Attachment, Relational Maintenance Behaviors and Relationship Quality in Romantic Long-Distance Relationships: A Dyadic Perspective

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Abstract

This study tested an actor-partner interdependence mediation model (APIMeM) in which dyadic relational maintenance behaviors (RMBs) mediate the relationship between romantic attachment (i.e., anxious and avoidant) and multiple indicators of relationship quality among couples in long-distance relationships (LDRs). Data were collected from 137 couples (women's mean age = 20.37 years; men's mean age = 21.93) who were in a serious romantic LDR and who completed an attachment measure, a measure of dyadic RMBs, and four measures of relationship quality (i.e., relationship satisfaction, relational commitment, closeness with the partner, and connection with others). Path analyses revealed significant actor and partner effects. Moreover, a total mediation between women's anxious attachment and both partners' relationship quality, and a partial mediation between men's and women's avoidant attachment and their own relationship quality were uncovered. Overall, the results suggest that, for couples in LDRs, one partner's behaviors, cognitions, or emotions influence each member of the dyad as well as the quality of the relationship.

Keywords: Attachment, couples, dyadic data analysis, long-distance relationships, relational maintenance behaviors; relationship quality

Attachment, Relational Maintenance Behaviors and Relationship Quality in Romantic Long-Distance Relationships: A Dyadic Perspective

Romantic long-distance relationships (LDRs) are becoming more and more prevalent as people pursue educational or career opportunities all over the world (Belus et al., 2018; Wang et al., 2019). By comparison with geographically close relationships, LDRs refer to a relationship in which it would be difficult or impossible for partners to see each other every day because of geographical distance (Dargie et al., 2015; Goldsmith & Byers, 2018; Stafford & Merolla, 2007). Many studies found that being in an LDR does not guarantee negative relational outcomes and that both types of relationships (i.e., geographically close and LDRs) can be satisfying (Goldsmith & Byers, 2018; Kelmer et al., 2013; Lee & Pistole, 2012). However, not all LDRs are the same and this diversity often goes unexplored (Dargie et al., 2015; Wang et al., 2019). This study aims to document heterogeneity in LDRs by investigating the mechanisms explaining relationship quality among couples in this type of relationship. In this regard, studying variables associated with relationship quality is crucial given its robust link with many indicators of psychological and physical well-being (e.g., Borelli et al., 2014). Because of its relevance to physical separation and relationship quality, attachment theory underlies this study (Bowlby, 1982; Mikulincer & Shaver, 2007).

We tested an actor-partner interdependence mediation model (APIMeM; Ledermann et al., 2011) in which dyadic relational maintenance behaviors (RMBs) mediate the relationship between romantic attachment (anxious and avoidant) and relationship quality (i.e., relationship satisfaction, relational commitment, closeness with the partner, and connection with others; Farooqi, 2014) among couples in LDRs. Dyadic

RMBs refer to face-to-face contact between partners, to relational cognitions, and to mediated communication between partners (Merolla, 2010). The objective pursued by individuals using dyadic RMBs is to sustain their romantic relationship over time through partner talk, whether mediated or not, and despite interactional hiatuses of varying durations (e.g., one day to several weeks; Du Bois et al., 2016; Merolla, 2012; Pistole, et al., 2010).

Most studies explored LDRs with individuals rather than couples (see Stafford & Merolla, 2007, for an exception), but the need for studies including both members of a couple in dyadic analyses has been underlined by many researchers (Belus et al., 2018; Hampton et al., 2017). Focusing on both members of the dyad in LDRs enabled us to examine reciprocal associations between partners (Kenny et al., 2006; Kim et al., 2020).

Geographical Separation and Romantic Relationships

Consistent with past research, we conceptualized romantic LDRs as relationships in which it would be difficult or even impossible for individuals to see their partners daily because of the geographical distance (Dargie et al., 2015; Goldsmith & Byers, 2018; Stafford & Merolla, 2007). At the present time, this type of relationship is especially common among young adults, and particularly among college students. Statistics showed that one third to 75% of college students are presently in an LDR or have been in an LDR at some point in their lives (Aylor, 2003; Stafford, 2005). With the recent rise in channels of computer-mediated communication (e.g., text messaging, social media, video chatting), couples in LDRs now have many ways to stay connected and be interdependent during periods of geographical separation (i.e., when face-to-face communication is impossible; Hampton et al., 2017). Regarding relational outcomes, a few researchers have

found that, by comparison with geographically close relationships, individuals in LDRs report lower relationship quality, while other scholars have found that they report similar or even higher relationship quality (Goldsmith & Byers, 2018; Kelmer et al., 2013; Lee & Pistole, 2012). However, negative beliefs regarding LDRs persist and individuals in these relationships could be said to be marginalized (Johnson & Hall, 2021). Consequently, research is still needed to document characteristics of individuals and couples (in terms of behaviors, cognitions, or emotions) that allow them to flourish while geographically separated (Belus et al., 2018). Characteristics that were investigated in this study to predict differences in relationship quality consist of romantic attachment and dyadic RMBs. These concepts are reviewed next.

Romantic Attachment and Relationship Quality

The construct of relationship quality refers to how positively or negatively individuals feel about their relationships (Farooqi, 2014). It is recognized as a multidimensional concept involving subjective experiences related to relationship satisfaction, commitment, intimacy, and so on. The construct has been explored in various types of relationships (e.g., friendship, cohabitation), but most of the research has focused on either marital or romantic relationships. In this study, to recognize its multidimensional aspect, we conceptualized relationship quality as being composed of relationship satisfaction, relational commitment, closeness with the partner, and connection with others. The first three variables are specific to the current romantic relationship, whereas the last one encompasses all significant others in the individual's social network, including the partner. The measure of connection with others was included to recognize the role of the extended social network for couples in LDRs and the

various type of relationships surrounding them. The inclusion of this variable is essential given recent data showing that individuals in LDRs reported significantly lower network support for their relationship by comparison with those in geographically close romantic relationships (Johnson & Hall, 2021).

For its part, the construct of romantic attachment refers to the emotional connection with the intimate partner, who provides a secure base, and to the inclination to maintain proximity with this person (Lee & Pistole, 2012; see also Bowlby, 1982). According to attachment theory, securely attached individuals search for closeness by talking to and being near the partner (Mikulincer & Shaver, 2007). In contrast, anxiously attached individuals maintain the attachment system constantly active, thus monitoring their partners' accessibility to meet their needs. Individuals with high levels of anxious attachment are vigilant to separation and overly dependent on their partners for comfort and guidance. Avoidantly attached individuals maintain a distant form of closeness. Individuals with high levels of avoidant attachment are overly self-reliant and suppress their negative emotions and separation threats.

Attachment theory is well suited to explain individual differences in relationship quality for couples in LDRs (Borelli et al., 2014). This is because geographical separation may act as a relational stressor for many individuals, increasing attachment threats and relational uncertainty (Merola, 2012). Surprisingly, its role in relationship quality in LDRs has not been extensively studied, particularly in comparison to geographically close relationships (Candel and Turliuc, 2019). Nevertheless, empirical data showed that individuals with higher levels of insecure attachment (i.e., anxious and avoidant)

idealized their partner less and reported less satisfaction in their LDRs (Lee & Pistole, 2012).

Dyadic Relational Maintenance Behaviors, Romantic Attachment, and Relationship Quality

Research on dyadic RMBs traditionally focused on geographically close relationships (Belus et al., 2018). However, because partners in LDRs have less frequent face-to-face contact with each other, compared to those in geographically close relationships, it may be especially critical for partners in LDRs to use dyadic RMBs to stimulate feelings of security in their relationship and preserve closeness with their partner (Belus et al., 2018; Borelli et al., 2014; Goldsmith & Byers, 2020). However, research linking romantic attachment and dyadic RMBs is rare, especially in LDRs (Pistole et al., 2010). Nonetheless, there is some evidence that individual differences in romantic attachment could influence proximity maintenance in LDRs, with persons having higher insecure (both anxious and avoidant) attachment disclosing less to their partner than persons having lower levels of insecure attachment (Lee & Pistole, 2012).

As compared to romantic attachment, there is more empirical evidence linking dyadic RMBs to diverse indicators of relationship quality. Using a sample of individuals who were not in LDRs, Dainton and Aylor (2002) revealed that those who performed more dyadic RMBs, such as routine assurance of one's love, were more satisfied with their romantic relationship than their counterparts who performed less dyadic RMBs (see also Rusbult & Buunk, 1993 and Ogolsky & Bowers, 2013). Similar results were also observed in LDRs. For instance, it was shown that dyadic RMBs predicted higher levels of relationship satisfaction (Belus et al., 2018; Goldsmith & Byers, 2020).

The Current Study

This study used an APIMeM (Ledermann et al., 2011) to examine, simultaneously and independently, actor effects (e.g., the connection between a person's attachment and that person's dyadic RMBs), partner effects (e.g., the connection between a person's dyadic RMBs and his or her partner's relationship quality), and mediation effects. In accordance with the attachment theory and results of past studies, we postulated that:

H1: Higher levels of anxious and avoidant attachment would be associated with lower levels of dyadic RMBs. Actor and partner effects were expected to be significant.

H2: Higher levels of dyadic RMBs would be related to higher relationship quality, with both actor and partner effects expected to be detected.

Finally, we also expected that:

H3: Dyadic RMBs would mediate the relationship between attachment and relationship quality.

Method

Participants

The sample is composed of 137 heterosexual Canadian couples composed of young adults in romantic LDRs. Although same-sex couples were welcome to participate, only 3 (2 gay couples and 1 lesbian couple) did and, given this small number, data from these same-sex couples were not subjected to statistical analyses. On average, partners had been in an LDR with each other for 13.44 months (SD = 13.89), while their mean total union length was 25.16 months (SD = 18.90). Concerning their relationship status,

87.6% of couples indicated that they are in a serious relationship with their partner, but do not have a common space in which they live together after a period of geographic separation (e.g., they live with their respective parents); 10.9% indicated that they are in a serious relationship with their partner and have a common space in which they live when they are together (e.g., they rent an apartment together); 0.7% indicated that they are engaged and 0.7% indicated that they are married.

The median number of kilometers separating the two partners was 350 km (*M* = 1086, *SD* = 1906; *min* = 35; *max* = 9598) and 18.4% of partners were separated from each other by over 1000 km. A total of 6.9% of couples indicated that they see each other in person once every six months (or less often); 3% every 4-5 months; 3% every 3 months; 7.6% every 2 months; 17.6% monthly; 23.7% 2-3 times a month; 16% four times a month; and 22.1% more than 4 times a month. During geographical separation periods, couples indicated that they used text messages (97.1% of the sample), telephone (89.8%), and webcam (82.5%) to communicate with each other. These results paralleled those of Hampton et al. (2017). Letters (2.2%) and emails (5.1%) were used only by a minority of couples. Furthermore, participants revealed that the most popular social media to communicate with their partner during periods of geographical separation included Facebook (46.7% of the sample), Instagram (60.6%), Messenger (70.1%), and Snapchat (84.7%).

Women's mean age was 20.37 years (*SD* = 2.36), whereas men's mean age was 21.93 years (*SD* = 3.23). Concerning their main occupation, most participants (92.6% for women and 59.5% for men) were students, while the rest were workers. The median annual income varied from $10,000 to $19,999 for men and from $0 to $9,999 for

women. Finally, participants' levels of education were, on average, 14.54 years (*SD* = 2.23) for women and 14.41 years (*SD* = 2.59) for men.

Procedure

The study received appropriate ethical review and clearance, thus meeting all ethical standards for research. To select couples for this study, the following criteria were applied: partners 1) had to be in a committed romantic relationship for at least 6 months (see Belus et al., 2018 for a similar criteria); 2) should be young adults aged from 17 to 35 years; 3) should agree about designating their relationship as an LDR at the time of the study. Having children was not an exclusion criterion, but no couple in the sample reported being parents. Couples were recruited by word of mouth, with the use of social media and advertisements, and in introductory psychology courses (i.e., subject pool via SONA). Participants recruited via a psychology course received one credit point for this course in compensation for their participation. The other participants entered a prize draw with the chance of winning $100.

Interested couples were asked to complete the online survey at home using SurveyMonkey, a web survey tool, without consulting their partner. Because partners are geographically distant, online research is particularly well suited to study LDRs, especially considering that the validity of this methodology is similar to that of in-person studies (Dargie et al., 2015). Participants were instructed to contact the researchers if they had questions. The survey was available in French or in English, the two official languages of Canada. The survey includes a demographic questionnaire, a measure of romantic attachment, a measure of RMBs, and four measures of relationship quality.

Measures

Demographic questionnaire. Participants answered questions about their demographic information, including their age, level of education, and annual income. They also responded to questions regarding their romantic relationship (e.g., its duration) and its long-distance components (e.g., the geographic distance between them and the communication technologies they use during periods of separation).

Romantic attachment. Each partner completed the 12-item Experiences in Close Relationship Scale-Short form (Wei et al., 2007). The questionnaire measures two dimensions of romantic attachment: anxious attachment (e.g., "I need a lot of reassurance that I am loved by my partner"; 6 items) and avoidant attachment (e.g., "I am nervous when my partner gets too close to me"; 6 items). Participants rated items based on how they generally feel in their relationship with their current romantic partner using a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Items were summed by subscale after reversing some items. Higher scores on each scale reveal higher levels of anxiety and avoidance. In this study, alphas were respectively .77 for men's avoidant attachment, .74 for women's avoidant attachment, .73 for men's anxious attachment, and .71 for women's anxious attachment.

Dyadic RMBs. Participants answered the 31-item subscale of dyadic long-distance RMBs developed by Merolla (2012). Each partner rated items on a 7-point Likert scale varying from 1 (*not at all characteristic of me*) to 7 (*very characteristic of me*). The questionnaire measures dyadic RMBs: 1- before geographic separations (prospective; 10 items; e.g., "I create a checklist (in my mind or on paper) of things my partner and I need to do/discuss before we part."), 2- during geographic separations (introspective; 15 items; e.g., "I text message my partner every day."), and 3- after being

reunited for a short period of time after geographic separations (i.e., retrospective; 6 items; e.g., "We chat about things that happened while we were apart"). The total score for dyadic RMBs was the mean of the dyadic prospective, introspective, and retrospective subscales. The higher the score, the more dyadic RMBs were done. In the current sample, the Cronbach's alphas were respectively .84 for women and .90 for men.

Relationship quality variables.

Relationship satisfaction. Partners completed the satisfaction level subscale of the Investment Model Scale (Rusbult et al., 1998) to measure their satisfaction with their romantic relationship. The subscale comprises 10 items, but only the last 5 are included in the mean total score (e.g., "I feel satisfied with our relationship"). The first 5 items aim to improve the intelligibility of the other items and to increase the validity and fidelity of the scale. Items were answered on a 9-point scale varying from 0 = *do not agree at all* to 8 = *agree completely*. Higher scores reflect higher level of relationship satisfaction (for women: $M = 6.59$, $SD = 1.22$; for men: $M = 6.86$, $SD = 1.22$). Cronbach's alphas were .85 for men and .80 for women in this study.

Relational commitment. The commitment level subscale of the Investment Model Scale was employed to assess commitment in the actual romantic relationship (Rusbult et al., 1998). It is composed of 7 items (e.g., "I am committed to maintaining my relationship with my partner") that are responded to using a 9-point scale ranging from 0 = *do not agree at all* to 8 = *agree completely*. The total score is the mean of the answers to all items, with higher scores reflecting higher levels of relational commitment (for women: $M = 7.21$, $SD = 1.12$; for men: $M = 7.20$, $SD = 1.13$). The scale displayed

adequate reliability and validity (Rusbult et al., 1998). For this sample, Cronbach alphas were .77 for women and .80 for men.

Closeness. The Inclusion of Other in the Self Scale (Aron et al., 1992), a single item pictorial measure, was used to assess the level of closeness between partners. It is composed of a series of seven overlapping circles, ranging from no self-other overlap to extensive self-other overlap. Participants were instructed to select which picture best described their relationship with their partner. The questionnaire creates a seven-step interval level scale ranging from 1 (no self-partner overlap) to 7 (extensive self-partner overlap), with higher scores reflecting higher level of closeness (for men: $M = 5.32$, $SD = 1.45$; for women: $M = 5.18$, $SD = 1.27$).

Connection with others. We used the 3-item connection subscale of the Relatedness need-satisfaction questionnaire (Sheldon et al., 2011; Sheldon et al., 2010; Sheldon & Gunz, 2009) to measure the level of connection with others during the last week (e.g., "I felt close and connected with other people who are important to me"). A 9-point scale ranging from 1 (*not true*) to 9 (*very true*) was used to answer the questionnaire. The total score is the mean of the 3 items (for women: $M = 6.89$, $SD = 1.57$ for men: $M = 6.82$, $SD = 1.59$), with higher scores indicating higher levels of connection with others. In the current study, alphas were .72 for men and .78 for women for this variable.

Data Analysis Strategy

Descriptive analyses, including correlations, were first performed. Subsequently, by employing path analyses, tests of the APIMeM were done. As suggested by Kenny and Ledermann (2010), we first verified whether dyad members were distinguishable or

indistinguishable by constraining actor and partner effects to be equal across gender. The results of the Lagrange Multiplier test of the equality constraints revealed gender differences for the actor effect between avoidant attachment and dyadic RMBs, $p < .20$, as well as for the partner effect between anxious attachment and dyadic RMBs, $p < .20$. Thus, we concluded that dyad members were distinguishable. The APIMeM for distinguishable dyads is derived from the typical actor-partner interdependence model (APIM) but allows for the examination of mediation effects (Ledermann et al., 2011). Because dyadic analyses were employed, the sample size in these analyses was equivalent to the number of dyads (or couples) instead of the number of individuals (Kenny et al., 2006). Due to the nonindependence between members of each couple, partners' scores for *X*s were allowed to correlate with one another (Kenny et al., 2006; Ledermann et al., 2011). Similarly, because of unmeasured common causes, error terms of *M* and *Y* covary between partners of the same couple. Furthermore, the levels of avoidant and anxious attachments for a given participant were also permitted to correlate to take into consideration that both variables measure insecure attachment.

We conducted path analyses through the maximum likelihood method of parameter estimation using EQS 3.1 for Windows. Five indices were employed to test the fit of the APIMeM: the Chi-square (χ^2) value, the Goodness of Fit Index (GFI), the Comparative Fit Index (CFI), the standardized Root Mean-square Residual (standardized RMR), and the Root Mean-Square Error of Approximation (RMSEA). The overall fit is considered adequate when the Chi-square value is non-significant; the CFI and the GFI are superior to .90; the standardized RMR is smaller than .08; and the RMSEA is less than .07 (Hopper et al., 2008; Kline 2011).

Results

Descriptive Analyses

Not surprisingly, preliminary analyses showed that measures of relationship quality correlated significantly one with the other, with some exceptions for the connection with others variable (see Appendix A). Considering that measures of relationship quality are related to one another, either conceptually or statistically, we created a composite score for relationship quality from the grand mean z-scores of relationship satisfaction, relational commitment, closeness with the partner, and connection with others. Composite scores have the advantages of acknowledging the multidimensional nature of the concept they represent, while reducing the potential for information overload and improving the ratio between the number of subjects and the number of parameters. Z-scores were chosen because they allow for an equivalent weighting of questionnaires (Song et al., 2013).

Table 1 reports on Spearman's rho correlations, means, and standard deviations for all variables of the APIMeM. Because individuals in LDRs differ in their living arrangements and considering that these differences may affect their relationship (Goldsmith & Byers, 2018), we also examined whether distance from one's partner and frequency of visits were associated with relationship quality (Dargie et al., 2015). If this was the case, these variables should be used as covariates in subsequent statistical analyses. Correlations (not shown in Table 1) implying, on the one hand, distance from one's partner and frequency of visits, and on the other hand, women's and men's relationship quality, ranged from -.01 to -.16, and were all nonsignificant, $p > .05$. Consequently, these variables were not controlled for in tests of the APIMeM.

Tests of the APIMeM

The results showed that, although six paths of the hypothesized original APIMeM illustrated in Figure 1 were significant (i.e., the two paths between women's as well as men's avoidant attachment and their own levels of dyadic RMBs; the two paths between women's anxious attachment and their own as well as their partner's dyadic RMBs; and the ones between women's as well as men's dyadic RMBs and their own levels of relationship quality), the overall fit of the model was poor, χ^2 (10, N = 137) = 62.09, $p <$ .001; GFI = .90, CFI = .70, standardized RMR = .13, RMSEA = .20. The Lagrange Multiplier test indicated that the adequation of the model could be improved by adding three parameters: two estimating a direct link between women's and men's avoidant attachment and their own levels of relationship quality and one correlation between women's avoidant attachment and men's anxious attachment. A modified model with these three additional parameters was then tested.

Figure 2 illustrates the results of our modified APIMeM. All fit indices revealed an adequate fit. As shown in Figure 2, the six paths that were significant in the original hypothesized model remained significant in this analysis, in addition to the two direct paths implying actor effects between avoidant attachment and relationship quality for both genders. In addition, covariances between errors terms of *M,* Θ = 14, $p <$ .05, and *Y,* Θ = .09, $p <$ .05, were significant. All estimated correlations among *X*s were also significant. The model explained 6% and 19% of variation in women's and men's dyadic RMBs, respectively. Moreover, it accounted for 27% of the variance in women's relationship quality and 23% in men's relationship quality. Table 2 summarizes beta

Table 1

Spearman's Rho Correlations among Study Variables and Descriptive Statistics for Women (W) and Men (M)

	1	2	3	4	5	6	7	*M*	*SD*
1. Avoidant attachment (W)								11.63	5.32
2. Anxious attachment (W)	.45***							20.38	6.77
3. Avoidant attachment (M)	.28***	.12						12.53	5.45
4. Anxious attachment (M)	.24**	.24**	.33***					17.38	6.82
5. Dyadic RMBs (W)	-.19*	.11	-.06	-.03				5.21	.68
6. Dyadic RMBs (M)	.03	.21*	-.30***	.04	.30***			5.01	.81
7. Relationship quality (W)	-.42***	-.16	-.18*	-.21**	.28***	.11		.00	.65
8. Relationship quality (M)	-.19*	.00	-.37***	-.10	.18*	.29***	.37***	.00	.66

Note. RMBs= relational maintenance behaviors.

* $p < .05$. ** $p < .01$. *** $p < .001$.

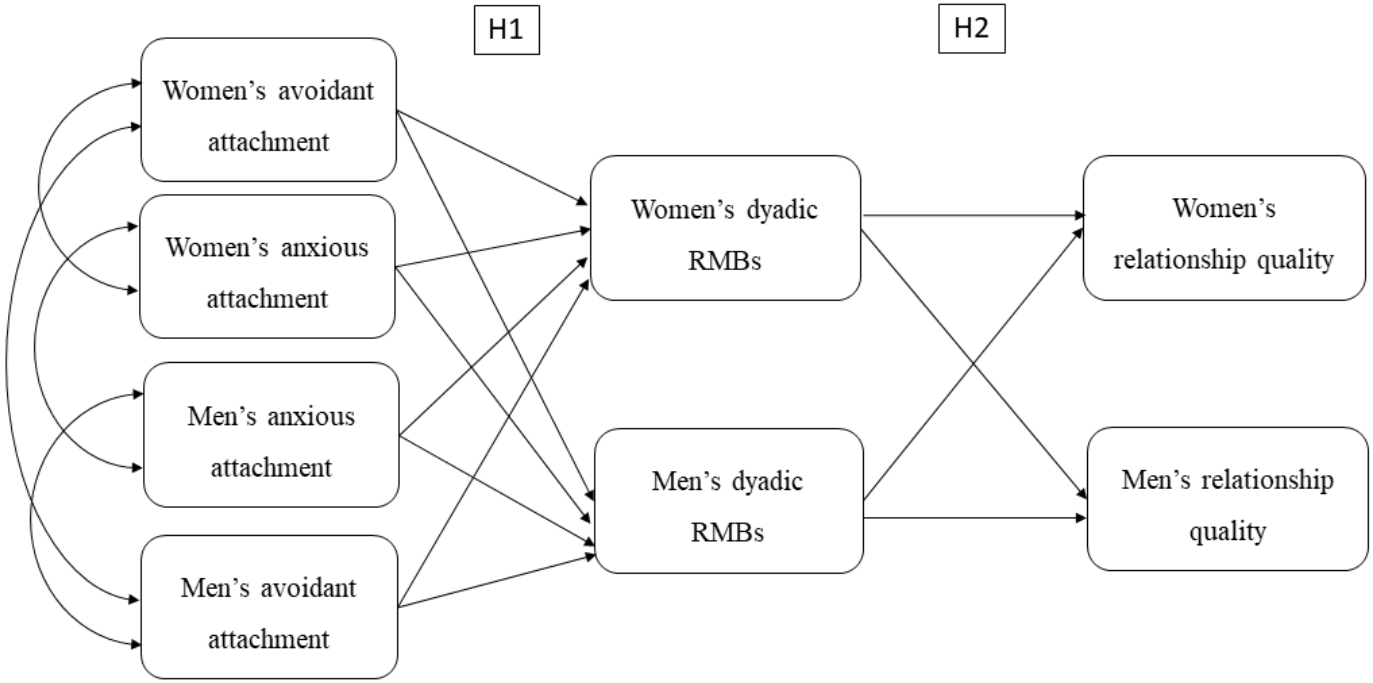

Figure 1. Original hypothesized actor-partner interdependance mediation model predicting relationship quality. Error terms for *M* as well as for *Y* were allowed to covary with one another.

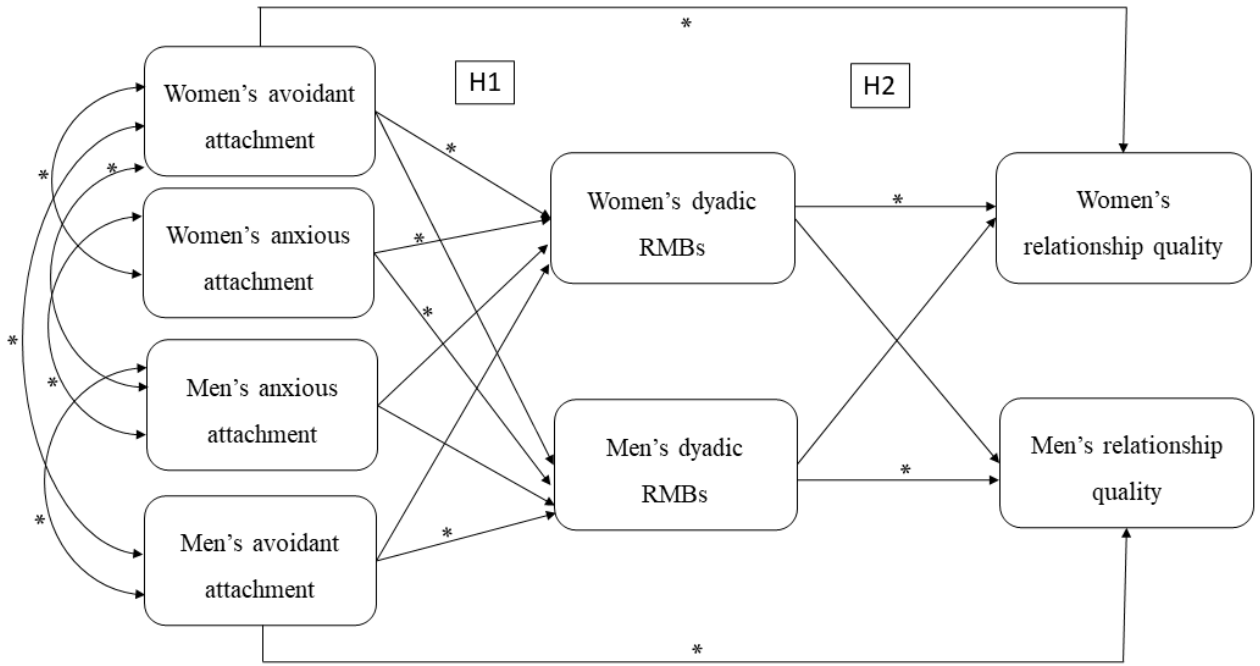

Figure 2. Final actor-partner interdependance mediation model predicting relationship quality. Error terms for *M* as well as for *Y* were allowed to covary with one another and covariances were significant in both cases. χ^2 (7, N = 137) = 7.68, p = .36; Goodness of Fit Index (GFI) = .99, Comparative Fit Index (CFI) = 1.00, standardized Root Mean-square Residual (standardized RMR) = .05, Root Mean-Square Error of Approximation (RMSEA) = .03.
* $p < .05$

Table 2

Results of Path Analyses for Women (W) and Men (M) for the Final APIMeM

Paths	*b*	*SE*	*β*	*k*
Avoidant attachment (W) → Dyadic RMBs (W)	-.03	.01	-.24*	0 (actor)
Avoidant attachment (W) → Dyadic RMBs (M)	-.00	.01	-.03	
Anxious attachment (W) → Dyadic RMBs (W)	.02	.01	.19*	.05 (actor)
Anxious attachment (W) → Dyadic RMBs (M)	.03	.01	.24*	2.42 (partner)
Avoidant attachment (M) → Dyadic RMBs (W)	.00	.01	.00	
Avoidant attachment (M) → Dyadic RMBs (M)	-.06	.01	-.37*	.07 (actor)
Anxious attachment (M) → Dyadic RMBs (W)	.00	.01	.01	
Anxious attachment (M) → Dyadic RMBs (M)	.01	.01	.10	
Dyadic RMBs (W) → Relationship quality (W)	.19	.08	.20*	.26 (actor)
Dyadic RMBs (W) → Relationship quality (M)	.11	.08	.11	
Dyadic RMBs (M) → Relationship quality (W)	.05	.06	.06	
Dyadic RMBs (M) → Relationship quality (M)	.15	.07	.19*	.70 (couple)
Avoidant attachment (W) → Relationship quality (W)	-.05	.01	-.44*	.12 (actor)
Avoidant attachment (M) → Relationship quality (M)	-.04	.01	-.34*	.22 (actor)

Note. RMBs= relational maintenance behaviors.

* $p < .05$.

coefficients, standard errors, and parameters *k*. We observed six actor-only patterns, one couple pattern, and one partner-only pattern.

We then followed the recommendation of Ledermann et al. (2011) and assessed a more saturated model including all direct and indirect paths between *X*s and *Y*s. By comparison with the final APIMeM, the saturated model included six additional direct links estimating actor and partner effects between attachment and relationship quality. Results revealed that none of these additional direct paths were significant. Moreover, a comparison of the chi-square for the final model, χ^2 (7, N = 137) = 7.68, p = .36, and the chi-square for the more saturated model, χ^2 (1, N = 137) = 1.91, p = .17, revealed no significant differences between the two models, $\Delta\chi^2$ (6, N = 137) = 5.77, p = .45. This suggests that women's and men's dyadic RMBs could fully mediate the relationship between women's anxious attachment and both genders' relationship quality (MacKinnon, 2008). The relationships between men's and women's avoidant attachment and their own levels of relationship quality were, for their part, partly mediated by their own levels of dyadic RMBs.

Discussion

The aim of this study was to test, using an APIMeM, whether dyadic RMBs mediate the relationship between romantic attachment and relationship quality among couples in LDRs. The three hypotheses that were put forward were partially supported. Concerning H1, results showed both significant actor and partner effects between romantic attachment and dyadic RMBs, with small to medium effect sizes reported. As hypothesized, concerning actor effects, men's and women's avoidant attachment predicted their own levels of dyadic RMBs. Higher levels of avoidant attachment were associated with lower levels of dyadic RMBs. In addition, contrary to what was expected regarding the direction of the relationship, women's anxious attachment *positively*

predicted their own levels of dyadic RMBs. Pertaining to partner effects, results revealed that women's anxious attachment was also *positively* related to men's dyadic RMBs. Regarding H2 on the link between dyadic RMBs and relationship quality, one actor effect (for women's relationship quality) and one couple effect (for men's relationship quality) were observed, with men's and women's dyadic RMBs positively predicting levels of relationship quality, as expected, with medium to large effect sizes observed. Finally, partly confirming H3, dyadic RMBs were found to mediate the relationship between romantic attachment and relationship quality for couples in LDRs. Both partial (implying avoidant attachment) and full (implying anxious attachment) mediations were observed. In sum, our results suggest that, for couples in LDRs, one partner's behaviors, thoughts, or emotions influence each member of the couple as well as the overall quality of the relationship.

Our results show that the nature of the emotional connection with the intimate partner, as conceptualized by levels of avoidant and anxious attachments, predicts the frequency of relational cognitions and communication that partners have before, during, and after periods of geographical separation taken as a whole. In accordance with past results concerning avoidant attachment (Belus et al., 2018; Goldsmith & Byers, 2020; Lee & Pistole, 2012), as well as the attachment theory (Bowlby, 1982; Mikulincer & Shaver, 2007), the present results reveal that the more men and women were self-reliant and tended to suppress their negative emotions and separation threats, the less they used dyadic RMBs in their LDRs. Concerning anxious attachment, we observed that women who were highly vigilant to separation and overly dependent on their partners for comfort and guidance used more dyadic RMBs and had partners who did the same. These

behaviors were probably aimed at meeting women's needs for reassurance in the context of frequent geographical separations. Our results are consistent with the assumption made by Pistole et al. (2010) who proposed that the use of introspective behaviors may be especially typical of the highly anxious.

Concerning the link between dyadic RMBs and the multidimensional measure of relationship quality, one actor effect and one couple effect were significant. Our results indicate that women's dyadic RMBs were positively related to their own relationship quality (see Baker et al., 2013, for similar results). Moreover, men's relationship quality was predicted globally by both partners' dyadic RMBs. We found that people who performed dyadic RMBs more frequently reported more quality in their relationships than people who performed less dyadic RMBs (see Ogolsky & Bowers, 2013 for similar results in geographically close relationships). This means that behaviors couples used to maintain their romantic relationships, despite cycles of separations and reunions, predict positive characteristics of the romantic relationship as well as better connection with significant others. Lastly, contrary to what was observed by Dargie et al. (2015), our results show that characteristics of living arrangements, namely geographical distance from one's partner and frequency of visits, were not related to relationship quality. It seems that couples in LDRs have the potential to experience high-quality relationships no matter what their living arrangements are (Goldsmith & Byers, 2018; Kelmer et al., 2013; Lee & Pistole, 2012).

Mediation Effects

The current study showed that dyadic RMBs are a mechanism through which people in LDRs, considering the type of emotional connection they have with their

partner, sustain their romantic relationship over time despite interactional hiatuses, and which allow for the prediction of the quality of their relationships. We found that the relational cognitions and communication partners use when they have infrequent face-to-face interactions mediate the link between, on the one hand, their own or their partner's romantic attachment and, on the other hand, their own relationship quality. A partial meditation was observed between men's and women's avoidant attachment and their own relationship quality, whereas a total mediation was noted between women's anxious attachment and both genders' relationship quality. The direct link revealed between men's and women's avoidant attachment and their own relationship quality is contrary to what was originally predicted, but consistent with some past studies (Lee & Pistole, 2012). It seems that having high levels of avoidant attachment and being in an LDR is particularly taxing for couples even if partners use behaviors to maintain their romantic relationship. It is worth noting, however, that levels of avoidant attachment were low in the current study.

Limitations and Future Directions

Using a cross-sectional methodology, the current study confirms that the final APIMeM offered a good fit to the data. The non-causal nature of results is, however, essential to mention, as well as the fact that our findings do not eliminate the possibility of bidirectional links between variables under study. Future studies should investigate the paths of influence observed in the current study by taking advantage of a longitudinal methodology. Directions for future studies could also examine potential moderators, such as jealousy, in the relationship between attachment, dyadic RMBs, and relationship

quality. In addition, it would be interesting to find out whether our results can be replicated with people from sexual minorities.

Additional limitations of the present work and other directions for research are also noteworthy. Our sample is composed mainly of college students without familial responsibilities, which is typical of people in LDRs (Aylor, 2003; Stafford, 2005), but raises the question of the generalization of results. For example, the results might not be the same for couples who are older, have family responsibilities (e.g., children), and who have been together for a longer time. Our findings are likely most applicable to young adults in the early stages of romantic relationships. Furthermore, our measure of dyadic RMBs had the advantage of taking into consideration the time of their enactment (before, during, and after separations), but the statistical analyses were executed on a global score of dyadic RMBs. Despite the good to excellent alphas obtained in the present study for the measure of dyadic RMBs, and the fact that the global score of dyadic RMBs represented each period equivalently, this statistical choice results in a certain imprecision in the findings. Studies using larger samples of couples may benefit from differencing dyadic RMBs as a function of time. Finally, the sample of couples allows for the examination of a wider variety of research questions by comparison with individual samples, such as partner effects. Nevertheless, a recent study revealed that they may give rise to a sample with higher levels of relational commitment relative to individual samples (Barton et al., 2019), which would result in an overall higher level of relationship quality.

After testing APIMeMs predicting a multidimensional measure of relationship quality with couples in LDRs, the current study confirmed both mediator and dyadic

effects. Our study contributes to the literature documenting the role of romantic attachment in couple relationships (e.g., Candel & Turliuc, 2019) by revealing both direct and indirect links between the two concepts for couples in LDRs. Variables that would act as moderators, by specifically mitigating the negative impact of avoidant attachment on dyadic RMBs and relationship quality, have yet to be discovered. In conclusion, our study can help improve understanding of how couples in LDRs maintain their relationships, even though geographical distance may act as a relational stressor (Borelli et al., 2014; Lee & Pistole, 2012). Considering that LDRs are often devalued in our society, which can lead couples to feel isolated and lonely (Johnson & Hall, 2021), our results contribute more generally to the understanding of marginalized relationships.

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