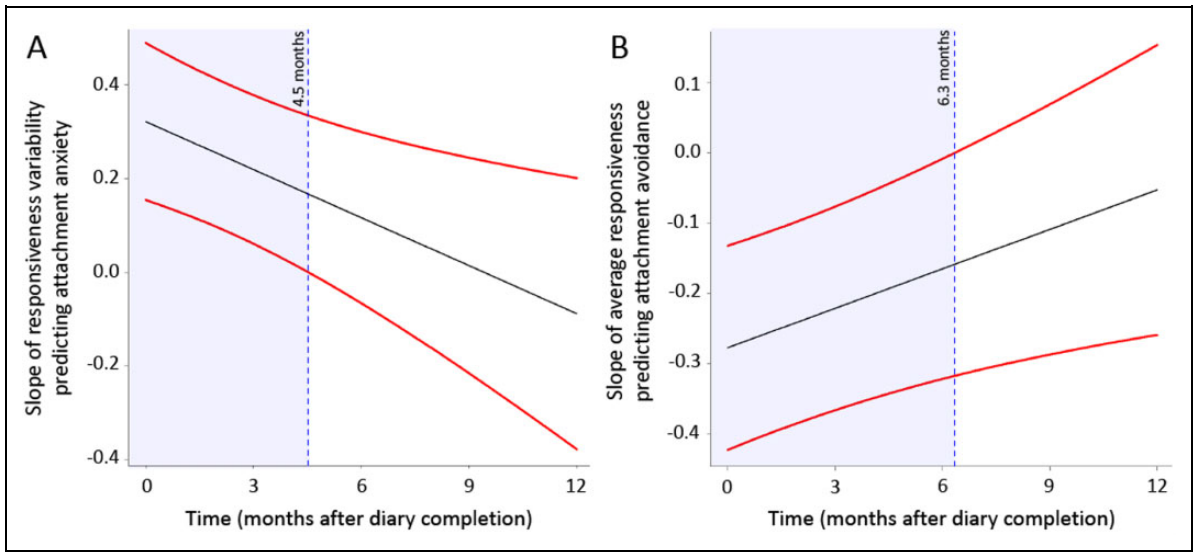

Figure 2. Slope of responsiveness variability predicting partner-specific attachment anxiety (Panel A) and slope of average responsiveness predicting partner-specific attachment avoidance over time (Panel B) in the covariate-free model. *Note.* The red lines define 95% CIs around slopes. In both panels, slopes falling to the shaded area are significantly different from zero. That is, the blue dashed line denotes the time point until when the predicted associations held. In analytic models, time was centered on the first assessment after diary completion such that immediate post-diary = 0 and 3, 6, 9, and 12 months following diary completion = 1, 2, 3, and 4, respectively. Panel A was based on the model described in Equation 2 and Panel B was based on the model described in Equation 3.

Our daily responsiveness assessment, which captured momentary perceptions of partner responsiveness during the 3-week diary period, allowed us to take a snapshot of romantic relationships within their first few months. Responsiveness variability and average responsiveness captured during this period will likely change over the course of the relationship, in which case their associations with later partner-specific attachment might weaken over time. Significant interactions between different types of responsiveness and time that we observed in our data provide evidence for this idea. Specifically, the predicted associations of responsiveness variability and average responsiveness with attachment orientations linearly decreased over time, becoming insignificant roughly midway through the yearlong follow-ups (see OSM for an alternative way of interpreting these interactions). After adjusting for covariates, the association between responsiveness variability and attachment anxiety appeared to persist much longer, covering the entire follow-up period of 1 year. However, we urge caution in interpreting this finding, given that the association did get weaker in the covariate-free model. Moreover, when we repeated the analyses using pre-diary anxiety as part of the outcome, the interaction between responsiveness variability and attachment anxiety was significant even after adjusting for covariates ($p = .003$; see Table S2 in OSM). Therefore, a more conservative conclusion might be that the association between responsiveness variability and attachment anxiety holds for shorter than a year.

Regardless, it is important that the associations we observed were not limited only to the immediate post-diary assessment but extended to at least a few months. The next critical question, then, is to test how changes in responsiveness variability and average responsiveness contribute to changes in attachment orientations over time. To address this question, repeating the diary period multiple times at follow-up assessments is necessary. Such a design, although difficult to implement, would allow future research to speak to how different types of responsiveness contribute to attachment development in the long run.

By studying responsiveness variability in intimate relationships for the first time, the present findings pave the way for a number of intriguing research directions. Although past work has repeatedly shown the central role of average responsiveness in relational and personal well-being (Reis et al., 2004), this work never investigated correlates of responsiveness variability. Future research should examine whether average responsiveness and responsiveness variability predict unique aspects of relational and personal well-being in early and later relationship stages and explore contexts that each may be adaptive (McNulty, 2016). For example, responsiveness variability and its correlate attachment anxiety may be adaptive in the early stages of a relationship if they reflect sensitivity to partner behaviors and motivation for relationship maintenance (Eastwick et al., 2008).

Given the dearth of research studying perceived responsiveness in fledgling couples, it is a prominent strength of the current work to focus on the early stages of relationships. This is also the very time that partner representations first develop, making it the ideal time to examine processes governing romantic attachment formation. It remains an open question whether unique associations of responsiveness variability and average responsiveness with attachment orientations generalize to more established relationships. On the one hand, these associations might be attenuated after attachment bonds have fully formed, as attachment orientations become more stable and

less susceptible to momentary situational influences. On the other hand, key turning points such as getting married or having children that redefine interdependence processes or diagnostic situations that reveal partners' underlying motives (Arriaga et al., 2018) might be particularly suited to observe these associations even in more established relationships.

In sum, the present study provided the first empirical support for a long-held but scarcely tested tenet on romantic attachment, demonstrating that perceiving variable partner responsiveness in day-to-day life predicts greater partner-specific attachment anxiety whereas perceiving higher levels of partner responsiveness predicts lower partner-specific attachment avoidance. These findings advance our understanding of romantic attachments and open up exciting avenues for future research.

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Supplemental Material

The supplemental material is available in the online version of the article.

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