

# Romantic attachment and mate retention behavior: The mediating role of perceived risk of partner infidelity

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## Abstract

Previous research indicates that the romantic attachment dimensions of anxiety and avoidance are associated with performance frequency of Benefit-Provisioning and Cost-Inflicting domains of mate retention. The current research aimed to replicate previous findings in a non-Western sample (Iran, Study 1) and to extend this research by investigating the mediating role of perceived risk of partner infidelity (Study 2). Studies 1 and 2 tested the hypotheses that attachment anxiety is positively associated with mate retention and that attachment avoidance is negatively associated with mate retention. Study 2 tested the hypothesis perceived risk of partner infidelity mediate the association between attachment dimensions and mate retention domains. Results of Studies 1 and 2 replicated previous research and also revealed that perceived risk of partner infidelity mediated the association between attachment anxiety, specifically, and mate retention. The current research advances our understanding of romantic attachment from an evolutionary psychological perspective.

## Keywords

Adult attachment, evolutionary psychology, mate retention, romantic relationships

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The romantic attachment system functions to regulate and maintain pair-bonds (Fraley & Shaver, 2000; Hazan & Diamond, 2000). Romantic attachment research investigates the ways in which individual differences in attachment to a partner influence relationship outcomes (Simpson & Belsky, 2008) and primarily examines the ways in which individuals respond emotionally and cognitively to relationship threats, such as partner infidelity or relationship dissolution (Shaver & Mikulincer, 2008). The current research addresses ways in which attachment bonds (i.e., the emotional and cognitive connection with a romantic partner) directly influence attachment behaviors (e.g., physical proximity to a partner) in adult romantic relationships. Given that a primary function of romantic attachment is to regulate responses—emotional, cognitive, and behavioral—to relationship threats (Hazan & Diamond, 2000), the current study investigates the associations between attachment bonds and attachment behaviors specifically employed to reduce the risk of partner infidelity and relationship dissolution (Buss, 1988).

Attachment bonds to romantic partners are conceptualized as two dimensions of *anxiety* and *avoidance* (Brennan, Clark, & Shaver, 1998; Fraley, Waller, & Brennan, 2000). Attachment anxiety reflects hyperactivation of the romantic attachment system, characterized by attempts to maintain proximity to a romantic partner, and an overdependence on a partner for stability and security (Cassidy, 2000). More anxiously attached individuals are hypervigilant to cues of rejection by a partner (Rholes & Simpson, 2004) and have difficulty disengaging from cues to relationship distress (Mikulincer, Gillath, & Shaver, 2002). More anxiously attached individuals may deploy controlling or coercive behaviors in response to cues of rejection in an attempt to elicit support and investment from a romantic partner (Mikulincer & Shaver, 2007).

Attachment avoidance reflects a hypoactivation of the romantic attachment system, characterized by attempts to evade emotional intimacy and physical proximity to a romantic partner (Cassidy, 2000). More avoidantly attached individuals emphasize independence and self-reliance in relationships to facilitate decreased partner dependence and proximity-seeking behaviors (Edelstein & Shaver, 2004). More avoidantly attached individuals are more likely to discount information and cues to relationship threats (Dykas & Cassidy, 2011; Kruger et al., 2013).

Romantic attachment dimensions are associated with distinct emotional and cognitive outcomes in romantic relationships (Shaver & Mikulincer, 2008)—particularly with regard to jealousy. More anxiously attached individuals report greater jealousy (Kim, Feeney, Jakubiak, 2017; Sharpsteen & Kirkpatrick, 1997), overestimate relationships threats, and perceive less commitment from a romantic partner (Mikulincer & Shaver, 2007). More avoidantly attached individuals, in contrast, report less chronic jealousy (Sharpsteen & Kirkpatrick, 1997) and are more attentive to potential alternative romantic partners for themselves (DeWall et al., 2011). However, limited research has addressed how one's attachment bond to a romantic partner may influence the deployment of overt behavioral strategies designed to prevent a partner's infidelity or relationship dissolution.

Kruger and colleagues (2013) investigated how attachment dimensions are associated with perceptions of a partner's behaviors. More anxiously attached individuals were more likely to interpret partner behaviors as cuing infidelity. Barbaro, Pham, Shackelford, and Zeigler-Hill (2016) investigated the extent to which attachment dimensions

were associated with performance of *mate retention behaviors*—behaviors employed to reduce the risk of partner infidelity or relationship dissolution (Buss, 1988). Mate retention behaviors (Buss, Shackelford, & McKibbin, 2008) are organized into five categories (Direct Guarding [e.g., “Called to make sure my partner was where they said they would be”], Intersexual Negative Inducements [e.g., “Became angry when my partner flirted to much”], Positive Inducements [e.g., “Displayed greater affection for my partner”], Public Signals of Possession [e.g., “Put my arm around my partner in front of others”], and Intrasexual Negative Inducements [e.g., “Stared coldly at a man who was looking at my partner”]), which comprise two higher order domains of *Benefit-Provisioning* (i.e., behaviors that reduce the likelihood of partner infidelity by increasing relationship satisfaction) and *Cost-Inflicting* (i.e., behaviors that reduce the likelihood of partner infidelity by inflicting costs on a partner). Barbaro et al. found that more anxiously attached men and women reported more frequent performance of Benefit-Provisioning and Cost-Inflicting mate retention. More avoidantly attached men reported less frequent performance of Benefit-Provisioning and Cost-Inflicting mate retention, whereas more avoidantly attached women reported less frequent performance of only Benefit-Provisioning mate retention.

Taken together, the findings of Barbaro et al. (2016) and Kruger et al. (2013) suggest that more anxiously attached individuals may perform more frequent mate retention because they are hypervigilant to cues of partner infidelity and potential relationship dissolution. More avoidantly attached individuals, in contrast, may perform less frequent mate retention because they discount cues that are potentially indicative of partner infidelity and are motivated to evade emotional intimacy with and physical proximity to a romantic partner.

The current research investigates the associations between romantic attachment dimensions and performance frequencies of Benefit-Provisioning and Cost-Inflicting mate retention. This research seeks to replicate the findings of Barbaro et al. (2016) in a non-Western sample (Iran, Study 1) to examine the extent to which attachment bonds facilitate performance of mate retention behaviors across domains in a different cultural context. Tehran may be considered the social, political, and cultural capital of Iran and is considered the largest city of Iran and the most populous city in Western Asia. The majority of the citizens are Muslim, followed by Christian, Jewish, and Zoroastrian minorities, and the official language of Iran is Persian (aka Farsi). Tehran therefore presents an interesting cultural contrast to traditional U.S. samples (which are primarily Christian and considered “Western”), while still being a large, industrialized city.

We hypothesize that (1) attachment anxiety will be positively associated with performance frequency of Benefit-Provisioning and Cost-Inflicting mate retention (Hypothesis 1), and (2) attachment avoidance will be negatively associated with performance frequency of Benefit-Provisioning and Cost-Inflicting mate retention (Hypothesis 2). The current research also investigates the mediating role of perceived risk of partner infidelity—a primary predictor of mate retention behavior, more generally (Buss, 1988; Buss & Shackelford, 1997)—on the associations between attachment dimensions and performance frequency of mate retention behavior across domains (U.S., Study 2). Specifically, we predict that perceived risk of partner infidelity will mediate the associations between attachment anxiety and attachment avoidance with Benefit-

Provisioning and Cost-Inflicting mate retention (Hypothesis 3). Because previous research indicates sex differences in romantic attachment dimensions (see Del Giudice, 2011), we will conduct *exploratory* moderation analyses<sup>1</sup> for Studies 1 and 2 to examine whether the associations between attachment dimensions and performance frequencies of mate retention behavior across domains differ for men and women.

## Study 1

Hypotheses 1 and 2 are tested in Study 1 using cross-sectional data obtained from a sample of individuals residing in Tehran, Iran.

## Method

### Participants

We recruited 306 participants (53.6% female) from university settings and publicly accessible places in Tehran, Iran. All participants were currently in a heterosexual, committed relationship, and identified themselves as Iranian with their native language being Persian. Participants were aged 18 to 57 years ( $M = 29.5$ ,  $SD = 6.8$ ), and their mean relationship length was 5.3 years ( $SD = 6.2$ ). Data collected in this study were part of a larger research project (see Procedure) that aimed to secure data from approximately 300 participants to afford adequate statistical power to conduct correlational and regression analyses to test hypotheses unrelated to the current study. Data collection closed for this study upon reaching the target sample size.

### Procedure

Potential participants were approached by a researcher and asked whether they would like to participate in a study about romantic relationships. To be eligible, participants must have been (1) currently in a heterosexual, committed romantic relationship and (2) at least 18 years of age. Eligible participants who agreed to participate completed a survey, which included demographic information (e.g., age, relationship length) and measures of mate retention behavior and romantic attachment. Participants also completed measures of personality and mate value to test hypotheses unrelated to the current study. Participation was voluntary and participants were not compensated.

### Materials

Participants completed the Persian translation of the Mate Retention Inventory-Short Form (MRI-SF; Atari, Barbaro, Shackelford, & Chegeni, 2017), which is a 38-item measure assessing performance frequencies of mate retention behaviors. The Persian version of the MRI-SF is comprised of a two-factor structure, largely consistent with previous reports<sup>2</sup> (Lopes, Shackelford, Santos, Farias, & Segundo, 2016; Miner, Starratt, & Shackelford, 2009) and demonstrates adequate internal consistency of mate retention tactics (Atari et al., 2017). Participants were instructed to report how often they performed each mate retention behavior using a 4-point scale (0 = *never*, 1 = *rarely*,

**Table 1.** Bivariate correlations and descriptive statistics for target variables (Study 1).

	1	2	3	4	5
1. Relationship length	—				
2. Anxious attachment	-.02	—			
3. Avoidant attachment	.14*	.11	—		
4. Benefit-Provisioning	-.24***	.29***	-.34***	—	
5. Cost-Inflicting	-.13*	.45***	.23***	.32***	—
Mean	63.69	3.61	2.27	1.72	0.59
SD	74.05	1.00	0.88	0.55	0.45

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

2 = *sometimes*, 3 = *often*). Following Atari et al., we constructed composite scores for the higher order domains of Benefit-Provisioning ( $\alpha = .89$ ) and Cost-Inflicting ( $\alpha = .84$ ) mate retention behaviors.

Participants then completed the Persian translation of the Experiences in Close Relationships (ECR) Scale (Panaghi, Maleki, Zabihzadeh, Poshtmashhadi, & Soltani-nezhad, 2014), which demonstrates adequate psychometric properties for use in Iran. The ECR Scale consists of 36 items assessing romantic attachment along the dimensions of anxiety and avoidance. Participants were instructed to respond to statements as they relate to their current romantic partner on a Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Statements included in the Persian translation of the ECR Scale were modified to be partner specific, rather than partner general (Panaghi et al., 2014). For example, the statement, “When *adult partners* disapprove of me, I feel really bad about myself” was modified to, “When *my romantic partner* disapproves of me, I feel really bad about myself” (emphasis added). Composite scores were calculated for each participant by reverse scoring the appropriate items and then averaging their responses to the 18 anxiety items ( $\alpha = .83$ ) and the 18 avoidance items ( $\alpha = .82$ ).

## Results

Bivariate correlations and descriptive statistics for study variables are displayed in Table 1. We conducted a hierarchical moderated regression analysis to examine the associations between attachment dimensions and performance frequency of Benefit-Provisioning mate retention. In Step 1, we entered the demographic variables of sex (0 = *female*, 1 = *male*) and relationship length and attachment dimensions of anxiety and avoidance. In Step 2, we entered two-way interaction terms between anxious attachment and sex, and avoidant attachment and sex, with Benefit-Provisioning as the dependent variable. Results indicated a significant positive main effect of anxious attachment on Benefit-Provisioning mate retention and a significant negative main effect of avoidant attachment on Benefit-Provisioning mate retention. A two-way interaction also emerged between anxious attachment and sex (see Table 2).

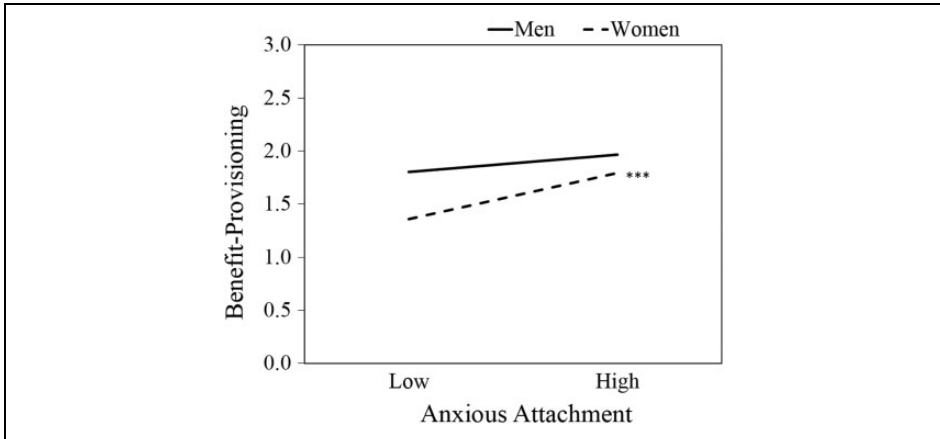
We conducted simple slopes analyses, recommended by Aiken and West (1991), to deconstruct the two-way interaction. The simple slopes tests were conducted using values one standard deviation above the mean to represent individuals who are

**Table 2.** Regression analyses predicting mate retention domains (Study 1).

	Benefit-Provisioning mate retention				Cost-Inflicting mate retention			
	<i>b</i>	$\beta$	<i>t</i>	Model statistics	<i>b</i>	$\beta$	<i>t</i>	Model statistics
Step 1				$R^2 = .30$ $F = 25.78$ $p < .001$				$R^2 = .24$ $F = 19.54$ $p < .001$
Relationship length	-.001	-.18	-3.34**		-.001	-.16	-2.76**	
Sex	.31	.28	5.14***		.14	.16	2.77**	
Anxious attachment	.16	.28	5.19***		.16	.35	6.28***	
Avoidant attachment	-.23	-.37	-6.77***		.11	.22	3.86***	
Step 2				$R^2 = .32$ $F = 18.86$ $p < .001$ $\Delta R^2 = .02$ $\Delta F = 3.83$ $p < .02$				$R^2 = .25$ $F = 13.33$ $p < .001$ $\Delta R^2 = .01$ $\Delta F = .92$ $p = .40$
Relationship length	-.001	-.17	-3.15**		-.001	-.16	-2.75**	
Sex	.31	.28	5.32***		.14	.16	2.81**	
Anxious attachment	.22	.39	5.17***		.16	.35	4.34***	
Avoidant attachment	-.20	-.32	-4.09***		.15	.30	3.62***	
Anxious $\times$ Sex	-.14	-.17	-2.28*		-.004	-.01	-.07	
Avoidant $\times$ Sex	-.08	-.10	-1.26		-.08	-.11	-1.34	

Note: Predictor variables mean centered prior to analyses.

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



**Figure 1.** Simple slopes plot for the two-way interaction between anxious attachment and sex on Benefit-Provisioning mate retention (Study 1). Anxious attachment variable mean centered prior to analyses. \*\*\* $p < .001$ .

relatively more anxiously attached and one standard deviation below the mean to represent individuals who are relatively less anxiously attached. The slope of the line representing the association between anxious attachment and Benefit-Provisioning mate retention was significant and positive for women ( $\beta = .38$ ,  $t = 4.97$ ,  $p < .001$ ), but not significant for men ( $\beta = .15$ ,  $t = 1.90$ ,  $p = .06$ ). The predicted values for this interaction are displayed in Figure 1. Moreover, relatively less anxiously attached men (vs. women) performed more frequent Benefit-Provisioning mate retention ( $\beta = .41$ ,  $t = 5.24$ ,  $p < .001$ ), and relatively more anxiously attached men (vs. women) performed more frequent Benefit-Provisioning mate retention ( $\beta = .16$ ,  $t = 2.07$ ,  $p < .05$ ).

We conducted a second hierarchical moderated regression analysis to examine the associations between attachment dimensions and performance frequency of Cost-Inflicting mate retention. In Step 1, we entered the demographic variables of sex and relationship length and attachment dimensions of anxiety and avoidance. In Step 2, we entered two-way interaction terms between anxious attachment and sex, and avoidant attachment and sex, with Cost-Inflicting mate retention as the dependent variable. Results indicated a significant positive main effect of anxious attachment on Cost-Inflicting mate retention and a significant positive main effect of avoidant attachment on Cost-Inflicting mate retention. No significant interactions emerged to predict Cost-Inflicting mate retention, and thus, sex did not moderate these associations (see Table 2).

## Study 2

Hypotheses 1–3 are tested in Study 2 using cross-sectional data obtained from a sample of individuals residing in the U.S.

## Method

### Participants

We recruited 899 participants (50.9% male) via Amazon's Mechanical Turk (MTurk). All participants were currently in a heterosexual, committed relationship. Participants were aged 18 to 75 years ( $M = 33.6$ ,  $SD = 10.0$ ). The racial composition of the sample was 78.0% White, 9.9% Asian, 8.9% Black, 1.9% American Indian or Alaska Native, 0.8% Native Hawaiian or Other Pacific Islander, and 0.6% did not report. The mean relationship length of the participants was 5.7 years ( $SD = 7.3$ ). Data collected in this study were part of a larger research project (see Procedure); a sample size of approximately 900 participants afforded adequate statistical power to conduct three-way interaction analyses separately by sex for hypotheses unrelated to the current study. Data collection closed for this study upon reaching the target sample size.

### Procedure

Prospective participants viewed an advertisement for the study on MTurk's job listings. To be eligible, participants must have been (1) currently in a heterosexual, committed romantic relationship of at least one full month and (2) at least 18 years of age. Individuals who were interested in participating—and eligible to do so—were provided with a link to an information page about the study. Those who agreed to participate could access and complete the survey, whereas those who did not agree to participate were exited from the study. We implemented recommended MTurk filters (Peer, Vosgerau, & Acquisti, 2013), such that individuals could only participate if they had successfully completed 95% of at least 500 previously accessed MTurk jobs. Participants reported demographic information (i.e., age, relationship length) and completed measures of romantic attachment and mate retention behaviors. The data reported in this study were obtained as part of a larger research study (see Sela, Mogilski, Shackelford, Zeigler-Hill, & Fink, 2016)—participants also completed several measures unrelated to the current research, including measures of personality, sexual behaviors, and mate value (full list of measures included in this study are available upon request). Participants were compensated \$5.00 for completing the study.

### Materials

Participants completed the MRI-SF (Buss et al., 2008), a 38-item measure assessing performance frequencies of mate retention behaviors. Participants were instructed to report how often during the past 1 month they performed each mate retention behavior using a 4-point scale (0 = *never*, 1 = *rarely*, 2 = *sometimes*, 3 = *often*). Following Buss, Shackelford, and McKibbin (2008) and Miner, Starratt, and Shackelford (2009), we constructed composite scores for the domains of Benefit-Provisioning ( $\alpha = .87$ ) and Cost-Inflicting ( $\alpha = .94$ ) mate retention.

Participants completed the ECR-Revised (ECR-R; Fraley et al., 2000), a 36-item measure assessing attachment bonds along the dimensions of anxiety and avoidance. Participants were instructed to respond to statements as they relate to their current



**Table 3.** Bivariate correlations and descriptive statistics for target variables (Study 2).

	1	2	3	4	5	6
1. Relationship length	—					
2. Anxious attachment	-.21***	—				
3. Avoidant attachment	-.17***	.66***	—			
4. Perceived risk of infidelity	-.15***	.59***	.44***	—		
5. Benefit-Provisioning	-.16***	.14***	-.12***	.13***	—	
6. Cost-Inflicting	-.20***	.56***	.34***	.54***	.51***	—
Mean	68.22	2.79	2.62	1.46	1.39	0.52
SD	87.46	1.35	1.14	2.19	0.55	0.58

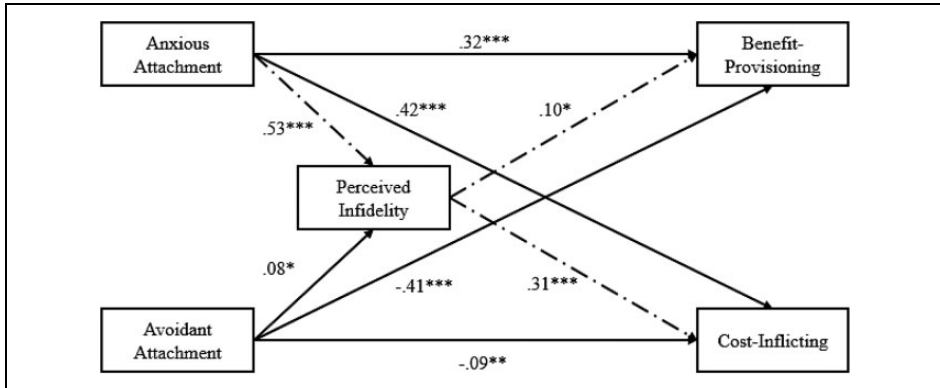
\*\*\* $p < .001$ .

romantic partner on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Statements included in the ECR-R were modified to be partner specific, rather than partner general. For example, the statement, “When I show my feelings for *romantic partners*, I’m afraid they will not feel the same about me” was modified to, “When I show my feelings for *my romantic partner*, I’m afraid my partner will not feel the same about me” (emphasis added). Composite scores were calculated for each participant by averaging their responses to the 18 anxiety items ( $\alpha = .96$ ) and the 18 avoidance items ( $\alpha = .93$ ).

Participants responded to four items adapted from previous research (e.g., Goetz & Shackelford, 2006) that assess their perceived likelihood of their romantic partner’s infidelity. Specifically, participants responded on a 10-point scale ranging from 0 (*not at all likely*) to 9 (*extremely likely*) to the following items: (1) “In the future, how likely do you think it is that your partner will fall in love with someone other than you, while in a relationship with you, for a short period of time? For example, a brief emotional affair,” (2) “In the future, how likely do you think it is that your partner will fall in love with someone other than you, while in a relationship with you, for a long period of time? For example, an ongoing emotional affair,” (3) “In the future, how likely do you think it is that your partner will have sexual intercourse with someone other than you, while in a relationship with you, for a short period of time? For example, a brief sexual affair,” and (4) “In the future, how likely do you think it is that your partner will have sexual intercourse with someone other than you, while in a relationship with you, for a long period of time? For example, an ongoing sexual affair.” Composite scores were constructed by averaging participant’s responses to the four items ( $\alpha = .95$ ) to create the variable, *Perceived risk of partner infidelity*.

## Results

Bivariate correlations and descriptive statistics for study variables are displayed in Table 3. We first conducted a moderated mediation analysis using a bootstrapping method via PROCESS for SPSS (Model 8; Hayes, 2013) to examine whether the associations between attachment dimensions and mate retention domains via perceived risk of infidelity were moderated by sex. No significant interactions emerged and,



**Figure 2.** Mediation model for Study 2. All variables were standardized prior to analyses (standardized coefficients shown). Dashed lines indicate significant indirect effects of anxious attachment on Benefit-Provisioning ( $M_{ab} = .05^{**}$ ) and Cost-Inflicting ( $M_{ab} = .17^{***}$ ) mate retention via perceived risk of infidelity. Model statistically controls for relationship length.  $*p < .05$ ;  $**p < .01$ ;  $***p < .001$ .

therefore, the interaction terms were removed from the analysis and are not subsequently considered (full analyses available upon request).

We next conducted a simple mediation analysis using a bootstrapping method via PROCESS for SPSS (Model 4;<sup>3</sup> Hayes, 2013). Anxious attachment and avoidant attachment were entered as predictor variables, with perceived risk of infidelity as the mediator, and Benefit-Provisioning and Cost-Inflicting mate retention as the outcome variables (see Figure 2). The model explained approximately 13% of the variance in Benefit-Provisioning mate retention ( $R^2 = .13$ ,  $F[4, 840] = 32.00$ ,  $p < .001$ ) and approximately 39% of the variance in Cost-Inflicting mate retention ( $R^2 = .39$ ,  $F[4, 841] = 132.52$ ,  $p < .001$ ). Results showed significant positive direct effects of anxious attachment on both Benefit-Provisioning and Cost-Inflicting mate retention and significant negative direct effects of avoidant attachment on both Benefit-Provisioning and Cost-Inflicting mate retention (see Table 4). Results also revealed two significant mediation effects, such that perceived risk of infidelity mediates the association between anxious attachment and Benefit-Provisioning mate retention ( $M_{ab} = .05$ ,  $SE_{ab} = .02$ ; 95% confidence interval (CI) [.01, .10]) and between anxious attachment and Cost-Inflicting mate retention ( $M_{ab} = .17$ ,  $SE_{ab} = .03$ ; 95% CI [.11, .23]). Perceived risk of infidelity did not mediate the association between avoidant attachment and either mate retention domain.

## General discussion

The current research examined the unique associations between romantic attachment dimensions and performance frequency of mate retention behaviors in Iran (Study 1) and the mediating role of perceived risk of partner infidelity on these associations (Study 2). In the Iran and U.S. samples, attachment anxiety was positively associated with

**Table 4.** Decomposition of standardized effects for a model of mate retention (Study 2).

Predictor variable	Outcome variable		
	Perceived risk of infidelity	Benefit-Provisioning	Cost-Inflicting
Anxious attachment			
Direct effect	$\beta = .53,$ $t = 14.08^{***}$	$\beta = .32,$ $t = 6.59^{***}$	$\beta = .42,$ $t = 10.34^{***}$
Indirect effect via PI		$M_{ab} = .05^{**}$	$M_{ab} = .17^{***}$
Avoidant attachment			
Direct effect	$\beta = .08,$ $t = 2.28^*$	$\beta = -.41,$ $t = -9.56^{***}$	$\beta = -.09,$ $t = -2.61^{**}$
Indirect effect via PI		$M_{ab} = .01$	$M_{ab} = .03$
Perceived risk of infidelity			
Direct effect		$\beta = .10,$ $t = 2.52^*$	$\beta = .31,$ $t = 9.32^{***}$

Note. All variables were standardized prior to analyses. Standardized coefficients ( $\beta$ ) and associated  $t$  statistics shown. PI = perceived risk of infidelity. Significance values for indirect effects ( $M_{ab}$ ) were calculated as the ratio of the standardized indirect effect estimate to the standard error of the indirect effect estimate (Kline, 1998). \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

performance frequency of Benefit-Provisioning and Cost-Inflicting mate retention, supporting Hypothesis 1. In Iran, however, the association between attachment anxiety and Benefit-Provisioning mate retention was stronger for women, than for men. Supporting Hypothesis 2 in Iranian and U.S. samples, attachment avoidance was negatively associated with performance frequency of Benefit-Provisioning mate retention. In the U.S. sample, attachment avoidance was negatively associated with Cost-Inflicting mate retention, but positively associated with Cost-Inflicting mate retention in the Iranian sample. Results provide partial support for Hypothesis 3, in that perceived risk of partner infidelity mediated the association between attachment anxiety and both Benefit-Provisioning and Cost-Inflicting mate retention. Perceived risk of infidelity, however, did not mediate the association between attachment avoidance and either mate retention domain.

Results of the current research provide support for Hypothesis 1 in Western (U.S.) and non-Western (Iran) samples. We found positive associations between attachment anxiety and Benefit-Provisioning and Cost-Inflicting mate retention—although the association between attachment anxiety and Benefit-Provisioning mate retention was only marginally significant for Iranian men. These results largely accord with previous research (Barbaro, Pham, Shackelford, & Zeigler-Hill, 2016), suggesting that the association between attachment anxiety and hypervigilance to cues of partner rejection and infidelity (Mikulincer & Shaver, 2007) might lead more anxiously attached individuals to over-perceive a partner's behaviors as cuing infidelity (Kruger et al., 2013) and, therefore, engage in greater mate retention effort. The results of Study 2—demonstrating that more anxiously attached partners also report greater concern regarding their romantic partner's potential infidelity—provide further support for this notion (see also, Kim et al., 2017).

Study 1 shows some evidence for sex differences with regard to performance frequencies of mate retention behaviors, such that Iranian men perform more Benefit-Provisioning mate retention than do Iranian women. This sex difference may be attributable to particular religious influences on romantic relationship behavior, more generally (see Sela & Barbaro, 2017); however, sex differences for Cost-Inflicting mate retention, but not Benefit-Provisioning mate retention, were reported in the study of Barbaro et al. (2016) in a U.S. sample. Moreover, the stronger association between anxious attachment and Benefit-Provisioning mate retention for Iranian women was not replicated in Study 2, which had a larger sample size and greater statistical power to detect such sex differences. Although cultural differences may indeed be responsible, in part, for the differences across studies, the current study cannot rule out the simpler explanation of measurement differences between samples, nor would a cultural explanation directly address differences within U.S. samples reported here and in the study of Barbaro et al. (2016). Our claims of sex differences are therefore tentative and cautious, and future research is needed to draw firm conclusions.

Tests of Hypothesis 3 extend previous research examining the relationships between attachment anxiety and negative partner-directed behaviors. Results indicate that perceived risk of partner infidelity partially mediates the association between attachment anxiety and performance of Cost-Inflicting mate retention for men and women. Because more anxiously attached individuals report persistent fears of partner rejection, these individuals are more likely to engage in controlling or coercive behaviors (Mikulincer & Shaver, 2007). Research suggests that more anxiously attached individuals engage in negative partner-directed behaviors in an attempt to reduce their anxiety about a partner's potential abandonment (Reed, Tolman, & Safyer, 2015), elicit support and investment from their romantic partner (Shaver & Mikulincer, 2008), or as a tactic of guilt-inducement to obtain emotional intimacy and physical proximity to their partner (Overall, Girme, Lemay, & Hammond, 2014). Many of these behaviors are captured by the Cost-Inflicting domain of mate retention, which include tactics of Emotional Manipulation, Direct Guarding (proximity maintenance behaviors), and Violence (Miner et al., 2009).

The direct effect of attachment anxiety on mate retention domains, however, remains significant after including perceived risk of infidelity as a mediator. Hypervigilance to cues of partner rejection and abandonment is just one characteristic of attachment anxiety, which is likely captured by the perceived risk of infidelity variable in the current research. Other characteristics of attachment anxiety (e.g., desire to "psychologically merge" with one's partner) may not be captured by perceived risk of partner infidelity and, therefore, may be responsible for the remaining positive direct effect of attachment anxiety on mate retention behaviors. Relatively more anxious individuals' desire to "psychologically merge" (Simpson, Griskevicius, & Kim, 2011) may account (in part) for the direct effect of attachment anxiety on Benefit-Provisioning mate retention behavior, in particular. Anxiously attached individuals may use Benefit-Provisioning mate retention behaviors (e.g., demonstrating love and affection) as a means to strengthen their emotional and psychological connection. Alternatively, Benefit-Provisioning behaviors performed by anxiously attached individuals may be a means to compensate for their use of Cost-Inflicting mate retention behaviors (e.g.,

manipulation tactics). Future research using daily diary methodology may be particularly useful for exploring these possibilities.

Associations between attachment anxiety and Cost-Inflicting mate retention suggest that hyperactivation of the romantic attachment system may be important for understanding aggressive behavior in romantic relationships. Research has documented associations between Cost-Inflicting mate retention and perpetration of intimate partner violence (e.g., Shackelford, Goetz, Buss, Euler, & Hoier, 2005) and associations between attachment anxiety and intimate partner violence perpetration in both men and women (e.g., Barbaro & Shackelford, 2019; Orcutt, Garcia, & Pickett, 2005). Future research could extend the model reported here to include measures of intimate partner violence.

The association between attachment anxiety and Cost-Inflicting mate retention behaviors has now been shown in three independent samples. Results of Study 2 support one potential proximal mechanism underlying this association—perceived risk of partner infidelity. Because the current research secured cross-sectional data and employed a correlational research design, strong causal statements of directionality and formal mediating effects are not defensible. Future research could employ longitudinal research designs to investigate how attachment anxiety manifests in romantic relationships, given that harmful partner-directed behaviors, such as manipulation tactics and physical violence, are associated with attachment anxiety (e.g., Barbaro & Shackelford, 2019; Orcutt et al., 2005).

Attachment avoidance is consistently negatively associated with performance of Benefit-Provisioning mate retention (see also Barbaro et al., 2016). Many behaviors captured by the Benefit-Provisioning domain of mate retention, such as the tactics of love and care, and sexual inducements (Buss et al., 2008), have the effect of increasing emotional and physical closeness with one's partner (Miner et al., 2009). The finding that more avoidantly attached individuals are less likely to perform Benefit-Provisioning mate retention in Western and non-Western samples is consistent with general avoidance strategies of evading emotional intimacy and physical proximity with one's romantic partner (Besharat, Naghshineh, Ganji, & Tavalaeayan, 2014; Edelstein & Shaver, 2004). Results of Study 2 do show, however, that avoidant attachment is weakly associated with perceived risk of partner infidelity. This (weak) positive association is consistent with research suggesting that avoidant individuals are simply *less* concerned and attentive about partner infidelity, but may not be wholly unconcerned about partner infidelity given that avoidant individuals are in a presumably monogamous relationship (e.g., DeWall et al., 2011; Kruger et al., 2013). The significance of the association may alternatively be a result of the large sample size producing a significant, but weak, association.

The results of the current research regarding the association between attachment avoidance and Cost-Inflicting mate retention are inconsistent across samples and, therefore, further research is needed to understand manifestation of attachment avoidance within these behavioral domains. Barbaro et al. documented that attachment avoidance was negatively associated with Cost-Inflicting mate retention for men but was not associated with Cost-Inflicting mate retention for women. In the current research, results from the Iranian sample show a positive association between attachment avoidance and Cost-Inflicting mate retention. In the U.S. sample, however, results show

a (weak) positive association between attachment avoidance and Cost-Inflicting mate retention (when accounting for attachment anxiety).

The discrepant associations between attachment avoidance and Cost-Inflicting mate retention in Iranian individuals may be attributable to differences in measurement of romantic attachment and mate retention. Romantic attachment in Iran was assessed with an older version of the ECR questionnaire (Panaghi et al., 2014) than that used in U.S. samples (Fraley et al., 2000). The two versions of the attachment measures may therefore function differently across cultures. Moreover, the mate retention tactics that comprise Cost-Inflicting mate retention in Iran and the U.S. samples slightly differ, such that tactics of Emotional Manipulation and Commitment Manipulation (4 items) load on the Benefit-Provisioning domain in Iran (Atari et al., 2017), rather than the Cost-Inflicting domain as in U.S. samples (Miner et al., 2009). Further research is warranted to understand how attachment avoidance manifests in romantic relationships in other cross-cultural, non-Western samples.

## Conclusions


The current research investigated the associations between romantic attachment dimensions and performance frequencies of Benefit-Provisioning and Cost-Inflicting mate retention (Study 1) and the mediating role of perceived risk of partner infidelity on these associations (Study 2). Attachment avoidance was associated with less frequent performance of mate retention across domains, but these associations were inconsistent in the Iran, relative to the U.S., samples. Attachment anxiety was associated with more frequent performance of mate retention across domains in Iran and the U.S., although this association was weaker for Iranian men, specifically. For men and women, perceived risk of partner infidelity partially mediated the association between attachment anxiety and performance of Benefit-Provisioning and Cost-Inflicting mate retention.

Results of the current research advance understanding of the romantic attachment system from an evolutionary psychological perspective. The current research assessed the ways in which romantic attachment bonds directly influence performance of attachment behaviors. The primary findings of the current research demonstrate that attachment anxiety has a robust and consistent association with more frequent performance of mate retention behaviors designed to reduce the risks of infidelity and dissolution (Buss, 1988). The replication of the association between attachment anxiety and mate retention behaviors (Barbaro et al., 2016) across cultures demonstrates (to some extent) the universality of the association between attachment bonds and behaviors that are directly linked to the proposed evolutionary function of romantic attachment—to regulate responses to pair-bond threats (Hazan & Diamond, 2000). These findings suggest important and interesting directions for future research to investigate the effect of attachment anxiety on harmful partner-directed behaviors, in particular.

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## Notes

1. Moderation by participant sex of the hypothesized associations is exploratory, rather than a priori, because formal moderation analyses were not conducted by Barbaro et al. (2016).
2. The mate retention tactics that comprise superordinate mate retention domains differ slightly in Brazil (Lopes et al., 2016) and Iran (Atari et al., 2017), as compared to the U.S. (Miner et al., 2009). The tactics of Emotional Manipulation and Commitment Manipulation (4 items) load highest on the Benefit-Provisioning domain in Iran and Brazil, rather than on the Cost-Inflicting domain as in U.S. samples. The tactic of Derogation of Competitors (2 items) loads highest on the Benefit-Provisioning domain in Brazil, rather than on the Cost-Inflicting domain as in the U.S. and Iran.
3. The PROCESS macro is limited to analysis of models with a single outcome variable. Because the mediation model tested in Study 2 contains two outcome variables, a seed command was used. Four independent mediation models (Model 4; Hayes, 2013) were linked using the seed command which ensures that each bootstrapping process begins with the same number, and thus, the confidence intervals for each model adhere to the same bounds (see Hayes, 2013 for detailed discussion).

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