

# Relationship Duration Moderates Associations Between Attachment and Relationship Quality: Meta-Analytic Support for the Temporal Adult Romantic Attachment Model

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## Abstract

Although research has examined associations between attachment dimensions and relationship outcomes, theory has ignored how these associations change over time in adult romantic relationships. We proposed the Temporal Adult Romantic Attachment (TARA) model, which predicts that the negative associations between anxious and avoidant attachment on one hand and relationship satisfaction and commitment on the other will be more negative as relationship durations increase. Meta-analyses largely confirmed that negative associations between both insecure attachment dimensions and both relationship outcomes were more negative among longer relationship durations in cross-sectional samples. We also explored gender differences in these associations. The present review not only integrates the literature on adult attachment and romantic relationship satisfaction/commitment but also highlights the importance of relationship duration as a key moderator of the associations among these variables. We discuss the broad implications of these effects and our meta-analytic findings for the TARA model, attachment theory, and romantic relationships.

## Keywords

close relationships, gender, individual differences

Based on attachment theory and research, relationship satisfaction and commitment should be fairly high and stable over time for most securely attached romantic couples. But what can we expect when one or both partners are anxiously or avoidantly attached? Should relationship satisfaction and commitment decrease or remain stable over time? Research on the associations among the attachment dimensions and measures of relationship satisfaction and commitment has not addressed how these associations change over the course of adult romantic relationships. Moreover, do gender differences moderate these associations? The purpose of the present research is threefold. First, we develop the Temporal Adult Romantic Attachment (TARA) model that describes how the links between insecure attachment dimensions and relationship quality might change over time. Second, using meta-analysis, we describe the simple associations between attachment dimensions and relationship quality. Third, we use meta-analysis to test the TARA model by assessing the extent to which the associations between insecure attachment dimensions and relationship satisfaction are moderated by relationship duration.

## Attachment

Adult attachment theory specifies three attachment dimensions: anxious, avoidant, and secure (Hazan & Shaver, 1987). Although attachment dimensions are sometimes described and analyzed categorically (i.e., a person may be anxiously, avoidantly, or securely attached to a partner; see Kirkpatrick & Davis, 1994), most research has examined two attachment styles—anxious and avoidant—as continuous dimensions, and has operationalized secure attachment as low scores on both dimensions (e.g., Fraley & Waller, 1998). Anxious attachment develops from *inconsistent* responsiveness, and thus an uncertainty that others can be trusted or relied on.

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People who score high on the anxious dimension tend to be hyper-vigilant to signs of distress or separation from partners. Avoidant attachment develops from neglect or *consistently unresponsive* attachment figures. People who score high on the avoidant dimension believe that their partners cannot be relied on, and show a disinterest in relationships, along with a heightened desire for self-reliance (Shaver & Mikulincer, 2005). People who are securely attached to their romantic partner feel emotionally close and intimate with their partner, and believe that their closeness and intimacy is adequately reciprocated by their partner. Although most studies define secure attachment as low scores on the anxious and avoidant attachment dimensions, a few studies have defined it using specific secure attachment measures independent of the traditional two dimensions (e.g., Brennan & Shaver, 1995).

## Relationship Quality and Stability

Relationship satisfaction is a key measure of romantic relationship quality. It is among the most frequently studied relationship quality variables and is also a key correlate of relationship stability over time (Berscheid & Reis, 1998). Relationship commitment is a key gauge of romantic strength and stability and correlated with relationship dissolution (Kelley, 1983). Although relationship satisfaction (quality) and commitment (strength or stability) are different constructs, they are typically positively correlated within persons and between couples (see Le & Agnew, 2003, for a review). Although studies have explored the associations between (a) the anxious and avoidant attachment dimensions, and (b) relationship satisfaction and commitment, no study has assessed the strength of these associations meta-analytically while examining relationship duration as a key moderator.

## Associations Among Attachment Dimensions and Relationship Quality and Stability

### Relationship Satisfaction

Most research on adult attachment and relationship quality has focused on romantic relationship satisfaction. Specifically, research (e.g., Hazan & Shaver, 1987) has found that people who are more insecurely attached to their partners fail to foster positive relationships because they are either too anxious (e.g., clingy, hyper-vigilant) or avoidant (e.g., emotionally detached). People high in anxious attachment tend to overinvest in the relationship and are highly sensitive to indications that their partner might not be available in times of need (Mikulincer & Shaver, 2003; Shaver & Mikulincer, 2005). People high in avoidant attachment, however, tend to experience lower relationship satisfaction because they are disengaged in their relationship and reject

intimacy and closeness (Shaver & Mikulincer, 2005). In line with prior research, we expected that anxious and avoidant attachment will be associated with lower relationship satisfaction, whereas secure attachment will be associated with higher relationship satisfaction.

### Relationship Commitment

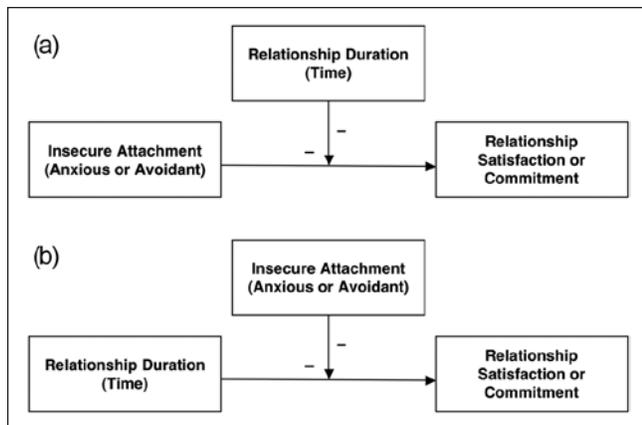
Research on attachment and relationship commitment is less extensive than that on relationship satisfaction. Nevertheless, because both insecure attachment dimensions reflect a heightened perceived risk associated with relying on others, both may play a role in the strength or stability of romantic relationships. Specifically, people who view their romantic partners as risky investments are less likely to be committed to their relationships.

Adults high in avoidant attachment are reluctant to commit to romantic relationships because they perceive risk in intimacy (Brunell, Pilkington, & Webster, 2007; Pilkington & Richardson, 1988) and expect their relationships to fail (Hazan & Shaver, 1994). For example, people who scored high on avoidant attachment had higher levels of commitment aversion, which mediated the relationship between avoidant attachment and expected relationship outcomes (Birmie, McClure, Lydon, & Holmberg, 2009). In addition, higher avoidance was associated with less trust (Vicary & Fraley, 2007) and feeling less invested in one's partner (Pistole, Clark, & Tubbs, 1995).

The relationship between anxious attachment and relationship commitment is less clear, producing some indirect and inconsistent findings. Anxiously attached people often enter relationships too quickly, over-self-disclose to maintain relationships (Mikulincer & Nachshon, 1991), and sometimes show a preoccupation with commitment (Feeney & Noller, 1990). Nevertheless, anxious attachment is generally related to lower commitment. For example, although anxiously attached people emphasized finding love, they also believed that "true love" was hard to find (Hazan & Shaver, 1987). People who were more anxious (vs. secure) also tended to perceive innocuous relationship events as negative, and actual negative events as downright disastrous. From a risk-regulation perspective, this should make committing to one's romantic relationship difficult, despite a desire for such commitment.

## The TARA Model

Although the associations among the attachment dimensions and relationship satisfaction/commitment have been examined previously, research has largely ignored how these associations may change over the course of romantic relationships. Moreover, no theoretical model has attempted to integrate how adult attachment and relationship satisfaction/commitment unfold over time. To this end, we developed the TARA model to describe and make predictions



**Figure 1.** The TARA model expressed as (a) relationship duration negatively moderating the simple negative association between insecure attachment and relationship satisfaction/commitment or, equivalently, (b) insecure attachment negatively moderating the simple negative association between relationship duration and relationship satisfaction/commitment. Note. TARA = Temporal Adult Romantic Attachment.

about the dynamic interplay between adult attachment and relationship quality over time (Figure 1). Specifically, the TARA model makes two key predictions. First, the relationships among insecure (anxious and avoidant) attachment and relationship satisfaction/commitment should be negative, becoming more negative for romantic relationships of longer durations (Figure 1a). Or, equivalently, the relationships among relationship duration and relationship satisfaction/commitment should become more negative over time, but especially for people who are more insecurely attached (either anxiously or avoidantly; Figure 1b). We expect this to occur primarily because of the lack of trust and intimacy that are characteristic of these attachment styles. Second, the associations between secure attachment and relationship satisfaction/commitment should be positive and fairly stable throughout the duration of the romantic relationships. Of note, the TARA model makes no specific predictions about how these processes may differ between the two insecure attachment dimensions or between men and women. Below we summarize empirical support for the TARA model.

### Stability and Change in Attachment Over Time

Because time is a key element of the TARA model, it is important to address questions of stability and change in attachment dimensions. Although some studies have examined genetic and heritability models of attachment (e.g., Donnellan, Burt, Levendosky, & Klump, 2008; Fraley, Roisman, Booth-LaForce, Owen, & Holland, 2013; Gillath, Shaver, Baek, & Chun, 2008), a recent longitudinal study (Fraley et al., 2013) concluded that little consistent evidence exists for genetic correlates of adult attachment aside from some modest support for a gene (HTR2A rs6313) ×

environment (maternal sensitivity over time) interaction for avoidant attachment. In their review of prior studies, the authors also found generally small associations between parent-child attachment security and later adult attachment ( $r_s \approx .10$ ) and concluded that the link between childhood and adult attachment is modest at best, and thus fairly mutable over time. Furthermore, they argue that when changes do occur in adult attachment, they are likely the result of learning or updating from prior adult relationships, such as a person's previous romantic relationship (see also Holmes & Johnson, 2009, for a review) or changes in relationship conditions, such as the transition to parenthood (Simpson, Rholes, Campbell, & Wilson, 2003). Nevertheless, the authors also caution that more studies will be needed to warrant more decisive conclusions regarding the dynamic nature of attachment stability and change over the life span (Fraley et al., 2013).

### Stability and Change in Relationship Satisfaction Over Time

Studies have also examined changes in relationship satisfaction over time, either with daily diary or longitudinal studies. For example, a meta-analysis of 37 studies found small but significant decreases in relationship satisfaction for male and female newlyweds during the first year or two of marriage, and this decrease occurred regardless of changes in parenthood status (Mitnick, Heyman, & Smith Slep, 2009). In another study, relationship satisfaction declined over a 3-year period in over two thirds of married couples, and the effect size of the average decrease was moderate-to-large ( $r = -.40$ ; Levenson & Gottman, 1985). Similarly, in a diverse community sample that included married and dating couples, relationship satisfaction declined or remained unchanged over 18 months in over two thirds of couples (Byers, 2005). Declining relationship satisfaction over time has also been linked to relationship dissolution ( $r = -.36$ ; Arriaga, 2001).

These and other studies have led some authors to propose an Erosion Theory of relationship satisfaction over time (Clements, Cordova, Markman, & Laurenceau, 1997). According to Erosion Theory, many—but not all—romantic couples begin with high positive factors, such as satisfaction, followed by a period of moderate-to-steep decline, which is in turn followed by a long plateau or a period of shallower decline (assuming couples stay together). This trend may be due to couples experiencing (a) extreme initial excitement (a honeymoon period), (b) the extinguishing of the spark that once fueled the initial excitement (a buyer's remorse of sorts; for example, Rosenzweig & Gilovich, 2012), or (c) an erosion over time in the romantic bond that was once forged (Clements et al., 1997). In contrast to relationship satisfaction, little research exists on fluctuations in commitment over time; however, given that satisfaction and commitment are positively correlated, they likely display similar trajectories over time. The TARA model predicts

that adult romantic attachment dimensions moderate the decline in relationship satisfaction or commitment over time; highly securely attached people should exhibit more stable relationships, and thus experience less decline or erosion, whereas people who are highly anxious or avoidant should show steeper declines.

### Summary of Empirical Support for the TARA Model

Although attachment dimensions and relationship outcomes show some evidence of stability and change over time, adult attachment dimensions are comparatively more stable within relationships than are relationships outcomes (satisfaction and commitment). In other words, as a given romantic relationship develops, attachment styles are fairly stable and resistant to change, while relationship outcomes are comparatively labile and may evolve over time. Thus, although we acknowledge that some bi-directional or reciprocal influence is possible, the TARA model proposes that the effect of attachment on satisfaction (or commitment) is more influential than the reverse. We also acknowledge that people's attachment orientations can change in adulthood, but that these changes are more likely to occur between different romantic relationships or partners than within the same relationship or partner. As such, the TARA model may only generalize to ongoing romantic relationships.

### The Present Meta-Analysis

Because research shows that attachment dimensions are associated with relationship quality, we focused our meta-analysis specifically on the associations among continuous measures of the two main attachment dimensions (anxious, avoidant)—as well as studies that examined secure attachment as an independent dimension—and relationship satisfaction/commitment. We chose to examine these two outcomes specifically because they are common to several theories of relationship quality (e.g., Rusbult's [1983] Investment Model). To test the TARA model, we also collected data on average relationship duration for each independent sample. Due to the constraints of meta-analysis, this meant we could only test the TARA model cross-sectionally rather than longitudinally. Nevertheless, meta-analysis afforded us the ability to sample a wide swath of relationship durations including thousands of people—something that would rarely be possible in a single study. We also tested for gender differences in our models because a recent meta-analysis found that men scored higher on avoidant attachment and lower on anxious attachment than women (Del Giudice, 2011). We remained agnostic, however, as to whether gender would moderate the associations among (a) attachment dimensions and relationship outcomes or (b) the extent to which these associations change over time. Thus, we examined gender effects on an exploratory basis. Given the

literature reviewed and based on the proposed TARA model, we made five main meta-analytic predictions:

1. The average associations among attachment insecurity (i.e., anxious and avoidant dimensions) and relationship satisfaction/commitment will be significant and *negative*.
2. The average associations among attachment security (assessed independently) and relationship satisfaction/commitment will be significant and *positive*.
3. Average relationship duration (time) will *negatively* moderate the average negative associations among attachment insecurity and relationship satisfaction/commitment.
4. Average relationship duration (time) *will not* moderate the average positive associations among attachment security and relationship satisfaction/commitment.
5. Predictions 1 to 4 will be similar for men and women.

## Method

### Literature Search

We conducted searches for relevant studies using the PsycINFO database. We sought articles including relationship quality (search terms included *relationship quality*, *relationship satisfaction*, *relationship functioning*, and *relationship commitment*) and attachment (search terms included *attachment* and *attachment style*). On finding relevant articles, we used PsycINFO's "cited references" and "times cited in database" features to examine related articles.

To address possible publication bias (i.e., file drawer effect; Rosenthal, 1979), we sent emails to colleagues of the authors who study romantic relationships requesting unpublished manuscripts and data sets containing measures of attachment and relationship satisfaction, commitment, or both. Finally, we placed a similar call to the Society for Personality and Social Psychology (SPSP) listserv asking for similar unpublished manuscripts/data sets. These methods located five unpublished manuscripts/data sets, including one dissertation.

### Selection Criteria

We selected studies if they included a measure of attachment *and* a measure of relationship satisfaction, relationship commitment, or both. Any measure of attachment was acceptable (e.g., forced choice items, continuous items), as long as it was measured using a continuous scale. We excluded studies that reported and analyzed attachment styles categorically (e.g., Kirkpatrick & Davis, 1994) because we could not derive an effect size (e.g., a correlation between avoidant attachment and relationship satisfaction). We also excluded studies in which attachment was experimentally manipulated. We set no

specific criteria regarding which measures of relationship satisfaction or commitment could be used, so long as it was continuous (vs. categorical) and purported to measure its respective construct (vs. a proxy of relationship commitment, such as contemplation of divorce). Although we included only studies that examined romantic relationships, we had no restrictions on the type of romantic relationship (e.g., heterosexual vs. homosexual, dating vs. married).

Because meta-analysis requires independent effect sizes, and because a few studies in our sample produced two non-independent effect sizes (e.g., two correlations based on two different measures of relationship satisfaction), we randomly selected via coin flip one of the two nonindependent effect sizes to be included for analyses (Table 1; see Lipsey & Wilson, 2001).

The final overall sample consisted of 57 independent effect sizes from a total of 14,340 people, including 5,226 men (36%), 6,859 women (48%), and 2,255 people (16%) from studies in which gender was unreported (Sample sizes: median = 180.0,  $M = 251.6$ ,  $SD = 196.0$ ; Table 1). Of the 57 effect sizes, 27 (47%) included dyadic, couples-based data, and 33 (58%) included a measure of average relationship duration of their respective samples, which ranged from 1.76 to 267 months (median = 22.8,  $M = 53.9$ ,  $SD = 67.4$ ). The number of available effect sizes ( $k$ ) for analysis varied widely by attachment style (secure, anxious, avoidant), relationship measure (satisfaction, commitment), and participant gender (men, women; Table 1). Across the 30 relationship satisfaction effect sizes (correlations) that included anxious and avoidant attachment styles, the unweighted correlation between these two types of ( $z$ -transformed) correlations was .46 ( $p < .01$ ), suggesting substantial overlap between these two attachment dimensions insofar as each relates to relationship satisfaction.

### Moderators

We examined one within-study (or within-effect-size) moderator—participant gender (because it varied within studies)—and one between-study (or between-effect-size) moderator—average relationship duration in months (because it varied between studies). Moreover, we examined between-study moderators only when the number of effect sizes was nine or more ( $k \geq 9$ ). This criterion gave us at least 75% power to detect a very large association ( $r = .70$ )—explaining about half of the variance in effect sizes ( $R^2 \approx .50$ )—at a level of marginal significance ( $p < .10$ ), should such a moderating effect exist (see Cohen, 1988).

Most relationship durations were given in mean months; a few in median months. When not presented in this metric, average relationship durations were converted to months (e.g., years  $\times$  12). Using average relationship duration as a continuous moderator had several advantages over alternative coding schemes such as dividing the sample into dating versus married couples. The latter is problematic because it

is a median split of sorts, which raises a host of issues. Indeed, across samples, some couples were dating longer than other couples had been married, so such a coding scheme would be an imperfect reflection of a more fundamental variable: actual relationship duration. We chose to model log average relationship duration— $\ln(\text{months})$ —for two reasons. First, the average relationship duration in months was positively skewed. Using such a variable could not only violate assumptions of normality and homogeneity of residuals but also result in misleading parameter estimates unduly affected by positive outliers. Second, the way people adjust to romantic relationship partners likely follows a non-linear function. For example, the amount of what couples learn about each other between 1 and 2 months together is greater than the difference between 11 and 12 months, which is in turn greater than the difference between 101 and 102 months, and so on. Thus, each additional unit of time is typically more important or informative to the relationship in terms of dyadic processes the earlier it occurs in the relationship, on average. Thus, for analytic and psychological reasons, we used log average relationship duration in months as a continuous moderator.

### Data Analysis

In our analyses, we present random (vs. fixed) effects meta-analysis. Random effects results are more conservative because, unlike fixed effects, they do not make a strong assumption regarding the homogeneity of effect sizes, and focus on estimating the true population parameter of all studies (or effect sizes), not just those sampled in the meta-analysis. As a result, random effects have wider confidence interval (CI) than fixed effects (Card, 2012; Hunter & Schmidt, 2004; Schmidt, 2010). We performed random- and mixed-effects meta-analyses with a structural equation modeling (SEM) approach using the Mplus 6 statistical package (Muthén & Muthén, 2010). This new SEM procedure takes advantage of maximum likelihood estimation whereas older approaches use weighted ordinary least squares (see Card, 2012, pp. 245-249). Following Card (2012), in all analyses, we treated effect sizes as random effects and moderators as fixed effects; thus, analyses involving moderators represent a mixed-effects meta-analysis. In Tables 2 and 3, we also include variance statistics (i.e.,  $\tau^2$ ). If the variance is significant (via  $z$  test), it suggests the effect sizes are heterogeneous; if it is not significant, it suggests the effect sizes are sufficiently homogenous.

### Results

Table 1 gives a summary of effect sizes across studies. Because different information was available from different studies, meta-analytic sample sizes (i.e.,  $ks$ ) ranged from 4 to 31, depending on the focal analysis. As with any finding, analyses based on larger samples of studies or effect sizes are

**Table 1.** Summary Table of Effect Sizes (Correlation Coefficients) for Meta-Analyses: Relationships Between Attachment Styles (Secure, Anxious, and Avoidant) and Relationship Satisfaction or Relationship Commitment.

Source	N	Dyad	Mos.	Relationship satisfaction (rs)						Relationship commitment (rs)							
				Anxious		Avoidant		Secure		Anxious		Avoidant					
				All	♂	♀	All	♂	♀	All	♂	♀	All	♂	♀		
Al Tamimi, Jaiswal, Grau, and Banse (2009)	100	Yes					.29										
Banase (2004)	666	Yes								.37	.43						
Banase and Kowalick (2007)	139										.55						
Birnbaum (2007)	96		234.0														
Birnie, McClure, Lydon, and Holmberg (2009) <sup>a</sup>	162																
Brassard, Lussier, and Shaver (2009)	548	Yes	72.0														
Brennan and Shaver (1995)	180	Yes															
Brennan and Campbell (2008)	232	Yes	12.2														
Butzer and Campbell (2008)	437	Yes	22.5														
Cann, Norman, Welbourne, and Calhoun (2008)	104	Yes	21.0														
Carmelley, Pietromonaco, and Jaffe (1996) Study 1	104	Yes															
Carmelley, Pietromonaco, and Jaffe (1996) Study 2	72	Yes															
Charania and Ickes (2007) <sup>b</sup>	800	Yes	144.0														
Clark, Lemay, Graham, Pataki, and Finkel (2010)	192	Yes	34.4														
Collins and Feeney (2000)	186	Yes	12.6														
Collins, Ford, Guichard, and Allard (2006)	194	Yes	13.3														
Crespo, Davide, Costa, and Fletcher (2008)	300	Yes	195.0														
Davis et al. (2006)	872																
Diamond, Hicks, Otter-Henderson (2008)	84	Yes															
Farr, Forsell, and Patterson (2010)	212																
Feeney (1994)	722	Yes															
Frei and Shaver (2002)	319		16.0														
Freitas (2004)	334		38.6														
Hadden, Smith, and Laurenceau (2009)	90	Yes	12.7														
Horne and Biss (2009)	158		47.3														
Hwang, Johnston, and Smith (2007)	100																
Joel, MacDonald, and Shimotomai (2011) Study 1	137		14.0														
Joel et al. (2011) Study 2	159		13.0														
Jones and Cunningham (1996)	372	Yes	15.2														
Kafetsios (2002)	124																
Kane et al. (2007)	610	Yes	17.0														

(continued)

**Table 1. (continued)**

Source	N	Dyad	Mos.	Relationship satisfaction (rs)						Relationship commitment (rs)					
				Anxious		Avoidant		Secure		Anxious		Avoidant			
				All	♂	♀	All	♂	♀	All	♂	♀	All	♂	♀
Le et al. (2008)	435		22.8	-.22	-.39	-.39	-.16	-.38	.57	-.02	-.41				
Lehnart and Neyer (2006)	208														
Little, McNulty, and Russell (2010) Study 1	144	Yes		-.30	-.39	-.39	-.16	-.38							
Little et al. (2010) Study 2	144	Yes		-.25	-.23	-.24	-.24	-.24							
Locke (2008)	60		15.3	-.26	-.53	-.53				-.05	-.38				
Lopez and Rice (2006) Study 1	487		31.0	-.23	-.52	-.52									
Lopez and Rice (2006) Study 2, Time 1	121			-.26	-.26	-.26	-.58	-.56							
Lowyck, Luyten, Demyttenaere, and Corveleyn (2008)	266			-.08	-.11	-.11			.53						
MacIntosh, Reissing, and Andruff (2010)	52		129.6	-.08	-.11	-.11									
Mak, Bond, Simpson, and Rholes (2010)	369		23.5	-.20	-.29	-.29									
Morrison, Urquiza, and Goodlin-Jones (1998) <sup>a</sup>	247			-.26	-.42	-.42	-.09	-.12	.38						
Olderbak and Figueredo (2009)	121		1.8	-.29	-.42	-.42	-.09	-.12							
Roberts and Pistle (2009)	165			-.20	-.49	-.49									
Rogers, Bidwell, and Wilson (2005)	160	Yes	16.6	-.33	-.30	-.30									
Schmitt (2002)	88	Yes	18.0	.08	-.19	-.19	.05	-.33		.29	-.41	.06	-.16		
Simpson (1990)	288	Yes	13.5	-.23	-.09	-.09	-.20	-.27	.23	.29	-.31	-.15	-.21		
Smith and Lonsbary (2005)	45			-.38	-.64	-.64									
Smith and Novak (2008)	716	Yes	267.0	-.59	-.55	-.55	-.71	-.77		-.46	-.48	-.58	-.60		
Strauss, Morry, and Kito (2012) Study 1	197		23.0	-.29	-.61	-.61									
Strauss et al. (2012) Study 2	178	Yes	18.9	-.28	-.48	-.48									
Sümer and Cozzarelli (2004)	352		2.1												
Tran and Simpson (2009)	148	Yes	6.0												
Treboux, Crowell, and Waters (2004) Study 2	215		51.0	-.52	-.61	-.61				-.07	-.30	-.44	-.50		
Troy, Lewis-Smith, and Laurenceau (2006)	236	Yes		-.32	-.27	-.26	-.16	-.37	.38	.17	.54				
Tsagarakis, Kafetsios, and Stalikas (2007)	140		27.4	-.26	-.42	-.42	-.43	-.35							
Wieselquist, Rusbult, Foster, and Agnew (1999)	130	Yes													
Wijngaards-de Meij et al. (2007)	438	Yes		-.33	-.12	-.12				-.16	-.18				

Note. Dyad = dyadic data; couples' data available from both partners. Mos. = relationship duration in months. ♂ = men. ♀ = women.

<sup>a</sup>Used a reverse-scored measure; effect size was reversed in direction to be consistent with other effect sizes.

<sup>b</sup>Only partial (vs. zero-order) correlations could be extracted as a measure of effect size.

**Table 2.** Random-Effects Meta-Analysis Results by Association and Gender.

Variable	k	N	r	95% CI		Variance statistics		
				LL	UL	$\tau^2$	SE	z
Satisfaction								
Anxious	31	8,505	-.29*	-.34	-.23	0.018	0.008	2.45*
Men	16	2,512	-.33*	-.41	-.24	0.034	0.016	2.13*
Women	18	2,803	-.35*	-.42	-.28	0.024	0.014	1.66 <sup>†</sup>
Avoidant	31	8,524	-.43*	-.49	-.37	0.039	0.010	3.86*
Men	16	2,053	-.42*	-.53	-.30	0.075	0.017	4.40*
Women	18	2,344	-.48*	-.57	-.38	0.062	0.017	3.57*
Secure	7	1,449	.41*	.33	.48	0.011	0.005	1.96 <sup>†</sup>
Men	5	1,142	.29*	.23	.34	0.000	0.002	0.82
Women	6	1,281	.40*	.30	.49	0.012	0.006	2.07*
Commitment								
Anxious	9	2,189	-.14*	-.26	-.01	0.031	0.014	2.20*
Men	5	692	-.16	-.37	.08	0.057	0.035	1.64
Women	5	705	-.40*	-.48	-.31	0.000	0.003	0.19
Avoidant	9	2,189	-.39*	-.48	-.28	0.027	0.011	2.47*
Men	5	692	-.39*	-.59	-.14	0.080	0.032	2.52*
Women	5	705	-.43*	-.58	-.26	0.038	0.012	3.04*

Note. CI = confidence interval; LL = lower limit, UL = upper limit.  $\tau^2$  = Variance.

<sup>†</sup> $p < .10$ . \* $p < .05$ .

**Table 3.** Random-Effects Meta-Analysis of Gender Differences in Associations Within Couples.

Variable	k	N	r	95% CI		Variance statistics		
				LL	UL	$\tau^2$	SE	z
Satisfaction								
Anxious	13	2,191	.01	-.06	.08	0.006	0.003	1.85
Avoidant	13	1,732	.11*	.05	.17	0.003	0.002	1.33
Men	13	1,732	-.42*	-.55	-.28	0.079	0.020	4.00*
Women	13	1,732	-.50*	-.61	-.38	0.069	0.017	4.04*
Secure	5	1,142	-.11	-.24	.03	0.015	0.019	0.80
Commitment								
Anxious	4	591	.27 <sup>†</sup>	-.03	.53	0.081	0.035	2.34*
Men	4	591	-.17	-.44	.12	0.071	0.045	1.60
Women <sup>a</sup>	4	591	-.42*	-.47	-.35	0.000	—	—
Avoidant <sup>a</sup>	4	591	.04	-.04	.12	0.000	—	—

Note. CI = confidence interval; LL = lower limit, UL = upper limit.  $\tau^2$  = Variance. Simple effects tests by gender are shown when the gender difference is at least marginally significant ( $p < .10$ ).

<sup>a</sup>The variance ( $\tau^2$ ) for this analysis was virtually zero; thus, fixed-effects results are shown.

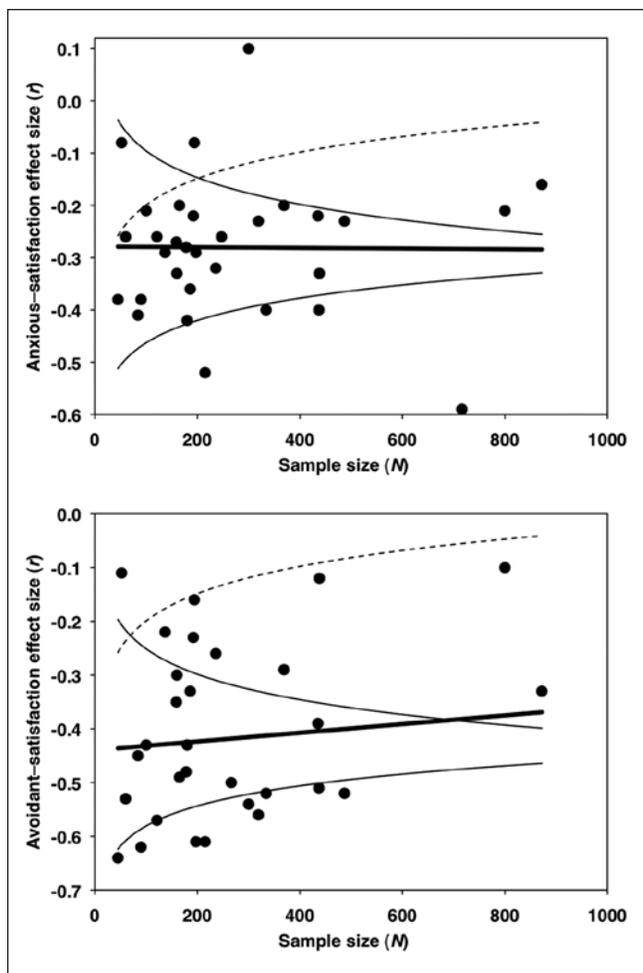
<sup>†</sup> $p < .10$ . \* $p < .05$ .

more reliable. First, we examine publication bias (i.e., the file drawer effect) in our two largest meta-analyses ( $ks = 31$ ). Second, we describe the main effects of attachment dimensions (anxious, avoidant, secure) on relationship satisfaction and on commitment (Predictions 1 and 2). Third, we describe the extent to which these simple relationships are moderated by between-study differences in average relationship dura-

tion (Predictions 3 and 4) and within-study gender differences in couples (Prediction 5).

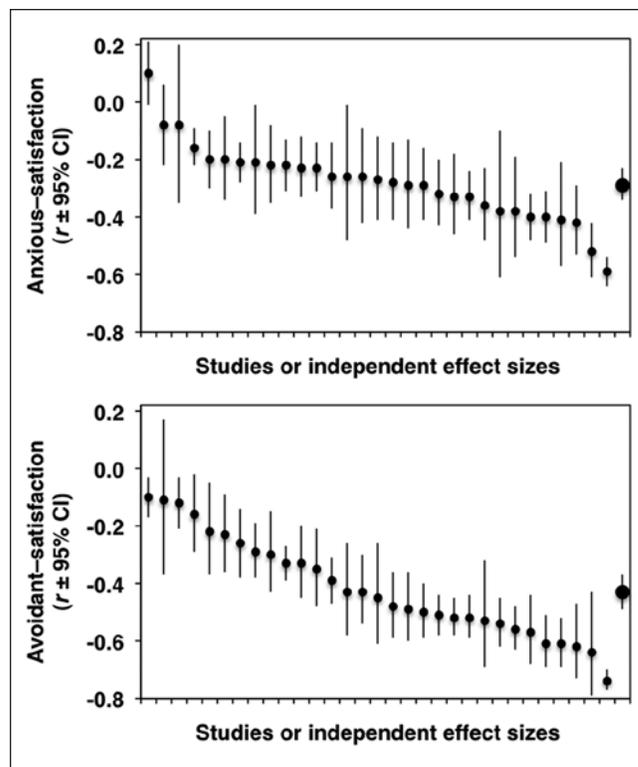
### Examining Publication Bias

Figure 2 shows funnel plots of raw effect sizes ( $rs$ ) against sample size ( $Ns$ ) for the analyses with the largest samples of



**Figure 2.** Funnel plots showing effect sizes ( $r_s$ ) as a function of sample size ( $N$ ) for anxious-satisfaction (top) and avoidant-satisfaction (bottom). In each figure, the thick, black line represents an unweighted line of best fit. Publication bias is possible if the weighted regression line is significant; it was in neither case. The thin, black lines show the 95% CI for the effects. The dashed lines show the significance thresholds at  $p < .05$ .

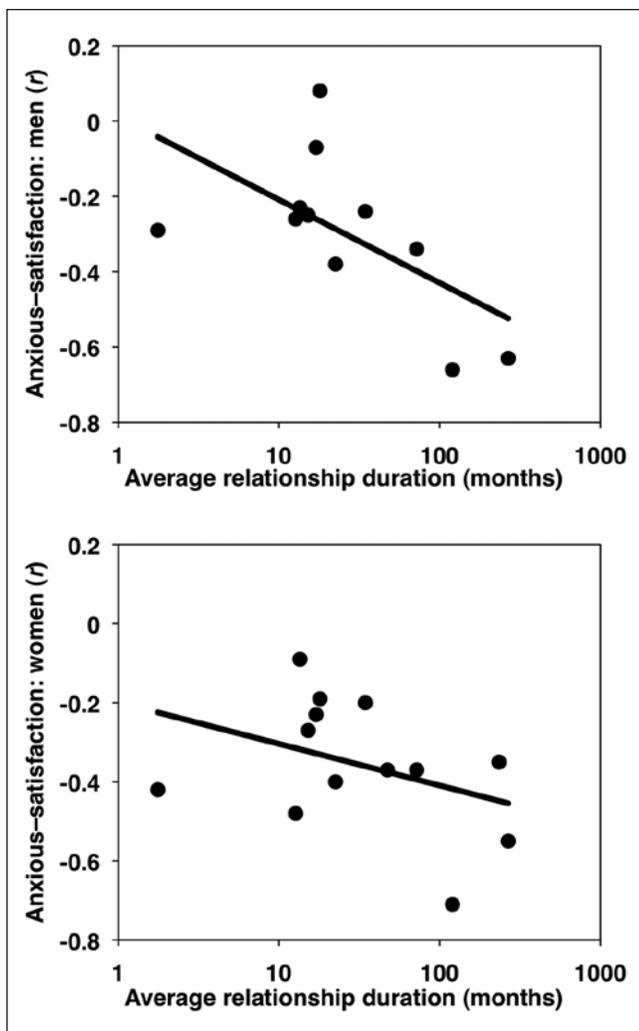
effect sizes ( $k_s = 31$ )—the associations between relationship satisfaction and anxious (top) and avoidant (bottom) attachment dimensions. As expected, these plots produced roughly normal distributions of effect sizes that were closer to their mean effect sizes as sample sizes increased (i.e., a narrowing funnel shape from left to right). We tested for publication bias using Egger's regression (Egger, Smith, Schneider, & Minder, 1997) for these two meta-analyses, which had adequate power to test for severe publication bias (Card, 2012). Results showed no evidence of publication bias (i.e., a linear association between effect size and sample size) for either anxious ( $r = .012, p > .95$ ) or avoidant ( $r = .097, p > .60$ ) attachment. These results suggested that between-study differences in sample size did not systematically bias the results, and that publication bias (or the file-drawer effect) was not a substantial problem.



**Figure 3.** Plots of effect sizes ( $r_s$ ) and their 95% CIs in descending order; anxious-satisfaction (top), avoidant-satisfaction (bottom). Larger dots at the right indicate average effect sizes.

### Attachment Main Effects

**Relationship satisfaction.** Anxious attachment was negatively and significantly associated with relationship satisfaction in 31 independent effect sizes  $r = -.29$ , 95% CI  $[-.34, -.23]$ . This negative association held for men ( $r = -.33$   $[-.41, -.24]$ ) and women ( $r = -.35$   $[-.42, -.28]$ ). Avoidant attachment was negatively and significantly associated with relationship satisfaction in 31 independent effect sizes ( $r = -.43$   $[-.49, -.37]$ ; Figure 3, bottom; Prediction 1). This negative association held for men ( $r = -.42$   $[-.53, -.30]$ ) and women ( $r = -.48$   $[-.57, -.38]$ ). The avoidant-satisfaction association was significantly stronger (more negative) than the anxious-satisfaction association ( $k = 30; r = .16$   $[.09, .23]$ ). We tested for this difference by (a)  $r$ -to- $z$  transforming both sets of correlations, (b) subtracting the avoidant  $z$ -transformed correlations from the anxious  $z$ -transformed correlations, and (c) running meta-analytic tests on these differences scores; these differences in effect sizes were significantly heterogeneous ( $\tau^2 = .034, SE = .011, z = 3.09, p = .002$ ). Secure attachment was positively and significantly associated with relationship satisfaction across seven independent effect sizes ( $r = .41$ ,  $[.33, .48]$ ; Table 2; Prediction 2). This positive association held for men ( $r = .29$   $[.23, .34]$ ) and women ( $r = .40$   $[.30, .49]$ ).



**Figure 4.** Anxious–satisfaction correlations as a function of average relationship duration (log months) for men (top) and women (bottom).

**Relationship commitment.** Anxious attachment was negatively and significantly associated with relationship commitment in nine independent effect sizes ( $r = -.14$  [-.26, -.01]; Table 2; Prediction 1). This negative association was significant for women ( $r = -.40$  [-.48, -.31]), but not for men ( $r = -.16$  [-.37, .08]). Avoidant attachment was also negatively and significantly associated with relationship commitment in nine independent effect sizes ( $r = -.39$  [-.48, -.28]; Table 2; Prediction 1). This negative association held for men ( $r = -.39$  [-.59, -.14]) and women ( $r = -.43$  [-.58, -.26]). The avoidant–commitment association was significantly stronger (more negative) than the anxious–commitment association ( $k = 9$ ;  $r = .26$  [.17, .35]); these differences in effect sizes were significantly heterogeneous ( $\tau^2 = .018$ ,  $SE = .008$ ,  $z = 2.28$ ,  $p = .023$ ). Secure attachment and commitment were measured in only one study we located; thus, no meta-analysis was conducted on this association (Prediction 2 not tested).

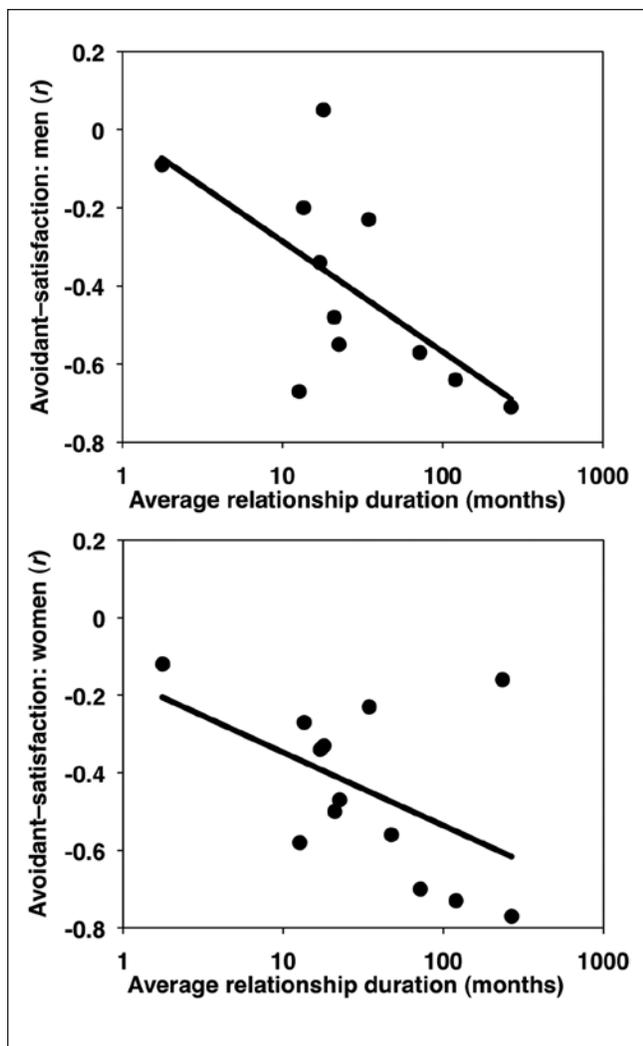
### Moderation by Average Relationship Duration

**Anxious attachment and relationship satisfaction.** Between-study differences in relationship duration significantly moderated the anxious-attachment–relationship-satisfaction correlations in men ( $k = 11$ ;  $b = -.126$ ,  $SE = .051$ ,  $z = -2.44$ ,  $p = .015$ ; Figure 4, top; Prediction 3). For this and subsequent analyses, the unstandardized coefficient,  $b$ , can be interpreted like this: For every unit increase in average relationship duration in log months, the  $r$ -to- $z$  transformed correlations decreased by .126. By re-centering the zero point of log relationship duration in months near -1, 0, and 1  $SDs$  from the total sample mean, we tested simple slopes at three different relationship durations: 6, 24, and 96 months (0.5, 2, and 8 years; see Aiken & West, 1991; Card, 2012; Judd, McClelland, & Ryan, 2009). For men in relationships for 6 months, the association was nonsignificant ( $r = -.15$  [-.34, .05]). The same association was significantly negative for men in relationships for 2 years ( $r = -.31$  [-.41, -.22]) and 8 years ( $r = -.46$ , [-.57, -.34]). Indicating some residual effect size heterogeneity, a significant amount of variance remained after controlling for relationship duration ( $\tau^2 = .021$ ,  $SE = .010$ ,  $z = 2.10$ ,  $p = .035$ ).

Between-study differences in relationship duration significantly moderated the anxious-attachment–relationship-satisfaction correlations in women ( $k = 13$ ;  $b = -.090$ ,  $SE = .041$ ,  $z = -2.17$ ,  $p = .030$ ; Figure 4, bottom; Prediction 3); as relationship duration increased, the association grew more negative. Simple effects tests showed that this association was significantly negative at relationship durations of 6 ( $r = -.22$  [-.38, -.05]), 24 ( $r = -.33$  [-.42, -.24]), and 96 ( $r = -.44$  [-.53, -.33]) months. Effect sizes were homogeneous after controlling for relationship duration ( $\tau^2 = .018$ ,  $SE = .014$ ,  $z = 1.29$ ,  $p = .20$ ).

**Avoidant attachment and relationship satisfaction.** Between-study differences in relationship duration significantly moderated the avoidant-attachment–relationship-satisfaction correlations in men ( $k = 11$ ;  $b = -.16$ ,  $SE = .023$ ,  $z = -6.97$ ,  $p < .001$ , Figure 5, top; Prediction 3); as relationship duration increased, the association grew more negative. Simple effects tests showed that this association was significantly negative at relationship durations of 6 ( $r = -.22$  [-.37, -.07]), 24 ( $r = -.42$  [-.51, -.33]), and 96 ( $r = -.59$  [-.64, -.52]) months. Effect sizes were homogeneous after controlling for relationship duration ( $\tau^2 = .023$ ,  $SE = .020$ ,  $z = 1.13$ ,  $p = .26$ ).

Between-study differences in relationship duration marginally moderated the avoidant-attachment–relationship-satisfaction correlations in women ( $k = 13$ ;  $b = -.125$ ,  $SE = .071$ ,  $z = -1.76$ ,  $p = .078$ ; Figure 5, bottom; Prediction 3); as relationship duration increased, the association grew more negative. Simple effects tests showed that this association was significantly negative at relationship durations of 6 ( $r = -.30$  [-.45, -.13]), 24 ( $r = -.45$  [-.58, -.38]), and 96 ( $r = -.51$

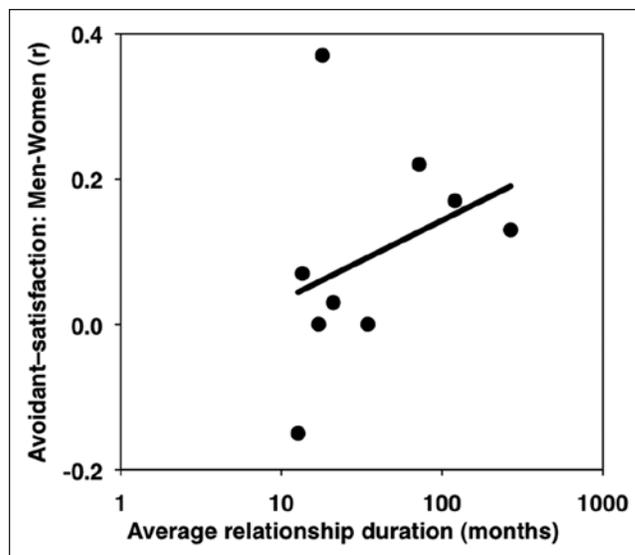


**Figure 5.** Avoidant-satisfaction correlations as a function of average relationship duration (log months) for men (top) and women (bottom).

[ $-.67, -.30$ ) months. Effect sizes were homogeneous after controlling for relationship duration ( $\tau^2 = .049$ ,  $SE = .027$ ,  $z = 1.82$ ,  $p = .069$ ).

**Secure attachment and relationship satisfaction.** Of the all the effect sizes available for this analysis, only two had information on average relationship duration (Table 1). Thus, because of insufficient sample size, we did not test Prediction 4.

**Insecure attachment and relationship commitment.** There were only seven effect sizes available to test whether relationship duration moderated the anxious-commitment and avoidant-commitment associations (Table 1). This fell below our a priori minimal sample size criterion of  $k = 9$  effect sizes for between-study moderators (mentioned above). Because of their importance to assessing the TARA model, however, we moved forward with testing these associations. Nevertheless,



**Figure 6.** Gender differences in avoidant-satisfaction moderated by average relationship duration (log months).

because of the small sample size and diminished power, we urge caution in interpreting the results below.

Between-study differences in relationship duration ( $ks = 7$ ) significantly moderated neither the anxious-attachment-relationship-commitment correlations ( $b = -.045$ ,  $SE = .077$ ,  $z = -.59$ ,  $p = .56$ ) nor the avoidant-attachment-relationship-commitment correlations ( $b = -.069$ ,  $SE = .044$ ,  $z = -1.56$ ,  $p = .118$ ; Prediction 3). After controlling for relationship duration, effect sizes were heterogeneous for anxious-commitment correlations ( $\tau^2 = .037$ ,  $SE = .014$ ,  $z = 2.68$ ,  $p = .007$ ), but sufficiently homogeneous for avoidant-commitment correlations ( $\tau^2 = .017$ ,  $SE = .015$ ,  $z = 1.13$ ,  $p = .26$ ). Although neither moderation effect was significant, both were in directions consistent with Prediction 3; as relationship duration increased, both associations tended to grow more negative. For example, simple effects tests for the avoidant-commitment association showed that it was significantly negative at relationship durations of 6 ( $r = -.31$  [ $-.51, -.07$ ]), 24 ( $r = -.39$  [ $-.51, -.27$ ]), and 96 ( $r = -.47$  [ $-.54, -.40$ ]) months. Thus, although a larger sample size would have provided more power and clarity, results provided some preliminary but nonsignificant support for Prediction 3, especially regarding relationship duration's moderation of the avoidant-commitment association.

### Moderation by Participant Gender

We examined gender differences in the above associations at the within-study (or within-effect-size) level (Table 3; Prediction 5). Specifically, we examined only studies (or effect sizes) involving couples, where both correlations between two variables (e.g., secure attachment and

relationship satisfaction) were available for men and women in the dyads (Table 1). We examined only actor (vs. partner; see Kenny, Kashy, & Cook, 2006) correlations because our hypotheses pertained only to actor effects and because too few studies reported partner correlations. We tested for gender differences by (a) *r*-to-*z* transforming the correlations for men and women, (b) subtracting the women's *z*-transformed correlations from the men's *z*-transformed correlations, and (c) running meta-analytic tests on these differences scores. A resulting weighted mean correlation that is *positive* and different from zero means that *men* have a significantly *more positive* association between those two variables compared with women in the dyad. In contrast, if the resulting weighted mean correlation is *negative* and different from zero, *women* have a significantly *more positive* association between those two variables compared with men in the dyad. Note that "more positive" could compare negative correlations, where, for example, a correlation of  $-.20$  would be more positive than one of  $-.40$ . We also tested for between-study moderation of these within-couple gender differences by relationship duration; we only report moderation results of marginal significance or greater ( $ps < .10$ ).

**Relationship satisfaction.** We found no significant within-couple gender difference for the anxious-attachment-relationship-satisfaction association (Prediction 5).

We found a significant within-couple gender difference across 13 studies for the association between avoidant attachment and relationship satisfaction ( $r = .11$  [.05, .17]); men had more positive (i.e., less negative) associations ( $r = -.42$  [-.55, -.28]) than did women ( $r = -.50$  [-.61, -.38]). This gender difference was significantly moderated by relationship duration ( $k = 9$ ;  $b = .045$ ,  $SE = .021$ ,  $z = 2.15$ ,  $p = .032$ ; Figure 6). simple effects tests showed no gender difference between couples' avoidant-attachment-relationship-satisfaction associations at 6-month relationship duration ( $r = .01$  [-.10, .11]). In contrast, the avoidant-attachment-relationship-satisfaction gender difference was significantly positive in relationships of 2 years ( $r = .07$  [.00, .14]) and 8 years ( $r = .13$ , [.07, .19]). From another angle, simple effects tests showed that the correlations for men with average relationship durations of 6 and 96 months were  $-.14$  [-.43, .18] and  $-.58$  [-.63, -.54], respectively, whereas the same correlations for women were  $-.14$  [-.31, .03] and  $-.67$  [-.71, -.62], respectively. Thus, the negative association between avoidant attachment and relationship satisfaction was more negative among couples with longer relationship durations, and this effect was truer for women than men.

**Relationship commitment.** We found a marginally significant ( $p = .08$ ) within-couple gender difference across four studies for the association between anxious attachment and relationship commitment ( $r = .27$  [-.03, .53]; Table 3). The direction of this within-couple gender difference was such that men had more positive (or less negative) associations between

anxious attachment and relationship commitment ( $r = -.17$  [-.44, .12]) than did women ( $r = -.42$  [-.47, -.35]). We found no such within-couple gender difference for the association between avoidant attachment and relationship commitment ( $r = .04$  [-.04, .12]; Table 3).

### Summary of Findings

For both sexes, the associations between relationship satisfaction and anxious and avoidant attachment became more negative as average relationship durations (log months) increased. Because of a limited sample size, we found only mixed preliminary support for the same associations for relationship commitment. Because these results are cross-sectional (vs. longitudinal), they cannot show causation (or even temporal precedence); however, they do indicate a novel and consistent association that supports the TARA model and suggest that relationship duration may be a key moderator of the (negative) associations between the two insecure attachment dimensions and relationship satisfaction. We encourage future studies to examine these effects longitudinally.

We could not test for gender differences in the moderation-by-relationship-duration analyses because the samples within each gender contained a mix of dyadic and nondyadic effect sizes (e.g.,  $k$  is 11 for men, but 13 for women); doing so would have violated the independence-of-residuals assumption. This choice allowed us to maximize our sample sizes ( $ks$ ), and thus, statistical power. As shown in the "Moderation by Participant Gender" section above, we tested gender difference only in dyadic contexts (Table 1), where we could properly account for nonindependence by using the couple—not the person—as the unit of analysis (see Kenny et al., 2006).

### Discussion

The first purpose of this meta-analysis was to assess the simple associations among attachment dimensions and relationship satisfaction/commitment. As predicted, and consistent with prior research, insecure attachment (anxious and avoidant) was negatively associated with relationship satisfaction and commitment (Prediction 1), and attachment security was positively associated with relationship satisfaction (Prediction 2). Unexpectedly, these associations were stronger (more negative) for avoidant than for anxious attachment. Future studies may wish to directly compare the strengths of these two insecure attachment dimensions' correlations with relationship satisfaction.

The second purpose of this meta-analysis was to test the TARA model: Does relationship duration moderate the associations among attachment dimensions and relationship outcomes? Overall, results provided support for the model, but we also observed some mixed findings. Specifically, because of a lack of studies (effect sizes), testing Prediction 3 for relationship commitment was underpowered, though preliminary

results were in the predicted direction, and Prediction 4 could not be tested. Clearly consistent with the TARA model, however, the negative associations between insecure attachment dimensions (anxious and avoidant) and relationship satisfaction were more negative in samples with longer average relationship durations. Moreover, the moderation effects were generally true for men and women.

One possible explanation for these moderation effects is that the negative properties of insecure attachment on relationship satisfaction gradually develop or accumulate over time. Alternatively, perhaps the thrill and positive affect often associated with new relationships temporarily masks the negative tension brewing within people with insecure attachment styles (e.g., Erosion Theory; Clements et al., 1997). Future research should focus on processes and longitudinal assessment to help understand how and why insecure attachment is more negatively associated with relationship satisfaction in people whose relationships have lasted longer (Figure 1b).

Another possible explanation for the moderating effect of relationship duration is that it may relate to well-documented decreases in relationship quality over time. Even in couples whose relationships remain intact, over time there are *decreases* in relationship satisfaction (Johnson et al., 2005; Karney & Bradbury, 1997; Kurdek, 2008), love and affection (Huston, Caughlin, Houts, Smith, & George, 2001), and sexual interest (Huston & Vangelisti, 1991), as well as *increases* in conflict (Stafford, Kline, & Rankin, 2004). People who are higher in avoidant or anxious attachment may be more sensitive to these changes as their relationships progress.

Alternatively, perhaps dispositional attachment styles impede the healthy, natural development of a relationship. That is, when relationships begin, attachment styles are simply not as important due to the initial lack of closeness and intimacy in fledgling relationships. For example, Eastwick and Finkel (2008) suggested that a large amount of partner-specific attachment anxiety exists in early stages of relationship formation and regardless of dispositional attachment orientations. As time progresses, however, dysfunctional patterns of interaction associated with working models of attachment may inhibit further development of the relationship.

In a similar vein, people with more insecure attachments may fail to perceive positive aspects of their relationships, which inhibits closeness and intimacy, resulting in less satisfaction over time. For example, when people recalled a recent situation in which they spoke with a friend or romantic partner about something that had upset them, those who reported greater fear of intimacy and preoccupation with relationships—components of insecure styles—perceived others as judging them and being disinterested in their problem (Bachman & Bippus, 2005). Dissatisfaction may also stem from maladaptive relationship cognitions. Anxious and avoidant attachment styles were associated with stronger endorsement of irrational relationship beliefs (e.g., that disagreement is bad for relationships, that romantic partners

should be able to read each others' minds; Stackert & Bursik, 2002). The lack of positive memories associated with one's partner may preclude closeness and intimacy, which may explain decreases in satisfaction.

Although research has explored gender differences in attachment styles (Del Giudice, 2011), it has not addressed the extent to which gender moderates the associations among attachment dimensions and relationship outcomes. We found that women had more negative avoidant–satisfaction correlations than men; no gender difference emerged for anxious–satisfaction correlations. Also for women (vs. men), anxious attachment was marginally ( $p < .10$ ) more negatively associated with relationship commitment. In contrast, gender did not moderate the association between avoidant attachment and relationship commitment. Thus, we found mixed support for Prediction 5; gender moderated some of the effects of interest, but not in a consistent or systematic way.

### Limitations and Future Directions

The present meta-analytic review has multiple limitations. The studies reviewed relied on self-report measures of attachment styles, and research (Leak & Parsons, 2001) found that three commonly used measures of attachment—the Attachment Styles Questionnaire (ASQ), the Adult Attachment Scale (AAS), and the Relationship Questionnaire (RQ)—are correlated with impression management. Specifically, results suggested that participants gave socially desirable responses, being more likely to endorse secure items than insecure ones. In addition, some scales of the ASQ and the AAS were positively associated with unconscious self-deception. Researchers have also argued that the nature of insecure attachment dimensions may make some people reluctant to honestly and reliably respond to attachment-related measures. For example, avoidant people may defensively block attachment-related information from their awareness (Crowell & Treboux, 1995). Although non-self-report measures of adult attachment exist—such as the Adult Attachment Interview (AAI; Hesse, 1999) and the Adult Attachment Projective (AAP; George & West, 2001)—they are rarely used due to the high burden of their administration (e.g., the AAI has an hour-long interview protocol). In addition, these attachment measures focus on people's recollection of their early relationships with their caregivers (AAI) or on their attachment themes projected onto a series of pictures (AAP), rather than current perceptions of their attachment to relationship partners. Most troubling may be that such attachment measures are inconsistently related to self-report attachment measures. For example, researchers have found that a self-report measure of attachment (ECR) was unrelated to the AAI (Riggs et al., 2007), whereas others have found moderate correlations between several self-report measures and the AAI (Shaver, Belsky, & Brennan, 2000). A meta-analytic review of this literature showed trivial relationships among these types of measures (Roisman et al., 2007).

The present meta-analysis also cannot address the possibility that changes in attachment styles over time affect relationship functioning. Instead, our findings can speak only to cross-sectional (vs. longitudinal) associations over time (via average relationship duration). Although some research suggests considerable attachment stability (e.g., Fraley, Vicary, Brumbaugh, & Roisman, 2011), romantic attachment does change over time (e.g., Fuller & Fincham, 1995). In addition, neither the TARA model nor the current analysis considers the roles that partners and their attachment styles may play in the relationship satisfaction and commitment of the actor. Studies have found that the characteristics of the actor and the partner shape couples' attachments and their association with relationship functioning (e.g., Godbout, Dutton, Lussier, & Sabourin, 2009; Riggs, Cusimano, & Benson, 2010). Future research would benefit from taking a longitudinal approach to studying attachment and relationship quality, as well as collecting data from both partners; doing so could allow for the possible expansion of the TARA model to include partner paths.

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