Similarity, Convergence, and Relationship Satisfaction in Dating and Married Couples

Gian C. Gonzaga
eHarmony Labs, Los Angeles, California and University of California, Los Angeles

Belinda Campos and Thomas Bradbury
University of California, Los Angeles

The current work investigates how personality and interpersonal processes combine to predict change in relationship quality. Measures of personality and emotion similarity were collected during laboratory interactions from a cross-sectional sample of dating couples (Study 1) and a 1-year longitudinal study of newlywed married couples (Study 2). Results showed that emotion similarity mediated the association between personality similarity and relationship quality (Studies 1 and 2) and that emotion convergence mediated the association between personality convergence and relationship satisfaction (Study 2). These results indicate that similarity and convergence in personality may benefit relationships by promoting similarity and convergence in partners' shared emotional experiences. Findings also lend support to models that integrate partners' enduring traits and couples' adaptive processes as antecedents of relationship outcomes.

Keywords: relationships, personality, emotion, similarity, convergence

Although extensive literatures demonstrate that personality traits and interpersonal behaviors covary with and predict the quality of intimate relationships, far less is known about how these influences combine to affect relationship functioning. On one hand, broad personality constructs (e.g., low levels of neuroticism, high levels of agreeableness and extraversion; Bouchard, Lussier, & Sabourin, 1999; Kelly & Conley, 1987; Kurdek, 1997) predict better relationship functioning, but few studies address proximal mechanisms by which this association comes about. Conversely,

behavioral analysis of interactions between intimate partners identify specific affective exchanges (e.g., high levels of anger and contempt, low levels of affection and support; Gonzaga, Keltner, Londahl, & Smith, 2001; Gonzaga, Turner, Keltner, Campos, & Altemus, 2006; Johnson et al., 2005; Pasch & Bradbury, 1998) that predict lower relationship functioning, yet the origins of between-couple variation in these experiences are not well understood.

Drawing from the vulnerability–stress–adaptation (VSA) model of marital development outlined by Karney and Bradbury (1995), which incorporates individual and dyadic elements, the present study investigated the hypothesis that moment-to-moment emotional experiences in relationships mediate the association between personality and relationship satisfaction. More specifically, this study aims to expand the VSA model by testing the hypothesis that *similarity* in partners' personalities, over and above partners' personalities considered independently, increases the likelihood that they will have similar emotional experiences in their conversations, which in turn promotes more fulfilling relationships.

The VSA Model of Relationships

As shown in Figure 1, the VSA model of relationship development holds that relationship satisfaction and dissolution are a function of three influences: partners' *enduring strengths and vulnerabilities,* or stable characteristics of the partners (e.g., personality traits, ethnicity, experiences in the family of origin); the *stressful events and circumstances* that couples encounter (e.g., the transition to parenthood, job loss, neighborhood disadvantage); and the *adaptive processes* that partners display (e.g., emotion experienced during interactions, behavioral skills, and associated
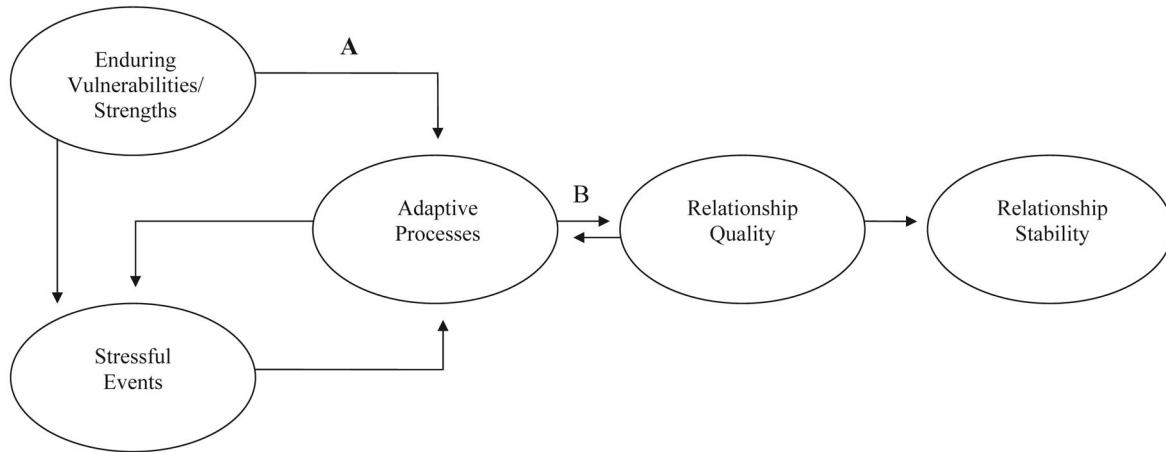
Figure 1.   The vulnerability–stress–adaptation model of marriage (Karney & Bradbury, 1995).

cognitions). Central to the purposes of the present study is the presumption in the VSA model that adaptive processes are the proximal mechanisms by which enduring strengths and vulnerabilities and/or stressful events impact relationship functioning.

Whereas previous models had focused intently on interpersonal processes to the relative exclusion of other influences on relationship development (e.g., social learning conceptions of marriage; see Jacobson & Margolin, 1979), the VSA model draws attention to factors that may affect (and be affected by) interpersonal processes and judgments of relationship satisfaction. Several examples support the utility of this approach: (a) Individuals growing up in families marked by conflict and divorce display more aggression, anger, and contempt in their marriages, which in turn increases risk for marital distress and dissolution (Story, Karney, Lawrence, & Bradbury, 2004); (b) within-person fluctuations in acute life events predict corresponding changes in relationship satisfaction, apparently because these stressors lead individuals to see more problems in their relationship and to view the partner as more blameworthy for them (Neff & Karney, 2004); (c) couples' problem solving behaviors, including humor and/or anger displayed during a conflict interaction, moderate the association between stressful life events and relationship functioning (Cohan & Bradbury, 1997).

Although the VSA model provides a relatively encompassing view of potential determinants of relationship change and deterioration, the model can be faulted for failing to specify the precise means by which stable individual characteristics affect relational processes. Additional data are therefore needed to clarify the nature and extent of mediation findings predicted by the model. Moreover, the model can be faulted more generally because it has not recognized the importance of dyadic level influences on relationship development. The association between partners' individual strengths and vulnerabilities—their similarities and differences, for example—may be at least as important as the independent effects of these characteristics. In the current work, we study personality traits as enduring vulnerabilities and emotional experience as adaptive processes, and use the rich tapestry of research linking personality, emotional experience, and relationship functioning as a basis for our hypotheses.

Personality, Emotional Experience, and Relationship Functioning

Evidence of the links between personality, emotional experience, and relationship functioning has been long apparent. It is well known that personality relates to the likelihood of experiencing certain sets of emotions. Extraversion, for example, is related to the reports of positive emotions, whereas neuroticism is related to reports of negative emotions (Costa & McCrae, 1992; Izard, Libero, Putnam, & Haynes, 1993; Larsen & Ketelaar, 1991; Watson & Clark, 1992). Personality traits such as neuroticism, extraversion, openness to experience, and agreeableness predict the expression of emotion in adults (Gross & John, 1994) and children as young as 1 year old (Abe & Izard, 1999). Moreover, recent evidence has shown that Big Five personality traits relate to the disposition to experience specific positive emotions such as love, pride, awe, and contentment (Shiota, Keltner, & John, 2006). Personality traits also predict relationship functioning. Individuals who rate themselves as high in neuroticism also experience low levels of relationship quality (Ben-Ari & Lavee, 2005; Geist & Gilbert, 1996; Kelly & Conley, 1987; Kurdek, 1997; Lavee & Ben-Ari, 2004) and have partners who have similar experiences (Bouchard et al., 1999; Karney & Bradbury, 1995, 1997). Relationship quality is also correlated with other personality traits such as agreeableness, extraversion, conscientiousness, and openness to experience (Bouchard et al., 1999; Kelly & Conley, 1987).

Finally, the experience and expression of discrete emotions also affect relationship functioning. For example, couples who display contempt during conflict go on to be less satisfied with the relationship (Pasch & Bradbury, 1998). The display of embarrassment relates to better relationship functioning (Keltner & Buswell, 1997), as does the experience and expression of love. Gonzaga and his colleagues (Gonzaga et al., 2001, 2006) have shown that the experience and display of love during interactions between dating couples relates to increased commitment, more constructive conflict resolution, and greater discussion of mutual future plans for the couple. Thus, previous work is consistent with the possibility that emotional experience mediates the association between personality and relationship satisfaction.

Dyadic-Level Relationship Variables

A second objective of the current work is to investigate the role of dyadic-level constructs in the VSA model. To date, work testing this model has been largely silent on this issue, focusing instead on individual or main effects. More specifically, each partner's enduring vulnerabilities, life stressors, or adaptive processes have been assumed to influence relationship functioning independently. Despite recognition of the need for using more dyadic-level constructs in relationships research, relatively few researchers have studied the connections between personality, emotional experience, and relationship satisfaction using such constructs (Feeney, 2003). One of the few studies that used dyadic-level constructs shows the promise in this approach. Ben-Ari and Lavee (2005) divided couples into groups that represented the husbands' and wives' attachment and levels of neuroticism. Couples in which both members were high in neuroticism or had insecure attachment styles had lower marital quality. Although this method represented both partners' types of attachment and levels of neuroticism, it also forced the researchers into creating types of couples, reducing the amount of variance in the analysis and the ability to find significant results. Moreover, as more dimensions of personality are considered, the number of resulting groups grows exponentially, making it difficult to use this approach when many personality traits are measured.

In the current work, we examine different dyadic-level constructs: the degree to which partners are similar to each other in personality and in emotional experience as predictors of relationship satisfaction. We do this for two reasons. First, similarity can be represented as a single number of associations between two individuals, and it also can be used as a predictor or a dependent measure, thereby simplifying and expanding the possible number of analyses. Second, given that similarity between members of a couple predicts relationship success, similarity is highly relevant to relationships research (Acitelli, Kenny, & Weiner, 2001; Russell & Wells, 1991). However, as we outline below, relatively little is known about the interpersonal manifestations of partner similarity, leaving open the question of how similarity might contribute to improved relationships.

Similarity and Relationship Functioning

Individuals in close relationships are similar to their partners and may grow to become more like each other over time. For example, married and dating couples are similar to each other in physical characteristics such as attractiveness (Feingold, 1988; Murstein, 1980; White, 1980), demographic characteristics such as age and education (Heath et al., 1985; Mare, 1991; Phillips, Fulker, Carey, & Nagoshi, 1988; Watkins & Meredith, 1981; Zonderman, Vandenberg, Spuhler, & Fain, 1977), and psychological characteristics such as personality and intelligence (Caspi & Herbner, 1990; Caspi, Herbner, & Ozer, 1992; Guttman & Zohar, 1987; Phillips et al., 1988; Watkins & Meredith, 1981; Zonderman et al., 1977). We refer to *similarity* as the tendency for two individuals to be alike each other at one moment in time. Couples also converge in a number of more dynamic processes. For example, across time couples become more alike in their emotional responses (Anderson, Keltner, & John, 2003). We define *convergence* as the tendency for two individuals to become more alike across time.

Of applied relevance, being similar to a partner at a moment in time, or converging toward a partner across time, seems to have positive effects on relationship functioning. Earlier theorizing proposed that similarity in personality, attitudes, and values would promote attraction and relationship satisfaction (Burleson & Denton, 1992; Byrne, 1971). Several studies have shown that similarity in personality predicts greater relationship satisfaction (Acitelli et al., 2001; Russell & Wells, 1991), as does similarity in other traits such as dysphoria (K. D. Locke & Horowitz, 1990). Similarity also predicts initial attraction (Klohnen & Luo, 2003), and perceiving a partner to be more similar to oneself than they really are relates to increased feelings of being understood in a relationship and relationship satisfaction (Murray, Holmes, Bellavia, Griffin, & Dolderman, 2002; cf. Gattis, Berns, Simpson, & Christensen, 2004). Convergence, like similarity, predicts relationship success. For example, dating couples and college roommates who converge in their emotional experiences have greater relationship cohesion and a smaller likelihood of relationship dissolution (Anderson et al., 2003).

Anderson et al., (2003) proposed three relational benefits of emotional similarity. First, because emotions organize an individual's response to the environment (Frijda & Mesquita, 1994), similarity in emotion coordinates a couple's response to the environment (e.g., Hatfield, Cacioppo, & Rapson, 1994; Kemper, 1991). Second, similarity in emotional experience facilitates partners understanding each other's emotional states (Hatfield et al., 1994; Keltner & Kring, 1998). Finally, emotion similarity is validating to both partners because each perceives that his or her own emotions are shared by an important other (LaFrance & Ickes, 1981; K. D. Locke & Horowitz, 1990). The benefits of emotion similarity posited by this theory are context free and independent of mean levels of emotional experience. Thus, a couple who has high, but similar, levels of anger during conflict would have three relational advantages over a couple who have high, but dissimilar, levels of anger. After accounting for the effect of levels of anger, the similar couple would (a) better understand each other's emotional states (e.g., "she must be angry because I am"), (b) coordinate their responses during the conflict (e.g., both engage in the interaction rather than one disengaging), and (c) feel validated because they share the emotion of anger (e.g., "at least he is angry too, he must care about this"). Moreover, emotion similarity should predict relationship quality regardless of what social interaction is used to gauge similarity.[1]

On the basis of these findings and the VSA model of relationship development, we advanced three predictions. First, couples will be more similar to each other in their personality and emotional experience than they will be to strangers. Second, because an individual's personality predicts his or her emotional experience, we expect that two individuals who are similar in personality will also be similar in emotional experience. Moreover, based on the literature linking similarity to relationship satisfaction, we

---

[1] A reviewer of this article pointed out that two of the three relational benefits of emotion similarity presented are elements of Reis and Shaver's (1988) intimacy model. This highlights the interesting possibility that emotion similarity may increase relationship functioning by increasing intimacy. Although this question is tangential to the current work, we believe it is an excellent avenue for future research.

expect personality and emotion similarity to be positively associated with relationship satisfaction. Each of these effects should hold over and above the effects of mean levels of personality and emotional experience. Third, because the VSA model predicts that adaptive processes will mediate associations between enduring strengths and relationship quality, we proposed that emotion similarity will mediate the relationship between personality similarity and relationship satisfaction. Related to the final hypothesis, the VSA model predicts a bidirectional causal association between adaptive processes and relationship quality. Moreover, although it is not predicted by the current VSA model, there is evidence of an association between personality and relationship quality. Based on this, we also considered an alternative mediation model, in which relationship quality mediates the association between personality and emotional experience.

The Current Work

We present two studies to test these hypotheses. In the first study, a sample of 66 dating couples provided measures of personality and relationship quality and then completed a series of seven videotaped interactions, after which they rated the emotions they felt during each interaction. In the second study, a sample of 172 newlywed couples completed measures of relationship satisfaction and personality and then interacted in a series of four videotaped interactions, rating their own emotions before and after each interaction. A year later, 151 of these couples returned to complete the same procedure and measures.

Study 1: Similarity in Personality and Emotion in Dating Couples

Method

Participants

Sixty-six heterosexual romantic couples were recruited from the University of California, Berkeley and the surrounding community via flyers, the psychology department subject pool, and university organizations (e.g., sororities, cultural groups). Inclusion criteria included the couple being monogamous for at least 3 months and both members of the couple being of the same ethnic group: Asian American (24 couples), European American (27 couples), or Latino (15 couples).[2] Women were on average 20.4 years old ($SD = 3.59$), and men were on average 21.3 years old ($SD = 4.04$). The average couple had dated 17.6 months (range: 3 to 60 months). There were no differences in the three ethnic groups in the average age of the participants or the amount of time the couple had been dating. All procedures were approved by the University of California, Berkeley Institutional Review Board.

Procedure

Upon entrance to the lab, couples signed consent forms together. Sessions lasted approximately 1.5 to 2 hr. Participants first filled out demographic, personality, and relationship questionnaires in separate rooms. They were then reunited and seated across from each other in a video laboratory. After participating in the videotaped tasks described below, couples were debriefed and dismissed. Participants either received credit for a subject pool requirement or were paid between $15 and $25 each for their participation.

Interactions

Following a baseline report of emotions, each couple engaged in four types of semistructured interactions, producing a total of seven interactions. Two involved partners teasing each other, two involved partners talking about a current personal concern, two involved partners talking about past intimate relationships, and one involved the couple talking about their first date. These interactions were designed to mimic common, emotionally laden social interactions to investigate the effects of emotional experience and emotion display on relationship functioning. Experimenters gave instructions to the participants through an intercom. One partner was randomly assigned to speak first in the teasing, concern, and past partner interactions. During all discussions participants were instructed to act as they normally would outside the laboratory and to respond to their partner in whatever manner they saw fit. Partners sat facing each other in chairs approximately 3 ft (0.91 m) apart. Cameras were placed in cabinets behind and above the participants. The cameras had an unobstructed view of each partner.

Teasing. Each participant was given a set of initials (either A. D. or L. I.) and asked to create a nickname for their partner using the initials and a story justifying the nickname (see Keltner, Young, Heerey, Oemig, & Monarch, 1998). Participants were given a few minutes to generate their nicknames and stories and a piece of scratch paper to jot down notes. Participants then took turns delivering their nickname and story to each other.

Current personal concern. In the initial questionnaire packet, each member of the couple listed three personal, nonrelationship, current concerns and rated (a) the seriousness of the concern on a scale of 1 (*not serious*) to 5 (*very serious*) and (b) how much they had discussed the problem with their romantic partner on a scale of 1 (*not at all*) to 5 (*extensively*). The experimenter determined which one of the concerns was both the most serious and least discussed by taking the one that had the combination of the highest seriousness rating and lowest discussion rating. Partners were instructed to discuss their problem, in turn, for 5 min each.

Past partner. Next each partner was asked, in turn, to discuss their most important past romantic relationship (excluding the current relationship). They were asked to talk about what was best about the past relationship, what was worst about the past relationship, and what was the most important thing they learned from the past relationship. Each partner was given 5 min to talk.

First date. Finally couples were asked to have a conversation about their first date. Discussions averaged 3 min 15 s (range 1 to 8 min). Couples most often discussed what they considered to be their first date, why they considered it their first date, described what they did on that date, and how that date changed their relationship.

---

[2] Two couples did not complete the procedure. One withdrew after teasing, the second withdrew after discussing a past partner. Both of these couples had completed their demographic measures, and we computed their emotional convergence scores using the emotional reports they had provided.

Measures

Emotion. Before the first interaction and after each of the seven interactions (two teasing, two current concern, two past partner, one first date), participants reported their own emotions and estimated their partner's emotions on a scale of 0 (*no emotion*) to 8 (*extreme emotion*). Participants reported on the following emotions: amusement, anger, anxiety, arousal, concern, contempt, desire, discomfort, disgust, embarrassment, fear, guilt, happiness, jealousy, love, pride, sadness, shame, shyness, sympathy, and tension. Mean scores measuring positive emotion (amusement, desire, happiness, love, pride, and sympathy, $\alpha = .95$) and negative emotion (anger, anxiety, concern, contempt, discomfort, disgust, embarrassment, fear, guilt, jealousy, sadness, shame, shyness, and tension, $\alpha = .96$) were computed. Arousal was not included in either of these estimates because it was not clearly positive or negative.

These emotions were assessed for two reasons. First, previous work has shown that these emotions are commonly felt in at least one of the four interactions described above (e.g., embarrassment, shame, pride; Keltner et al., 1998; desire, love; Gonzaga et al., 2001). Second, previous work has shown that the experience of that emotion affects relationship functioning (e.g., jealousy; Buss, Larsen, Westen, & Semmelroth, 1992; contempt; Pasch & Bradbury, 1998). As the current work focused on convergence in the experience of emotions (as opposed to the attribution of emotion), the partner estimates of emotion are not discussed further.

Personality. Personality was measured using the Big Five Inventory (BFI; John, Donahue, & Kentle, 1991). The BFI is a 44-item measure that assesses the Big Five personality traits of Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience. These scales have shown good reliability and validity (John & Srivastava, 1999).

Determining personality and emotion similarity. We estimated personality similarity by correlating one partner's ratings on the 44 items of the BFI scale with the other partner's ratings on the 44 items of the BFI scale. The resulting profile correlation was used as an index of personality similarity. We estimated emotion similarity by correlating the 168 emotion reports of one partner across the eight different emotion report times with their partners' 168 emotion reports and retained the profile correlation as an index of emotion similarity. We applied a Fisher's Z transformation to the correlation distributions before conducting inferential analyses. However, we report raw correlation coefficients in the results for ease of interpretation. In this and Study 2, we correlated emotion reports from the same interaction rather than the same role. For example, we correlated couples' emotion reports when the man was teasing and the woman was being teased (same interaction, different roles) rather than correlating when the man was teasing with when the woman was teasing (different interactions, same roles). This is because we wanted to show how much partners had similar experience concurrently rather than how similar they were in the same social role.

Relationship quality. Relationship quality (RQ) was measured using three scales. First, participants reported on 1 (*not at all*) to 7 (*a lot*) scales how much they had discussed the future of the relationship, how committed the relationship was, and whether they were in love with their partner. These three questions were averaged into a single measure, women, $\alpha = .84$; men, $\alpha = .86$.

Second, the Marital Adjustment Test (MAT; H. J. Locke & Wallace, 1959) was modified for use in a dating sample. Finally, participants reported on a scale of 1 (*never*) to 5 (*always*), "Are you physically affectionate with your partner?" "Is your partner physically affectionate with you?" "Do you praise your partner?" "Does your partner praise you?" "Are you nice to your partner in other ways?" and "Is your partner nice to you in other ways?": women, $\alpha = .83$; men, $\alpha = .82$. After the three scales were scored separately, the total scores for each scale were standardized and combined for one total couple-level RQ score ($\alpha = .64$). (For other details of the procedure and results from this data set, see Campos et al., 2007; Gonzaga et al., 2006). In the current work female and male RQ scores were averaged for analysis. We did this for three reasons. First, the emotion and personality similarity measures were inherently dyadic, thus using mean couple levels of RQ would ensure that all measures were dyadic. Second, male and female RQ scores were correlated ($r = .52$), suggesting they could both be treated as indicators of dyadic RQ. Finally, the average of the scores is the most reliable indicator of each couple's level of RQ. We do, however, also report results predicting male and female RQ separately when appropriate.

Results

For all significant effects we report effect sizes in r^2, eta squared, or Cohen's *d*.

Controlling for Ethnicity

A one-way analysis of variance revealed no differences between ethnicities on emotion similarity, $F(2, 63) = 0.43$, *ns*, or RQ, $F(2, 63) = 1.53$, *ns*, but there were significant differences in personality similarity, $F(2, 63) = 3.26$, $p < .05$, $\eta^2 = .094$. Because of this, we controlled for ethnic composition of the couple as indicated below.

Are Partners Similar in Personality and Emotional Experience?

Our first hypothesis held that couples would be similar on personality and emotion. We first tested similarity levels against 0 using one-sample *t* tests. The average personality correlation, $r = .21$, $t(65) = 6.08$, $p < .001$, $r^2 = .044$, and the average emotion correlation, $r = .44$, $t(65) = 16.90$, $p < .001$, $r^2 = .194$, were significantly higher than 0, as expected.

Our current sample drew largely from the student population of a single university that was, presumably, more homogeneous than the general population. We therefore also reasoned that the actual level of similarity between randomly paired individuals might be greater than 0 for both personality and emotion similarity. We therefore created an alternative baseline that represented the average correlations of men and women who were not romantic partners. To do this, we took the woman from each couple and paired her with all men in the sample who were not her partner. We computed profile correlations with each of these partners and then took the average of all of these correlations. We used a Fisher's Z transformation on these correlations and used this as a comparison point. We used paired-sample *t* tests in this analysis for two reasons. First, both estimates shared the women's estimates, ne-

cessitating a paired-sample test. Second, our samples were not representative, and one-sample t tests are based on the assumption that the comparison point is representative of the population. As expected, the average emotion correlation ($r = .44$) between partners was greater than the comparison emotion correlation, $r = .36$, $t(65) = 5.21$, $p < .001$, $d = 1.29$. However the average personality correlation ($r = .21$) between partners was not significantly greater than the comparison personality correlations, $r = .19$, $t(65) = 0.85$, ns.

Does Personality Similarity Predict Emotion Similarity?

Our second hypothesis held that personality similarity would relate to emotion similarity. As expected, a regression analysis showed that personality similarity predicted emotion similarity after controlling for ethnicity of the couple, $\beta = .36$, $t(63) = 2.90$, $p < .01$, $d = 0.73$.

Does Personality Similarity Predict RQ?

Our second hypothesis also held that personality similarity would relate to RQ. Indeed, personality similarity positively predicted RQ after controlling for ethnicity, as expected, $\beta = .37$, $t(63) = 3.02$, $p < .01$, $d = 0.76$. We also tested for sex differences in our models by predicting male and female relationship quality separately. Personality significantly predicted both men's, $\beta = .31$, $t(63) = 2.51$, $p < .05$, $d = 0.63$, and women's, $\beta = .30$, $t(63) = 2.38$, $p < .05$, $d = 0.60$, RQ.

Does Emotion Similarity Predict RQ?

Our second hypothesis held that emotion similarity would relate to RQ. As expected, emotion similarity positively predicted RQ after controlling for ethnicity, $\beta = .34$, $t(63) = 2.91$, $p < .01$, $d = 0.73$. Emotion similarity predicted women's, $\beta = .39$, $t(63) = 3.33$, $p < .01$, $d = 0.84$, but not men's satisfaction, $\beta = .19$, $t(63) = 1.55$, $p = .12$.

Finally, to test for the context independence of our effects, we ran partial correlations with emotion similarity estimates derived from each individual interaction (e.g., teasing, past partner). Similarity in emotional experience predicted relationship quality in three of the four interactions after controlling for ethnicity, teasing, $r(63) = .28$, $p < .05$, $r^2 = .078$; past partner discussion, $r(62) = .34$, $p < .01$, $r^2 = .116$; and the first date discussion, $r(62) = .44$, $p < .01$, $r^2 = .194$. Emotion similarity in the current concern

discussion did not significantly predict relationship quality, $r(63) = .11$, ns.

Does Personality or Emotional Experience Explain the Association Between Similarity and RQ?

An important question concerns whether the effects of similarity exist over and above the main effects of personality and emotion. Until these effects are removed, one cannot be sure whether the positive effect of similarity is due to the similarity between the couples or to a main effect, such as high levels of positive emotion or low levels of negative emotion during the interaction. Therefore, we conducted partial correlations for the association between similarity and RQ, controlling for ethnicity and either mean personality or mean emotional experience. As shown in Table 1, adding each of the Big Five scale scores or the amount of positive or negative emotion experienced did not account for the association between our similarity measures and RQ. Even after controlling for mean levels of personality or emotional experience, we continued to find a significant and positive association between similarity and RQ.

Does Emotion Similarity Mediate the Association Between Personality Similarity and RQ?

Our final hypothesis held that emotion similarity would mediate the association between personality similarity and relationship quality. In the above analysis we established the first three criteria for a mediation analysis: significant associations between personality similarity, emotion similarity, and RQ. In the final step, we predicted RQ with personality similarity and emotion similarity simultaneously, after controlling for ethnicity. As shown in Figure 2, the beta for the association between personality similarity and RQ dropped but was still significant, suggesting partial mediation. A Sobel test showed a mediation effect that neared significance, $Z = 1.68$, $p < .10$. The mediation effect was significant when predicting women's satisfaction, $Z = 1.97$, $p < .05$, but the conditions for mediation were not met when predicting men's satisfaction only.

Alternative Mediation Model

As highlighted in the introduction, we considered an alternative mediation model in which RQ would mediate the association

Table 1

The Relationship Between Similarity Measures and Relationship Satisfaction Controlling for Personality and Emotion in Study 1

| | | Control | | | | | | |
| | | Personality | | | | | Emotion | |
Predictor	Zero order	Extraversion	Agreeableness	Conscientious	Neuroticism	Openness	Positive	Negative
Personality similarity	.36**	.34**	.28*	.31*	.30*	.30*	.33*	.34**
Emotion similarity	.35**	.33**	.35**	.33**	.29*	.31*	.29*	.31*

Note. All analyses also control for ethnicity of the couple. Numbers are partial correlations.
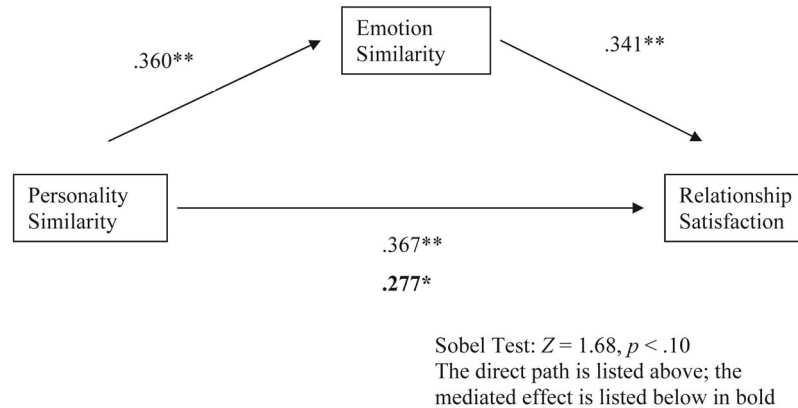* $p < .05$. ** $p < .01$.

Figure 2. Mediation effect of emotion similarity in the relationship between personality similarity and relationship satisfaction in Study 1.

between personality similarity and emotion similarity. The mediation effect neared significance via a Sobel test, $Z = 1.69$, $p < .10$.

Discussion

The results of the first study supported our hypotheses that members of a couple would be similar in personality and emotional experience, that both types of similarity would predict RQ, and that emotional similarity would mediate the association between personality similarity and relationship quality, although this last effect only approached significance. These results support the hypothesis that similarity in the momentary experience of emotion is a proximal mechanism that in part accounts for the association between personality similarity and RQ.

One result did not support our predictions. Partners did not have more similar personalities than randomly paired couples. This finding points to one limitation of Study 1, that our sample was a group of college-age dating couples, which limits the generalizability of the findings. This may also explain why randomly assigned pairs were as similar as currently dating partners. One might expect that there was higher level of similarity among random pairs of individuals who were mostly students at the same university. Moreover, we were studying dating couples, which combined couples who would be making a longer commitment and those who were not. If couples who were eventually going to dissolve their relationship were less similar to their partners than those who were going to continue their relationship, it would limit the personality similarity correlation. However, these results are consistent with those of Luo and Klohnen (2005), who also found that the personality similarity for real couples was no larger than that of randomly paired couples. Also, we could only investigate these relationships concurrently. If personality and emotion similarity promote relationship satisfaction, then changes in personality and emotion similarity would predict changes in relationship satisfaction over time.

To address these issues we conducted Study 2, which assessed personality and emotion as well as relationship satisfaction in a set of newlywed couples twice, at times 1 year apart, early in their marriage. This methodology allowed us to replicate our findings in Study 1 in a sample of newlyweds and to test our hypotheses about convergence.

Study 2: Similarity and Convergence in Personality and Emotion in Married Couples

In Study 2, we investigated the associations between personality similarity, personality convergence, emotional similarity, emotion convergence, and relationship satisfaction in a longitudinal study of newlywed couples. Study 2 builds on the findings of Study 1 in three main ways. First, it aims to replicate the findings of Study 1 in a different sample and with a different type of couple. Second, our sample in Study 2 was much larger, providing more powerful tests of our hypotheses. Third, the longitudinal nature of the study allowed us to investigate personality and emotion convergence. Although some research has found that couples tend to converge more in their emotional experience over time (Anderson et al., 2003), this effect may be limited to early relationship development. Although married couples are likely to have similar personalities, their personalities, *on average*, do not become more similar over time (Caspi & Herbner, 1990; Caspi et al., 1992). However, this work did not show how individual couples converged or diverged in personality. We consider it highly likely that some couples would change in how alike they were over time. If similarity predicts relationship satisfaction, then the extent to which a particular couple becomes more or less alike in personality or emotional experience should have ramifications for their relationship.

Therefore, in Study 2 we advance the same hypotheses as Study 1 with several important additions. First, based on our findings in Study 1 that similarity in personality, emotional experience, and relationship satisfaction are interrelated, we believe that personality convergence and emotion convergence will positively relate to each other and to changes in relationship satisfaction. That is, those couples who grow more alike each other in personality and emotions will be more satisfied than those who do not. Second, emotion convergence will mediate the association between personality convergence and change in relationship satisfaction. That is, the positive effect of couples growing more alike in personality on relationship satisfaction will, at least in part, be accounted for by couples growing more alike each other in emotional experience.

Method

Participants

We recruited 172 couples from the greater Los Angeles area using marriage license records from between 1993 and 1994. Marriage license records included spouses' addresses, age, years of education, and previous marriages. Eligibility criteria were that the marriage be the first marriage for both spouses, each spouse be over 18 years of age, and each spouse have at least a 10th grade education. Couples who met these criteria were sent letters inviting them to participate in a longitudinal study of marriage in which they would earn $75. A postage-paid response card was included for couples to return if they were interested in participating. Of the 3,606 invitations that were sent, 637 couples replied (17.8%) expressing interest in participation, 41 letters were returned as undeliverable (1.1%) and 2,928 letters (81.2%) were unanswered.

The 637 couples who expressed interest in the study were further screened over the telephone. In addition to confirming the above criteria, spouses also had to speak English, have no children (biological or step), and have no immediate plans to move from the greater Los Angeles area. In addition, wives had to be younger than 35 years of age to maximize the possibility that the couples would become parents during the project.

The 172 couples who met the eligibility criteria and kept their first appointment comprised the initial sample. At the initial laboratory session, couples, on average, had been married fewer than 6 months (range: 1–8 months). On average, husbands were 27.56 ($SD = 3.9$) years old, had 15.3 ($SD = 2.2$) years of education (3rd year of college), and reported an annual income of between $20,000 and $30,000. On average, wives were 26.00 ($SD = 3.4$) years old, had 15.5 ($SD = 1.6$) years of education, and reported an average annual income of between $10,000 and $20,000. More than three fifths of the sample (64.2%) were European American; the remaining participants were predominantly Asian American or Latino. Just under three fourths of the sample were Protestant or Catholic (72.4%); most of the remainder reported no religious affiliation or were Jewish or Mormon.

Procedure

Initial laboratory session. Couples were invited to attend a laboratory session within 6 months of being married. Spouses completed questionnaires and individual interviews, as well as a series of four videotaped social interactions. The first two discussions were about an area of disagreement nominated by one of the two spouses. Couples then had a 30-min break in which they completed additional questionnaires. The second two discussions were designed to elicit social support from the other spouse. Spouses sat facing each other in chairs approximately 3 ft (0.91 m) apart. Cameras were placed in sight, behind, and above the shoulder of each spouse to gain an unobstructed view of each partner.

Conflict discussions. From their initial packet of questionnaires, each partner completed the Marital Problem Inventory (Geiss & O'Leary, 1981). In this measure they were asked to rate how much difficulty or disagreement they had with their spouse in 19 different common areas of conflict (e.g., communication, money management) on a scale of 1 (*not a problem*) to 11 (*major problem*). Two blank spaces were listed for additional difficulties. The experimenters highlighted 3 areas of high conflict for each

spouse. Each spouse was given 10 min to discuss one of the highlighted topics of conflict. The couples were told to discuss the issue, and even if they could not solve the problem, they should "work toward a solution." Couples were told that they should have the discussion as they would at home, there was no need to describe the problem or explain names or places, the experimenters would turn down the volume on the recording equipment during the discussions so they would not be heard, and they would have 10 min for the discussion and should spend the entire time talking about that topic. The couple was left alone in the room for 10 min, at the end of which, the experimenter knocked on the door to signal the discussion time was over.

Social support discussions. Each social support interaction was 10 min. At random, one spouse was selected and asked to "talk about something that you would like to change about yourself," with the caveat that this topic could not be a source of tension or concern in the marriage. The partner was instructed to "be involved in the discussion and respond in whatever way you wish." Roles were then reversed in the second conversation. Before each discussion the couple was told that they should discuss the topic the way they normally would at home, that the experimenters would not listen to the conversation as they were having it, and that they had 10 min to discuss the topic. The most popular topics discussed included getting into shape, losing weight, or changing appearance and completing personal goals (e.g., a hobby, at work, in relationships with others).

Measures

Emotion. Immediately before and after each of the four discussions participants completed the Positive and Negative Affect Scale (Watson, Clark, & Tellegen, 1988), a 20-item scale measuring positive and negative affective states that shows good validity and reliability. Participants were instructed to rate, on a scale of 1 (*not at all*) to 5 (*very much*), how much of the following they were feeling "at this moment": interested, distressed, excited, upset, strong, guilty, scared, hostile, enthusiastic, proud, irritable, alert, ashamed, inspired, nervous, determined, attentive, jittery, active, and afraid.

Personality. Personality was measured using the NEO (McCrae & Costa, 1987). The NEO is a 60-item measure that has five 12-item subscales measuring the Big Five personality traits: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience. The NEO has shown good reliability and validity (McCrae & Costa, 1987).

Determining similarity and convergence in personality and emotion. We estimated personality similarity by creating a profile correlation using the 60 items on the NEO scale measured at Time 1 and Time 2. To estimate emotional similarity, we computed a profile correlation using the 160 emotion reports gathered across the eight different emotion reports gathered at Time 1 and Time 2. To estimate each couple's personality convergence, we controlled for Time 1 personality similarity when testing the effects of Time 2 personality similarity. To estimate each couple's emotion convergence, we controlled for Time 1 emotion similarity when testing the effects of Time 2 emotion similarity. Similarly, when testing for changes in marital satisfaction, we controlled for Time 1 satisfaction when testing the effects of Time 2 satisfaction.

Marital satisfaction.   Marital satisfaction was measured using the MAT. The MAT is a widely used measure of marital satisfaction that produces scores ranging from 2 to 158, has adequate reliability (split half = .90), and discriminates between distressed and nondistressed spouses (H. J. Locke & Wallace, 1959). The correlations of wives' and their husbands' MAT scores were strong (Time 1, $r = .52$, Time 2, $r = .59$). For the reasons outlined in Study 1, we averaged the scores of the wife and husband to create a single dyadic indicator of relationship satisfaction for analysis and report results in each gender separately when appropriate.

Follow-up assessments.   Twelve months after the initial data collection, a very similar laboratory session was conducted, with identical measures of personality and satisfaction and identical conflict and social support discussions. A sample of 151 couples returned to complete the second laboratory session. We tested for differences between the couples who did and did not participate in the second laboratory session in personality, personality similarity, emotional experience, emotion similarity, and relationship satisfaction at Time 1 and found only one difference. Those couples who attended the second laboratory session were more satisfied ($M = 258.58$, $SD = 27.46$) than those who did not attend the second laboratory session, $M = 243.62$, $SD = 34.65$, $t(170) = 2.26$, $p < .05$. Couples were paid \$75 for each laboratory session.[3]

Results

Are Married Partners Similar in Their Personality and Emotions?

Our first hypothesis held that couples would be similar in personality and emotion. We tested the similarity correlations against 0. The average personality correlations, Time 1 average $r = .42$, $t(171) = 24.46$, $p < .001$, $d = 3.74$; Time 2 average $r = .44$, $t(150) = 23.00$, $p < .001$, $d = 3.76$; and the average emotion correlations, Time 1 average $r = .59$, $t(171) = 30.43$, $p < .001$, $d = 4.65$; Time 2 average $r = .58$, $t(150) = 26.43$, $p < .001$, $d = 4.32$, were all significantly higher than 0.

As in Study 1, we reasoned that the actual level of similarity between randomly paired individuals in this sample might be greater than 0 but less than the level observed among partners. To determine a baseline representing the average level of similarity between random pairs, we took the woman from each couple and paired her with all other men in the sample who were not her partner. We computed the profile correlations with each of these partners and then took the average of all of these correlations. We used a Fisher's Z transformation on each of these correlations and used this as a comparison point. As in Study 1, we used paired-sample t tests. The average emotion correlation between partners was greater than the comparison emotion correlation at both time points, Time 1 comparison $r = .56$, $t(171) = 3.23$, $p < .001$, $d = 0.49$; Time 2 comparison $r = .55$, $t(150) = 2.16$, $p < .05$, $d = 0.35$. The average personality correlation between partners was also greater than the comparison correlation at both time points, Time 1 comparison $r = .22$, $t(171) = 15.05$, $p < .001$, $d = 2.30$; Time 2 comparison $r = .21$, $t(150) = 15.28$, $p < .001$, $d = 2.50$.

Do Personality and/or Emotional Experience Converge Over Time?

We also conducted tests to determine whether, on average, couples converged in their personality and emotions between the two laboratory sessions. This was tested with two paired-sample t tests conducted between Time 1 and Time 2 personality similarity and Time 1 and Time 2 emotion similarity for couples that completed both sessions. Time 2 personality similarity, $M = .44$, was significantly higher than Time 1 personality similarity, $M = .42$, $t(150) = -2.34$, $p < .05$, $d = 0.38$. Time 1, $M = .59$ and Time 2, $M = .58$; emotion similarity was not different, $t(150) = 1.03$, *ns*. On average, couples converged in self-reported personality but not emotional experience.

Does Personality Similarity Predict Emotion Similarity?

Our second hypothesis held that personality similarity would predict emotion similarity concurrently. Personality similarity positively predicted emotion similarity as expected, Time 1, $\beta = .37$, $t(171) = 5.21$, $p < .001$, $d = 0.80$; Time 2, $\beta = .38$, $t(145) = 5.00$, $p < .001$, $d = 0.83$.

Does Personality Similarity Predict Relationship Satisfaction?

Our second hypothesis also held that personality similarity would predict relationship satisfaction. Indeed, personality positively predicted relationship satisfaction: Time 1, $\beta = .45$, $t(171) = 6.59$, $p < .001$, $d = 1.01$; Time 2, $\beta = .52$, $t(150) = 7.52$, $p < .001$, $d = 1.23$. This effect held when predicting husbands' satisfaction, Time 1, $\beta = .40$, $t(171) = 5.61$, $p < .001$, $d = 1.15$; Time 2, $\beta = .48$, $t(150) = 6.75$, $p < .001$, $d = 0.84$, and wives' satisfaction, Time 1, $\beta = .39$, $t(171) = 5.12$, $p < .001$, $d = 0.78$; Time 2, $\beta = .45$, $t(150) = 6.18$, $p < .001$, $d = 1.01$.

Does Emotion Similarity Predict Relationship Satisfaction?

Our second hypothesis also held that emotion similarity would predict relationship satisfaction. This was the case, as emotion similarity positively predicted relationship satisfaction: Time 1, $\beta = .33$, $t(171) = 4.61$, $p < .001$, $d = 0.71$; Time 2, $\beta = .41$, $t(150) = 5.46$, $p < .001$, $d = 0.89$. This effect held when predicting husbands' satisfaction, Time 1, $\beta = .29$, $t(171) = 3.93$, $p < .001$, $d = 0.60$; Time 2, $\beta = .34$, $t(150) = 4.40$, $p < .001$, $d = 0.73$, and wives' satisfaction, Time 1, $\beta = .29$, $t(171) = 3.98$, $p < .001$, $d = 0.61$; Time 2, $\beta = .39$, $t(150) = 5.14$, $p < .001$, d = 0.84.

To test for context independence in our effects, we also computed correlations between emotion similarity derived from each interaction separately and from relationship satisfaction. These were both significant as expected, social support, Time 1, $r(172) = .27$, $p < .01$, $r^2 = .073$; Time 2, $r(151) = .38$, $p < .01$, $r^2 = .144$,

---

[3] Because the sample in Study 2 contained a wide variety of ethnicities and many mixed ethnicity couples, it was not possible to control for ethnicity in the analysis of Study 2.

and conflict discussions, Time 1, $r(172) = .30$, $p < .01$, $r^2 = .090$; Time 2, $r(151) = .37$, $p < .01$, $r^2 = .138$.

Does Emotion Similarity Mediate the Association Between Personality Similarity and Relationship Satisfaction?

Our third hypothesis held that emotion similarity would mediate the association between personality similarity and relationship satisfaction. In the above analyses, we established the first three criteria for a mediation analysis: significant associations between personality similarity, emotion similarity, and relationship satisfaction. We therefore predicted relationship satisfaction with personality similarity and emotion similarity simultaneously. As shown in Figures 3 and 4, the beta for the association between personality similarity and relationship satisfaction dropped, although it was still significant—suggesting partial mediation. Sobel tests were conducted to see whether these changes were significant. These tests were significant at Time 1, $Z = 2.48$, $p < .05$, and Time 2, $Z = 2.95$, $p < .001$. This held true when predicting husbands' satisfaction only, Time 1, $Z = 2.03$, $p < .05$; Time 2, $Z = 2.45$, $p < .05$, and wives' satisfaction only, Time 1, $Z = 2.09$, $p < .05$; Time 2, $Z = 2.80$, $p < .01$.

Personality and Emotion Convergence

Finally, we tested to see whether personality and emotion convergence predicted changes in relationship satisfaction. If our hypothesis is true, one would expect that couples that converged on personality or emotional experience would be more satisfied than those who diverged.

Does Personality Convergence Predict Emotion Convergence?

By our hypothesis, couples who converged in their personality would also converge in their emotional experience. Indeed, a regression analysis showed personality convergence positively predicted emotion convergence, $\beta = .22$, $t(145) = 2.71$, $p < .01$, $d = 0.45$.

Does Personality Convergence Predict Change in Marital Satisfaction?

We also predicted that couples who grew more alike in their personality would have higher relationship satisfaction. To test this, we predicted Time 2 relationship satisfaction with our estimate of personality convergence and Time 1 satisfaction. As expected, personality convergence positively predicted changes in relationship satisfaction, $\beta = .30$, $t(145) = 3.47$, $p < .01$, $d = 0.58$. This effect held when predicting husbands' satisfaction, $\beta = .23$, $t(145) = 2.72$, $p < .01$, $d = 0.45$, and wives' satisfaction, $\beta = .33$, $t(145) = 3.42$, $p < .001$, $d = 0.57$. To understand the nature of this effect, we determined the mean raw change in relationship satisfaction for the upper and lower quartiles of personality convergence. Those in the lowest quartile dropped in satisfaction, on average by 11.21 points, whereas those in the highest quartile went up in satisfaction, on average by 4.20 points.

Does Emotion Convergence Predict Change in Marital Satisfaction?

Finally, we predicted that couples who grew more alike in their emotional experience would have higher relationship satisfaction that those who did not. To test this, we predicted Time 2 relationship satisfaction with our estimate of emotion convergence and Time 1 relationship satisfaction. Indeed, emotion convergence positively predicted relationship satisfaction, $\beta = .29$, $t(145) = 3.49$, $p < .01$, $d = 0.58$. This effect approached significance when predicting husbands' satisfaction, $\beta = .14$, $t(145) = 1.70$, $p < .10$, $d = 0.28$, and was significant when predicting wives' satisfaction, $\beta = .40$, $t(145) = 4.20$, $p < .001$, $d = 0.70$.

Finally, to see whether this effect was context independent, we tested this association using emotion similarity estimates separately derived from the social support and conflict interactions. Both of these effects were significant: social support, $r(142) = .23$, $p < .01$, $r^2 = .053$; conflict, $r(142) = .28$, $p < .01$, $r^2 = .078$. To understand the nature of this effect, we determined the mean raw change in relationship satisfaction for the upper and lower quartiles of emotion convergence. Those in the lowest quartile dropped
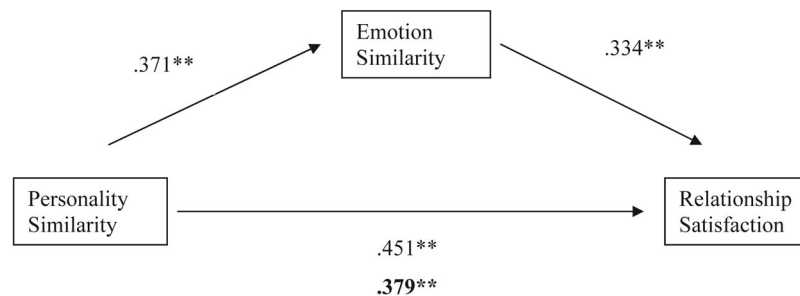
Sobel Test: $Z = 2.48$, $p < .05$
The direct path is listed above; the mediated effect is listed below in bold

Figure 3. Mediation effect of emotion similarity in the relationship between personality similarity and relationship satisfaction at Time 1 in Study 2.
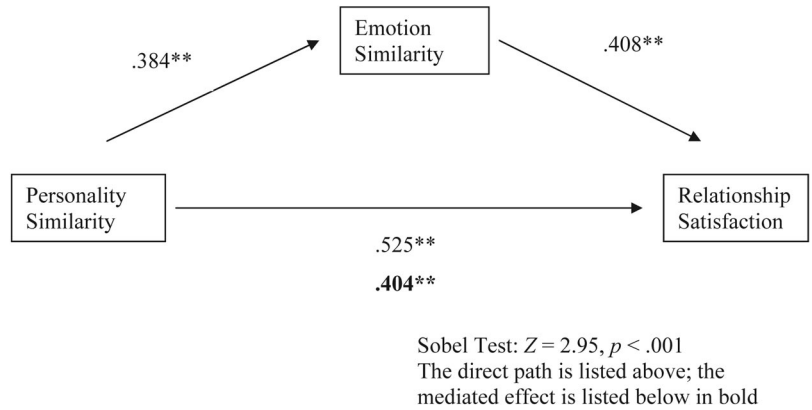
Figure 4. Mediation effect of emotion similarity in the relationship between personality similarity and relationship satisfaction at Time 2 in Study 2.

in satisfaction, on average by 13.24 points, whereas those in the highest quartile dropped in satisfaction, on average by 2.55 points.

Does Emotion Convergence Mediate the Association Between Personality Convergence and Change in Relationship Satisfaction?

Finally, we predicted that emotion convergence would mediate the association between personality convergence and change in relationship satisfaction. In the above analyses, we established the first three criteria for a mediation analysis: significant bivariate associations between personality convergence, emotion convergence, and change in relationship satisfaction. We then predicted Time 2 relationship satisfaction with Time 1 relationship satisfaction as well as personality and emotion convergence simultaneously. As shown in Figure 5, the beta for the association between personality convergence and change in relationship satisfaction dropped, although it was still significant—suggesting partial mediation. A Sobel test showed that this change was significant, $Z = 1.97$, $p < .05$. This held true when predicting wives' satisfaction only, $Z = 2.13$, $p < .05$, but the conditions for

mediation were not met when predicting husbands' satisfaction only.

Alternative Mediation Model

As a comparison, we tested the alternative mediation model proposed in Study 1: Marital satisfaction would mediate the association between personality similarity/convergence and emotion similarity/convergence. This model revealed significant mediation effects at Time 1, $Z = 2.48$, $p < .05$, Time 2, $Z = 2.37$, $p < .05$, and in the convergence analysis, $Z = 2.21$, $p < .05$, by the Sobel test.

Does Personality or Emotional Experience Explain the Association Between Similarity/Convergence and Satisfaction?

As in Study 1, we conducted analyses to determine whether the association between our similarity/convergence variables and relationship satisfaction could be explained either by mean levels of personality or by emotional experience. We ran partial correlations
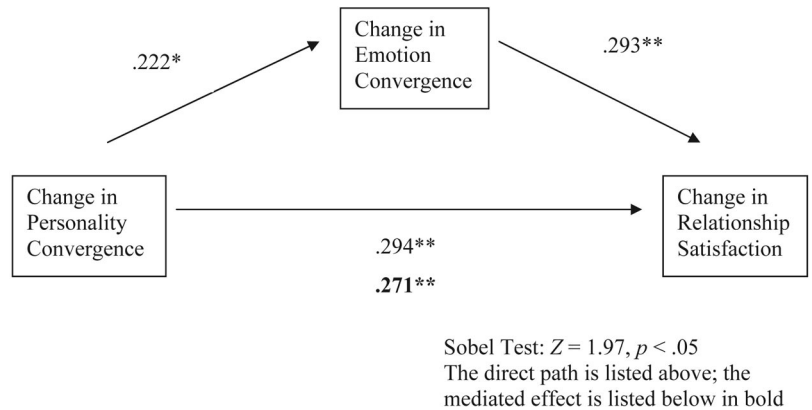

Figure 5. Mediation effect of change in emotion convergence in the relationship between change in personality convergence and change in relationship satisfaction in Study 2.

between our similarity/convergence variables and relationship satisfaction controlling for mean levels of personality or emotion. As shown in Table 2, adding each of the Big Five scale scores or the amount of positive or negative emotion experienced did not account for the association between our similarity measures and relationship satisfaction. In all 42 analyses, when controlling for personality or emotional experience the association between our similarity/convergence measures and relationship satisfaction remained significant.

Does Personality or Emotional Experience Predict Personality Convergence or Emotion Convergence?

Finally, we wanted to determine whether mean levels of Time 1 personality and emotion predicted personality and emotion convergence. To do this we conducted partial correlations where personality and emotion measures taken at Time 1 were related to the personality and emotion similarity measures taken from Time 2 after controlling for the personality and emotion similarity measures taken at Time 1. Emotion measures taken in the laboratory at Time 1 did not predict either personality or emotion convergence. Time 1 extraversion, $r(148) = .20$, $p < .05$, $r^2 = .04$, and agreeableness, $r(148) = .16$, $p < .05$, $r^2 = .026$, both correlated positively with emotion convergence. Time 1 conscientiousness, $r(148) = .21$, $p < .05$, $r^2 = .044$, positively correlated with personality convergence.

Discussion

Study 2 replicates the findings of Study 1 and extends them in a number of important ways. First, it shows that the associations between personality similarity, emotion similarity, and relationship satisfaction are similar among married couples and dating couples. In fact, unlike Study 1, our couples were more similar to each other than to strangers in the sample in both emotional experience and personality. This finding supports our hypothesis that couples who are similar in personality are more likely to make greater commitments; married couples were more alike in personality than were randomly paired couples, whereas the dating couples in Study 1 were not more alike in personality than were randomly paired couples. Second, Study 2 shows that married

couples converge in personality, but not emotional experience, across the 1st year of their marriage. Most important, personality and emotion convergence predict changes in relationship satisfaction. Couples who became more alike in personality and emotional experience generally maintained their levels of marital satisfaction, whereas those who became less alike in personality and emotional experience faced steep drops in marital satisfaction over the 1.5 years of marriage. Moreover, emotion similarity/convergence partially mediated the association between personality similarity/convergence and relationship satisfaction. Finally, none of these effects were accounted for by mean levels of personality or emotional experience.

General Discussion

In studies of college-age dating partners and newlywed married couples, we found that partners were similar in their personality and emotions, that personality and emotion similarity were significantly and positively correlated to each other, and that personality and emotion similarity positively correlated with relationship quality. Moreover, emotion similarity predicted relationship quality regardless of which interaction was used to derive the similarity estimate. In dating couples, this was true when they teased each other, talked of a past partner, or discussed their first date. In married couples, this was true in conflict and social support interactions. Thus the positive relationship effect of emotion similarity seems to be context independent; being similar is beneficial to the relationship regardless of what type of interaction partners engage in and is independent of mean levels of personality and emotional experience. We believe there are limitations to this effect. Although some of our interactions were designed to elicit negative emotion (conflict, social support), it is unlikely that couples in our studies would have demonstrated a spiral of increasing negative affect because they were in the laboratory. In situations of very high negative affect the positive effect of similarity may be washed out or reduced. Moreover, we only assessed emotional experience. If our couples were able to regulate the expression of negative affect, it may have stopped a negative affect cycle before it started. Thus, although our results support the counterintuitive idea that similarity in moderate levels of negative affect may have some

Table 2

The Relationship Between Similarity Measures and Relationship Satisfaction Controlling for Personality and Emotion in Study 2

| Predictor | Zero order | Control | | | | | | |
| | | Personality | | | | | Emotion | |
		Extraversion	Agreeableness	Conscientious	Neuroticism	Openness	Positive	Negative
Personality similarity								
Time 1	.45**	.29**	.33**	.37**	.22**	.46**	.43**	.36**
Time 2	.52**	.46**	.42**	.47**	.37**	.53**	.49**	.48**
Change	.30**	.31**	.28**	.26**	.29**	.31**	.29**	.28**
Emotion similarity								
Time 1	.33**	.17*	.25**	.30**	.16*	.33**	.28**	.18*
Time 2	.41**	.37**	.37**	.40**	.31**	.43**	.35**	.31**
Change	.28**	.30**	.29**	.27**	.28**	.28**	.26**	.20*

Note. Numbers are zero order and partial correlations.
* $p < .05$.   ** $p < .01$.

benefits for a relationship, more work is needed before the assertion can be made that similarity in high levels of negative affect is similarly beneficial.

Personality similarity may also manifest through similarity in emotions expression or physiology. In theory, information about internal experience is conveyed through emotional expression (e.g., Ekman, 1992) such that if partners are similar in displaying fewer emotions (e.g., at the low end of emotional expressivity), it may limit the degree to which similarity in emotions predicts relationship satisfaction. Likewise similarity in physiology may have important implications for both the quality of the relationship and individual health that point to a potential hazard of similarity. In as much as negative patterns of arousal are shared between partners, both may suffer the health costs of that discussion (e.g., Robles & Kiecolt-Glaser, 2003).

In both studies, we found evidence that emotion similarity mediated the association between personality similarity and relationship satisfaction, as we expected. We also found these same findings with personality convergence, emotion convergence, and changes in relationship satisfaction in Study 2. Newlywed couples who became more alike in their personalities and emotions were less likely to drop in relationship satisfaction across the 1st year of marriage. Thus, the effect of similarity on relationship satisfaction is not static. Although couples, on average, may converge relatively little in personality and emotions across time, this does not mean that all couples remain the same. As time passes and experience in the relationship grows, some couples converge and some diverge. Our data suggest that converging and diverging have significant ramifications for the relationship; converging bodes well and diverging bodes poorly.

An alternative mediation model, in which relationship satisfaction mediated the association between personality similarity and emotion similarity, also performed well when tested. The VSA model as shown in Figure 1 predicts bidirectional effects from adaptive processes to relationship quality. Thus, the VSA model supports multiple causal pathways. Because both models showed significant partial mediation, it is likely that emotion similarity affects relationship satisfaction (i.e., couples who are more similar are more likely to be happy) and relationship satisfaction affects emotion similarity (i.e., couples who are happier are more likely to experience similar emotion). Thus, the causal association between adaptive processes and relationship quality is, as predicted by the VSA model, bidirectional. The significant alternative mediation model also shows that there may be a direct influence of enduring strengths/vulnerabilities on relationship quality, at least in some cases. Thus, the present findings suggest potential revisions to the current VSA model. It may also be that this effect is mediated through different adaptive processes that were not measured in this study. At the very least, our findings suggest that there are likely multiple avenues of effect and causality in the VSA model to be explored in future research.

In Study 2 we found that newlywed couples, on average, converged in their personalities the first 1.5 years of their marriage. This is interesting, considering that previous research has shown the couples on average do not converge on personality over time (Caspi & Herbner, 1990; Caspi et al., 1992). It should be noted that this effect was quite small, but it may be indicative of couples continuing to incorporate aspects of each other into the self (Aron & Aron, 1991) during the early stages of marriage. This effect may

subside as the marriage continues and couples reach a ceiling of similarity.

The studies presented here provide relatively solid evidence that personality similarity and convergence promote relationship satisfaction by setting the stage for similar emotional experiences. However, although our mediation effects were all significant, or close to significant, they were not large. We believe emotion similarity and convergence are two of many pathways by which personality similarity and convergence may influence relationship functioning. Personality similarity and convergence likely lead to similar opinions, attributions, and values among romantic partners. At the same time, we assessed a limited set of emotions in a small sample of interactions in the laboratory. Aggregating a couple's emotion similarity and convergence over many more emotions and situations would likely produce stronger effects.

This study provides support for the contention in the VSA model of relationship development that one link between enduring strengths/vulnerabilities and marital quality occurs via adaptive processes. Although other studies have found similar results (e.g., see Davila, Bradbury, & Fincham, 1998), no study to date of which we are aware has investigated personality traits as enduring strengths/vulnerabilities and emotions as adaptive process, despite the fact that both of these constructs have long histories of research linking them to each other and to relationship quality. Our findings support the theory that enduring vulnerabilities, be they personality, attachment style, family history, or the like, promote the nature of day-to-day interactions that have important ramifications for the relationship. In turn, this opens the door to exploring exactly how personality affects these mediating processes. For example, one possibility is that enduring strengths/vulnerabilities directly influence behavior, which in turn affects the emotional content of the interaction. Individuals high in neuroticism, for example, might feel more anxiety and display more negative emotion, subtly altering the tone of the interaction. Another possibility is that enduring strengths/vulnerabilities may alter the way individuals perceive the world in such a way as to change the nature of the interaction (Karney, Bradbury, Fincham, & Sullivan, 1994). Here, individuals high in neuroticism may interpret a partners' benign and ambiguous comment as hostile and reciprocate the hostility, thereby escalating the conflict rather than reducing it.

This line of work dovetails nicely with the burgeoning area of research on the social functions of emotions (Keltner & Haidt, 1999). These accounts hold that emotions coordinate moment-to-moment interactions between partners and are therefore critical elements in understanding the nature, and ultimate success or failure of, interpersonal relationships (Gonzaga et al., 2001). In addition to conveying information, emotions also organize behavior and elicit responses from interaction partners (Keltner & Kring, 1998). The expression of emotion may actually entice others to act in similar ways. Thus, the expression of emotion may promote similarity in emotional experience, via emotional contagion. If couples become increasingly similar in their daily emotional responses, it may feed back into partners converging in broader more static characteristics such as personality. For example, if an individual consistently elicits smiling and positive emotion from a sour and shy partner, over time, that partner may become more agreeable and extraverted.

In conclusion, we found in dating and married couples that partners were similar in their personalities and emotional experi-

ence. In turn, similarity related to better relationship functioning, suggesting that emotional similarity may be a proximal mechanism linking personality similarity and relationship satisfaction. When partners converged in personality and emotional experience over time, the convergence related to better relationship functioning. Finally, emotion convergence mediates the association between personality convergence and changes in relationship satisfaction. For many years, research investigated the numerous ways in which relationship partners are similar. More recently, researchers have highlighted the value of similarity in relationships; similarity relates to better relationship functioning. Our work turns to the process of how similarity promotes relationship functioning, and it seeks to better understand the proximal processes between personality and relationship well being.

References

Abe, J. A., & Izard, C. E. (1999). A longitudinal study of emotional expression and personality relations in early development. *Journal of Personality and Social Psychology, 77,* 566–577.

Acitelli, L. K., Kenny, D. A., & Weiner, D. (2001). The importance of similarity and understanding of partners' marital ideals to relationship satisfaction. *Personal Relationships, 8,* 167–185.

Anderson, C., Keltner, D., & John, O. P. (2003). Emotional convergence between people over time. *Journal of Personality and Social Psychology, 84,* 1054–1068.

Aron, A., & Aron, E. N. (1991). Love and sexuality. In K. McKinney & S. Sprecher (Eds.), *Sexuality in close relationships* (pp. 25–48). Hillsdale, NJ: Erlbaum.

Ben-Ari, A., & Lavee, Y. (2005). Dyadic characteristics of individual attributes: Attachment, neuroticism, and their relation to marital quality and closeness. *American Journal of Orthopsychiatry, 75,* 621–631.

Bouchard, G., Lussier, Y., & Sabourin, S. (1999). Personality and marital adjustment: Utility of the five-factor model of personality. *Journal of Marriage and the Family, 61,* 651–660.

Burleson, B. R., & Denton, W. H. (1992). A new look at similarity and attraction in marriage: Similarities in social-cognitive and communication skills as predictors of attraction and satisfaction. *Communication Monographs, 59,* 268–287.

Buss, D. M., Larsen, R. J., Westen, D., & Semmelroth, J. (1992). Sex differences in jealousy: Evolution, physiology, and psychology. *Psychological Science, 3,* 251–255.

Byrne, D. (1971). *The attraction paradigm.* New York: Academic Press.

Campos, B., Keltner, D., Beck, J., Gonzaga, G. C., John, O. P., & Shiota, M. N. (2007). Culture and teasing: The relational benefits of reduced desire for positive self-differentiation. *Personality and Social Psychology Bulletin, 33,* 3–16.

Caspi, A., & Herbner, E. S. (1990). Continuity and change: Assortative marriage and the consistency of personality in adulthood. *Journal of Personality and Social Psychology, 58,* 250–258.

Caspi, A., Herbner, E. S., & Ozer, D. J. (1992). Shared experiences and the similarity of personalities: A longitudinal study of married couples. *Journal of Personality and Social Psychology, 62,* 281–291.

Cohan, C. L., & Bradbury, T. N. (1997). Negative life events, marital interaction, and the longitudinal course of newlywed marriage. *Journal of Personality and Social Psychology, 73,* 114–128.

Costa, P. T., & McCrae, R. R. (1992). The five-factor model of personality and its relevance to personality disorders. *Journal of Personality Disorders, 6,* 343–359.

Davila, J., Bradbury, T. N., & Fincham, F. (1998). Negative affectivity as a mediator of the association between adult attachment and marital satisfaction. *Personal Relationships, 5,* 467–484.

Ekman, P. (1992). An argument for basic emotions. *Cognition and Emotion, 6*(3–4), 169–200.

Feeney, J. A. (2003). The systemic nature of couple relationships: An attachment perspective. In P. Erdman & T. Caffery (Eds.), *Attachment and family systems: Conceptual, empirical, and therapeutic relatedness* (pp. 139–163). New York: Brunner-Routledge.

Feingold, A. (1988). Matching for attractiveness in romantic partners and same-sex friends: A meta-analysis and theoretical critique. *Psychological Bulletin, 104,* 226–235.

Frijda, N. H., & Mesquita, B. (1994). The social roles and functions of emotions. In S. Kitayama & H. R. Markus (Eds.), *Emotion and culture: Empirical studies of mutual influence* (pp. 51–87). Washington DC: American Psychological Association.

Gattis, K. S., Berns, S., Simpson, L. E., & Christensen, A. (2004). Birds of a feather or strange birds? Ties among personality dimensions, similarity, and marital quality. *Journal of Family Psychology, 18,* 564–574.

Geiss, S. K., & O'Leary, K. D. (1981). Therapist ratings of frequency and severity of marital problems: Implications for research. *Journal of Marital and Family Therapy, 7,* 515–520.

Geist, R. L., & Gilbert, D. G. (1996). Correlates of expressed and felt emotion during marital conflict: Satisfaction, personality, process, and outcome. *Personality and Individual Differences, 21,* 49–60.

Gonzaga, G. C., Keltner, D., Londahl, E. A., & Smith, M. D. (2001). Love and the commitment problem in romantic relations and friendship. *Journal of Personality and Social Psychology, 81,* 247–262.

Gonzaga, G. C., Turner, R. A., Keltner, D., Campos, B., & Altemus, M. (2006). Romantic love and sexual desire in close relationships. *Emotion, 6,* 163–179.

Gross, J. J., & John, O. P. (1994). Facets of emotional expressivity: Three self-report factors and their correlates. *Personality and Individual Differences, 19,* 555–568.

Guttman, R., & Zohar, A. (1987). Spouse similarities in personality items: Changes over years of marriage and implications for mate selection. *Behavior Genetics, 17,* 179–189.

Hatfield, E., Cacioppo, J. T., & Rapson, R. L. (1994). *Emotional contagion.* New York: Cambridge University Press.

Heath, A. C., Berg, K., Eaves, L. J., Solaas, M. H., Sundet, J., Nance, W. E., et al. (1985). No decline in assortative mating for educational level. *Behavior Genetics, 15,* 349–369.

Izard, C. E., Libero, D. Z., Putnam, P., & Haynes, O. M. (1993). Stability of emotion experiences and their relations to traits of personality. *Journal of Personality and Social Psychology, 64,* 847–860.

Jacobson, N. S., & Margolin, G. (1979). *Marital therapy: Strategies based on social learning and behavior exchange principles.* New York: Brunner/Mazel.

John, O. P., Donahue, E. M., & Kentle, R. (1991). *The "Big Five" Inventory: Versions 4a and 54.* Berkeley: University of California, Institute of Personality and Social Research.

John, O. P., & Srivastava, S. (1999). The Big Five Trait taxonomy: History, measurement, and theoretical perspectives In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (pp. 102–138). New York: Guilford Press.

Johnson, M. D., Cohan, C. L., Davila, J., Lawrence, E., Rogge, R. D., Karney, B., R., et al. (2005). Problem-solving skills and affective expressions as predictors of change in marital satisfaction *Journal of Consulting and Clinical Psychology, 73,* 15–27.

Karney, B., R., & Bradbury, T. N. (1995). The longitudinal course of marital quality and stability: A review of theory, methods, and research. *Psychological Bulletin, 118,* 3–34.

Karney, B., R., & Bradbury, T. N. (1997). Neuroticism, marital interaction, and the trajectory of marital satisfaction. *Journal of Personality and Social Psychology, 72,* 1075–1092.

Karney, B. R., Bradbury, T. N., Fincham, F. D., & Sullivan, K. T. (1994). The role of negative affectivity in the association between attributions and marital satisfaction. *Journal of Personality and Social Psychology, 66,* 413–424.

Kelly, E. L., & Conley, J. J. (1987). Personality and compatibility: A prospective analysis of marital stability and marital satisfaction. *Journal of Personality and Social Psychology, 52,* 27–40.

Keltner, D., & Buswell, B. N. (1997). Embarrassment: Its distinct form and appeasement functions *Psychological Bulletin, 122,* 250–270.

Keltner, D., & Haidt, J. (1999). Social functions of emotions at four levels of analysis. *Cognition and Emotion, 13,* 505–521.

Keltner, D., & Kring, A. M. (1998). Emotion, social function, and psychopathology. *Review of General Psychology, 2,* 320–342.

Keltner, D., Young, R. C., Heerey, E. A., Oemig, C., & Monarch, N. D. (1998). Teasing in hierarchical and intimate relations. *Journal of Personality and Social Psychology, 75,* 1231–1247.

Kemper, T. D. (1991). Predicting emotions from social relations. *Social Psychology Quarterly, 54,* 330–342.

Klohnen, E. C., & Luo, S. (2003). Interpersonal attraction and personality: What is attractive–self similarity, ideal similarity, complementarity or attachment security? *Journal of Personality and Social Psychology, 85,* 709–722.

Kurdek, L. A. (1997). The link between facets of neuroticism and dimensions of relationship commitment: Evidence from gay, lesbian, and heterosexual couples. *Journal of Family Psychology, 11,* 503–514.

LaFrance, M., & Ickes, W. (1981). Posture mirroring and interactional involvement: Sex and sex typing effects. *Nonverbal Behavior, 5,* 139–154.

Larsen, R. J., & Ketelaar, T. (1991). Personality and susceptibility to positive and negative emotional states. *Journal of Personality and Social Psychology, 61,* 132–140.

Lavee, Y., & Ben-Ari, A. (2004). Emotional expressiveness and neuroticism: Do they predict marital quality?. *Journal of Family Psychology, 18,* 620–627.

Locke, H. J., & Wallace, K. M. (1959). Short marital-adjustment and prediction tests: Their reliability and validity. *Marriage and Family Living, 21,* 251–255.

Locke, K. D., & Horowitz, L. M. (1990). Satisfaction in interpersonal interactions as a function of similarity in level of dysphoria. *Journal of Personality and Social Psychology, 58,* 823–831.

Luo, S., & Klohnen, E. C. (2005). Assortative mating and marital quality: A couple-centered approach. *Journal of Personality and Social Psychology, 88,* 304–326.

Mare, R. D. (1991). Five decades of educational assortative mating. *American Sociological Review, 56,* 15–32.

McCrae, R. R., & Costa, P. T. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology, 52,* 81–90.

Murray, S. L., Holmes, J. G., Bellavia, G., Griffin, D. W., & Dolderman, D. (2002). Kindred spirits? The benefits of egocentrism in close relationships. *Journal of Personality and Social Psychology, 82,* 563–581.

Murstein, B. I. (1980). Mate selection in the 1970s. *Journal of Marriage and the Family, 42,* 777–792.

Neff, L. A., & Karney, B., R. (2004). How does context affect intimate relationships? Linking external stress and cognitive processes within marriage. *Personality and Social Psychology Bulletin, 30,* 134–148.

Pasch, L. A., & Bradbury, T. N. (1998). Social support, conflict, and the development of marital dysfunction. *Journal of Consulting and Clinical Psychology, 66,* 219–230.

Phillips, K., Fulker, D. W., Carey, G., & Nagoshi, C. T. (1988). Direct marital assortment for cognitive and personality variables. *Behavior Genetics, 18,* 347–356.

Reis, H. T., & Shaver, P. (1988). Intimacy as an interpersonal process. In S. Duck & D. F. Hay (Eds.), *Handbook of personal relationships: Theory, research, and interventions* (pp. 367–389). New York: Wiley.

Robles, T. F., & Kiecolt-Glaser, J. K. (2003). The physiology of marriage: Pathways to health. *Physiology and Behavior, 79,* 409–416.

Russell, R., J., & Wells, P. A. (1991). Personality similarity and quality of marriage. *Personality and Individual Differences, 12,* 407–412.

Shiota, M. N., Keltner, D., & John, O. P. (2006). Positive emotion dispositions differentially associated with Big Five personality and attachment style. *Journal of Positive Psychology, 1,* 61–71.

Story, L. B., Karney, B., R., Lawrence, E., & Bradbury, T. N. (2004). Interpersonal mediators in the intergenerational transmission of marital dysfunction. *Journal of Family Psychology, 18,* 519–529.

Watkins, M. P., & Meredith, W. (1981). Spouse similarity in newlyweds with respect to specific cognitive abilities, socioeconomic status, and education. *Behavior Genetics, 11,* 1–21.

Watson, D., & Clark, L. A. (1992). On traits and temperament: General and specific factors of emotional experience and their relation to the five-factor model. *Journal of Personality, 60,* 441–476.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54,* 1063–1070.

White, G. L. (1980). Physical attractiveness and courtship progress. *Journal of Personality and Social Psychology, 39,* 660–668.

Zonderman, A. B., Vandenberg, S. G., Spuhler, K. P., & Fain, P. R. (1977). Assortative marriage for cognitive abilities. *Behavior Genetics, 7,* 261–271.