Published in final edited form as:

Pers Relatsh. 2012 December 1; 19(4): 644–662. doi:10.1111/j.1475-6811.2011.01384.x.

Dependence regulation in newlywed couples: A prospective examination

Jaye L. Derrick,

Research Institute on Addictions, University at Buffalo, SUNY

Kenneth E. Leonard, and

Research Institute on Addictions and Department of Psychiatry, School of Medicine, University at Buffalo, SUNY

Gregory G. Homish

Department of Community Health and Health Behavior, School of Public Health and Health Professions and Research Institute on Addictions, University at Buffalo, SUNY

Abstract

According to the Risk Regulation Model (Murray, S. L., Holmes, J. G., & Collins, N. L. (2006). Optimizing assurance: The risk regulation system in relationships. *Psychological Bulletin*, 132, 641-666), people need to trust in their partner's regard before they risk interdependence. The current study prospectively examines the association between perceived regard and levels of dependence in newlywed couples over nine years of marriage. Analyses demonstrate that changes in perceived regard predict levels of dependence, changes in dependence do not predict perceived regard, and alternative explanations cannot account for these effects. Further, changes in perceived regard prospectively predict divorce, and levels of dependence mediate this association. Results are discussed in terms of the dependence regulation component of the Risk Regulation Model.

Keywords

relationships; perceived regard; Risk Regulation; Dependence Regulation; marital satisfaction; divorce

Balancing the desire to seek connection with the need for self-protection is a complicated task. Seeking connection and interdependence is necessary for a satisfying relationship, but it also increases the likelihood and pain of rejection (Kelley, 1979; Simpson, 1987). Given this danger, people must determine the extent to which they are willing to risk interdependence. According to the Risk Regulation Model (Murray, Holmes, & Collins, 2006), people only allow themselves to risk caring for and depending on their partner when it is safe to do so; that is, people regulate dependence with a sense of trust in their partner's regard and responsiveness. To date, dependence regulation has not been demonstrated

Address correspondence to Jaye L. Derrick, Research Institute on Addictions, University at Buffalo, State University of New York, 1021 Main Street, Buffalo, NY 14203-1016. jderrick@ria.buffalo.edu.

Preliminary results of this research were presented at the 117th Annual Meeting of the American Psychological Association, August 6-9, 2009, in Toronto, Ontario.

prospectively in married couples. Given the greater average length of their relationships and the greater commitment demonstrated by the act of getting married, the question is still open as to whether married couples need to regulate dependence in the manner of dating couples. In the current research, we examine dependence regulation in newlywed couples over the first nine years of marriage.

Relationships and Interdependence

Interdependence is an integral part of relationship functioning. Partners are dependent upon each other in multiple domains, from deciding what to have for dinner to deciding when and if to have children (Holmes & Rempel, 1989; Kelley, 1979; Murray & Holmes, 2009; Murray et al., 2006). Given that individuals hold idiosyncratic preferences and goals that may not be entirely compatible with those of their relationship partner, conflicts of interest are a nearly unavoidable part of interdependent life (Kelley, 1979; Murray & Holmes, 2009). The extent to which these conflicts are resolved in a manner that suits both partners is dependent on the degree to which people are motivated to put their own needs aside and find a mutually beneficial solution. Doing so increases the risk of exploitation, however, if the partner is not similarly motivated to cooperate.

Accordingly, perceptions of the partner's responsiveness to the self are a critical component of relationship functioning (Davila & Sargent, 2003; Holmes & Rempel, 1989; Reis, Clark, & Holmes, 2004). If people do not perceive evidence of their partner's likely responsiveness to their needs, they will prioritize self-interest and decrease their dependence on a partner who may not have their best interests at heart (Murray et al., 2006). Given that people cannot simply read their partner's mind to determine whether he or she is likely to be responsive, however, people need a system that allows them to evaluate and respond to relationship risk appropriately. In this system, perceptions of the partner's regard are crucial to the regulation of risk and dependence.

The Dependence Regulation System

According to the Risk Regulation Model (Murray et al., 2006; see also Murray & Holmes, 2009; Murray, Holmes, & Griffin, 2000), negotiating interdependent life requires a regulation system with cognitive, affective, and behavioral components to balance connectedness and self-protection goals. Each of these components follows an if-then contingency rule to gauge the risk of rejection and determine whether the relationship is safe. We focus on the behavioral component, also known as the Dependence Regulation System (Murray et al., 2006; Murray et al., 2000), in the current research.

The Dependence Regulation System follows a behavioral response rule: "if feeling accepted or rejected, then regulate dependence" (Murray et al., 2006, p. 644). This system can be triggered directly, through perceptions of the partner's likely acceptance or rejection (i.e., perceived regard), or indirectly, through resulting gains or drops in state self-esteem. When people feel unsure of their partner's continuing positive regard, they may begin to limit dependence by: 1) decreasing the range of or extent to which they enter situations in which they must depend on their partner (e.g., less disclosure and intimacy); 2) by shifting the symbolic value attached to the partner (i.e., less partner valuing); and 3) by shifting the

symbolic value attached to the relationship (i.e., lower satisfaction). By decreasing dependence in these ways, people can decrease the future risk of experiencing hurt or rejection. When people feel more confident in their partner's regard, they may instead increase dependence in these areas.

Evidence for Dependence Regulation

Cross-sectionally, both dating and married couples demonstrate a strong positive association between perceived regard and levels of dependence (Murray et al., 2000; Murray, Holmes, Griffin, Bellavia, & Rose, 2001). People who believe their partner sees them positively on a set of interpersonal qualities (Murray et al., 2000) and who feel more loved (Murray et al., 2001) view their partner more positively and report greater satisfaction in their relationship. Perceived regard also affects the interpretation of daily conflicts, thereby influencing people's behavior toward their partner. People who are higher in perceived regard respond to one day's hurt or feelings of rejection by drawing closer to their partner the next day; people who are lower in perceived regard respond by behaving more negatively toward their partner and reducing closeness (Murray, Bellavia, Rose, & Griffin, 2003).

The studies reviewed thus far provide evidence for dependence regulation in the short-term. But how do these short-term associations affect levels of dependence over the longer term? In dating relationships, perceived regard at baseline is positively associated with satisfaction and partner valuing at four months for both men and women, and with partner valuing at twelve months for men (Murray et al., 2000). To date, however, no study has examined the prospective association between perceived regard and levels of dependence in married couples. Although dependence regulation has been examined prospectively in dating couples, it might be the case that dependence regulation is more central to relationship initiation processes than to long-term relationship maintenance processes. People who have only known each other for a few months, as compared to those who have known each other for several years or even decades, might be less certain about whether or not their partner reciprocates their attraction and affection (c.f. Eastwick & Finkel, 2008; Solomon & Knobloch, 2004).

Although an association between perceived regard and dependence has been demonstrated cross-sectionally in married couples, it has never been examined prospectively. It is conceivable that married couples are merely reporting relationship perceptions that were largely fixed years earlier. This static view of married life is inaccurate, however. On average, satisfaction declines precipitously over the first few years of marriage (Karney & Bradbury, 1997; Kurdek, 1999; Murray et al., 2011), and as many as 50% of first marriages end in divorce (Cherlin, 2010). Thus, the need to regulate relationship risk still might be present in marriage as a long-term relationship maintenance process. In the current study, we examine the role of dependence regulation in a sample of newlywed couples. We evaluate whether changes in perceived regard indeed lead to changes in levels of dependence over time. Further, we examine the effect of dependence regulation on the occurrence of divorce.

Overview of the Current Study

Figure 1 depicts the model of dependence regulation (the behavioral response portion of the Risk Regulation Model; Murray et al., 2000, 2006) used in the current study. As can be seen, dependence is operationalized in this study with three separate indicators: disclosure and intimacy, partner valuing, and satisfaction.

Path A reflects the expectation that changes in perceived regard will influence the extent to which people are willing to enter interdependent situations with their partner. When people are less secure in their partner's regard, and thus his or her likely responsiveness, they should choose to disclose or seek support elsewhere, thereby limiting dependence on a partner who might be unresponsive to their needs. When people are more secure in their partner's regard and likely responsiveness, however, they should increase the extent to which they depend on their partner to fulfill their emotional needs (Murray, Derrick, Leder, & Holmes, 2008; Murray et al., 2006).

Path B reflects the expectation that changes in perceived regard will influence the symbolic value attached to the partner. When people are less secure in their partner's regard, they should self-protectively distance themselves from their partner, devaluing his or her positive qualities and thus, minimizing the potential long-term pain of losing the partner's affection (Murray et al., 2000; Murray, Holmes, MacDonald, & Ellsworth, 1998; Murray, Rose, Bellavia, Holmes, & Kusche, 2002). When people are more secure in their partner's regard, however, they should view their partner more positively, demonstrating the positive illusions inherent to satisfying relationships (Murray, Holmes, & Griffin, 1996; Murray et al., 2000).

Finally, Path C reflects the expectation that changes in perceived regard will influence the symbolic value attached to the relationship. People who are less secure in their partner's regard should also self-protectively withhold positive beliefs about their relationship. If they question their partner's likely intention to stay in the relationship, believing that the relationship fulfills all of their needs and desires would only increase their potential for loss. Yet, people who are more secure in their partner's regard should view their relationship more positively, giving them the ability to overlook minor transgressions and conflicts of interest (Murray et al., 2006; Murray et al., 2000).

Hypotheses

Although our data are longitudinal, they are correlational, so we cannot prove causation in the current study. We can, however, find evidence *consistent with* causation. We follow three steps in evaluating our causal model. First, we should observe temporal precedence. That is, the hypothesized cause should predict the hypothesized outcome prospectively. Second, we should be unable to find a reciprocal effect. In other words, the hypothesized outcome should *not* predict the hypothesized cause over time. Third, we should be able to rule out other variables that might account for our predicted effects.

Accordingly, we hypothesized three effects that would support our causal model: 1) perceived regard will prospectively predict disclosure and intimacy, partner valuing, and satisfaction (see Figure 1); 2) disclosure and intimacy, partner valuing, and satisfaction will

not predict perceived regard over time;¹ and 3) neither trajectories of change over time nor attrition will account for these results. If these three hypotheses are supported, we can conclude that our data are consistent with the theorized causal precedence of perceived regard.

Demonstrating evidence consistent with the idea that perceived regard causes changes in disclosure and intimacy, partner valuing, and satisfaction in newlywed couples over nine years would be a novel addition to the study of dependence regulation. An even more stringent test of dependence regulation might include examination of a more objective distancing behavior: divorce. We expected that changes in perceived regard would be sufficient to limit dependence to the point of severing the relationship. Indeed, people are overwhelmingly more likely to divorce when dissatisfied with their relationship than when satisfied (Karney & Bradbury, 1995). Accordingly, we hypothesized two additional effects: 4) perceived regard would prospectively predict divorce; and 5) subjective levels of dependence would mediate this effect.

Method

Participants

Participant couples ($N = 634$) were part of the Adult Development Study, a large community study that followed couples over the first nine years of marriage. Participants were predominantly White (husbands: 59%; wives: 62%) or African American (husbands: 33%; wives: 31%). The majority of participants had at least some college education (husbands: 66%; wives: 62%) and most were employed at least part-time at the initial assessment (husbands: 89%; wives: 75%). At the first time point, husbands averaged 28.7 ($SD = 6.3$) and wives averaged 26.8 ($SD = 5.8$) years of age. Consistent with demographic trends (see Smock, 2000, for a review), the majority of couples were living together prior to marriage (69%, $Md = 18$ months), and many couples had children at the time of marriage (48%). None of the husbands or wives had previously been married.

Procedure

Additional details of the recruitment process and participation rates are available elsewhere (e.g., Homish & Leonard, 2007), but briefly, participants were recruited from the local city hall at the time they applied for their marriage license. Couples who agreed to participate in the longitudinal study were given questionnaires to complete and return through the mail. Data were collected from both spouses at the first time point for 634 couples. Participants answered questions about themselves, their relationship, and their health behaviors at six time points: at the time of marriage and at the first, second, fourth, seventh, and ninth anniversaries. The measures in the current analyses were taken from all six waves of data.

Over time, some participants were lost due to divorce. Ten couples divorced after Year 0, 15 after Year 1, 37 after Year 2, 47 after Year 4, and 21 after Year 7. Additional couples were lost due to attrition (the husband, the wife, or both failed to return the survey). Some

¹Although we might expect the partner's response to people's dependence seeking behavior to predict changes in people's perceived regard over time (e.g., Reis & Shaver, 1988), we did not assess the partner's actual responsiveness in the current study.

participants failed to return a questionnaire at one time point but were successfully reassessed at later time points. The final sample size was 531 in Year 1, 472 in Year 2, 397 in Year 4, 333 in Year 7, and 257 in Year 9. Although the analyses of the relationship perception trajectories use all couples in which both partners responded to at least one time point (i.e., $n = 634$), the primary analyses include only couples in which both partners returned questionnaires for at least two consecutive time points (i.e., $n = 531$) due to the lagged nature of the analyses.

Measures

Demographics—At the initial screening, participant couples completed a measure of demographics (age, race/ethnicity, employment, length of time cohabiting, children). Couples who ever dropped from the study without explanation ($n = 284$), versus those who completed all waves of the study or only dropped due to divorce ($n = 350$), were more likely to be non-white (45% versus 37% of husbands, $p = .03$, 43% versus 34% of wives, $p = .01$) and to be unemployed at the time of marriage (13% versus 8% of husbands, $p = .04$, 29% versus 21% of wives, $p = .02$). Couples who dropped versus those who completed did not differ in age, education, length of time living together prior to marriage, or whether or not they had a child at the time of marriage (all $ps > .25$). We included all of these demographic variables as covariates in the initial model building phase of our analyses. Only race and whether or not they had children at the time of marriage had unique predictive value with respect to the dependent variables, so all other control variables were removed from the final models.²

Multidimensional Satisfaction Scale—At each assessment wave, participant couples completed the Multidimensional Satisfaction Scale, an 11-item measure that assesses satisfaction with different aspects of the marriage (Kearns & Leonard, 2004). For each item, participants were asked to consider how satisfied they were with that particular aspect of their marriage (e.g., “the division of labor”; “sexual intimacy”; “personal growth and autonomy”). Participants were given several example statements to describe each aspect. They rated each aspect on a scale from 1 (not at all satisfied) to 9 (completely satisfied). Higher scores indicate greater satisfaction with that aspect of the relationship.

Perceived regard was assessed using the aspect, “emotional security.” The examples for this aspect are: “whether you feel completely secure in the knowledge that your partner loves and accepts you”; “how attentive and responsive your partner is to your emotional needs”; “whether you can count on your partner to be available and responsive to you when you need someone.”

Disclosure and intimacy was assessed using the aspect, “emotional closeness.” The examples for this aspect are: “how much closeness or intimacy you feel with your partner; how much you and your partner confide in each other and are emotionally open and honest with each other.”

²Results were nearly identical when all of the demographic covariates were included.

Partner valuing was assessed using the aspect, “your ability to love and accept your partner.” The examples for this aspect are: “how easy it is for you to love and accept your partner as he/she is”; “whether your need to love, care for, and nurture someone is met in your relationship”; “how strong your feelings of love for your partner are.”

Global relationship satisfaction—At each assessment wave, participant couples completed the Marital Adjustment Test (Locke & Wallace, 1959). This measure assesses participants’ overall feelings of satisfaction with their marriage ($\alpha = .81$ for husbands, $\alpha = .80$ for wives). Scores at the first time point ranged from 28 to 158. Higher scores indicate greater satisfaction.

Divorce—At each time point, participants were asked about their marital status as part of the questionnaire packet. In addition, as part of the subject tracking procedures, we sometimes learned that a couple who was no longer participating had divorced. This information was recorded and entered into the database. In the current analyses, if either member of the couple indicated that they were divorced or filing for divorce, we coded the couple as divorced (0 = intact, 1 = divorced).

Validity of Constructs

The Adult Development Study was not created with the initial intention of studying dependence regulation. Although measures included in the study appear to map onto the constructs of interest, these are one-item measures with uncertain validity. Accordingly, to provide an empirical assessment of the validity of these measures, we conducted a pilot study to examine the association between the measures from the current study and measures of perceived regard and dependence from previous research. Ninety-five married individuals were recruited to participate through Amazon.com’s Mechanical Turk website (<https://www.mturk.com/mturk/>) (see Buhrmester, Kwang, & Gosling, 2011, for a discussion of the benefits of conducting online research using Mechanical Turk). They completed a series of questionnaires online in exchange for \$0.20 USD. These questionnaires included the Multidimensional Satisfaction Scale (Kearns & Leonard, 2004), measures previously used to assess perceived regard (perceived acceptance, perceived partner commitment, and perceived partner closeness; Derrick & Murray, 2007; Murray et al., 1998; Murray et al., 2005), and measures previously used to assess partner valuing (dependence on partner and love for partner; Derrick & Murray, 2007; Murray et al., 1998).

We used Mplus 6.1 (Muthén & Muthén, 2010) to conduct a confirmatory factor analysis for a two-factor model in which perceived acceptance ($\alpha = .96$), perceived partner commitment ($\alpha = .89$), perceived partner closeness ($\alpha = .92$), and our single-item measure of emotional security loaded on one perceived regard factor, and dependence on partner ($\alpha = .87$), love for partner ($\alpha = .93$), and our single-item measure of ability to love and accept partner loaded on a second partner valuing factor. This model fit the data well, $\chi^2(13) = 19.60$, $p = .11$, CFI = 0.99, RMSEA = .07, SRMR = .04, AIC = 2425.20. Given the strong correlations between these measures, we next examined a one-factor model and compared this model to the two-factor model.³ Fit was significantly worse in the one-factor model, $\chi^2(1) = 84.92$,

$p < .001$, $\chi^2(14) = 104.52$, $p < .001$, CFI = .87, RMSEA = .25, SRMR = .08, AIC = 2508.12.⁴

We did not include additional measures of disclosure and intimacy in the pilot, but models including the emotional closeness item on the perceived regard factor and the partner valuing factor did not fit the data, $\chi^2(19) = 63.78$, $p < .001$, CFI = .95, RMSEA = .15, SRMR = .05, AIC = 2764.56, and $\chi^2(19) = 73.15$, $p < .001$, CFI = .94, RMSEA = .17, SRMR = .05, AIC = 2773.93, respectively. Thus, even though they are part of the same multidimensional measure of satisfaction, the items emotional security, ability to love and accept partner, and emotional closeness all appear to tap separate underlying constructs.

Results

Descriptive Statistics

Descriptive statistics for perceived regard and each of the dependence variables at each time point for husbands and wives are presented in Table 1. Bivariate correlations between perceived regard and all of the dependence variables are presented in Table 2. The variables other than divorce were highly intercorrelated, raising the question of whether or not they are truly separate constructs. Conceptually, the Risk Regulation Model (Murray et al., 2006) and Dependence Regulation Model (Murray et al., 2000) argue that perceived regard and levels of dependence are separate but highly related constructs. Indeed, if perceived regard causes dependence regulation, as theorized, these variables should by necessity be related. The fact that the variables are highly correlated creates a more conservative test for our primary hypotheses, particularly given that we control for autocorrelations in all analyses. Our pilot data provide additional evidence confirming that these are likely separate, though highly related, constructs.

Analysis Strategy

Examining the association between changes in perceived regard and levels of dependence over time requires a specialized analysis strategy because our data are non-independent in nature (i.e., there were repeated assessments per individual and assessments from both members of each couple). Accordingly, we conducted multilevel modeling analyses using the multivariate feature of the program MLwiN 2.22 (Goldstein et al., 1998). Our analytic approach follows a two-level nested structure: within-person assessments across time make up Level 1, couple makes up Level 2, and husband and wife responses are treated as multivariate outcomes at Level 1. This approach simultaneously estimates two regression equations, one for husbands and one for wives, controlling for the interdependence of responses from two members of a dyad. This approach is identical in its multilevel structure to the approach of Barnett and his colleagues (e.g., Barnett, Marshall, Raudenbush, & Brennan, 1993; Barnett, Raudenbush, Brennan, Pleck, & Marshall, 1995; see also Kenny,

³We conducted these analyses so that the two models were nested, thus allowing direct comparisons between the two models using a one degree of freedom χ^2 test. Specifically, in the two factor model, we set the factor variances equal to one and freed all of the indicators. To compare this two-factor model to a one-factor model, we then set the covariance between the two factors equal to one.

⁴We ran additional two-factor models in which the emotional security item and the ability to love and accept partner item both loaded on the perceived regard factor, both loaded on the partner valuing factor, or each loaded on the opposite factor. These models fit poorly. More information about these analyses can be obtained from the first author.

Kashy, & Cook, 2006; Laurenceau & Bolger, 2005) in the sense that both approaches create simultaneous regression lines for men and women. The current approach merely exchanges a multivariate command for the dummy-coded variables used in the Barnett approach (see Homish & Leonard, 2005; Murray et al., 2003; Murray et al., 2002).

Trajectories of Relationship Perceptions

As a first step in understanding how the variables of interest in the current study operate over time, we conducted multilevel growth curve analyses examining each variable. The analysis for perceived regard used the following equations:

$$\ln(Y_{Ht}) = \beta_{0H} + \beta_{1H}C + \beta_{2H}R + \beta_{3H}T + \beta_{4H}T^2 + u_H \quad (1)$$

$$\ln(Y_{Wt}) = \beta_{0W} + \beta_{1W}C + \beta_{2W}R + \beta_{3W}T + \beta_{4W}T^2 + u_W \quad (2)$$

Equation 1 represents the effect for husbands (H); Equation 2 represents the effect for wives (W). Perceived regard is a one-item measure, which results in a non-continuous or count outcome. Accordingly, we utilized a Poisson multilevel model to account for the nonlinear structure of the data. We predicted one time point's level of perceived regard (Y) from an average level term (β_0 , an intercept that varies across people and is a random coefficient), whether or not they had a child at the time of marriage (β_1 , a fixed effect that is time invariant, coded 0 = no, 1 = yes), race (β_2 , a fixed effect that is time invariant, coded 0 = white, 1 = non-white), time (β_3 , a fixed effect, coded 0, 1, 2, 4, 7, 9), the quadratic effect of time (β_4 , a fixed effect), and an error term (u) that reflects the deviation of each person's average from the overall average of Y . Coefficients that did not differ significantly between husbands and wives were pooled across gender.

Identical analyses were conducted for the disclosure and intimacy and partner valuing constructs, which were also one-item measures. Analyses for satisfaction were conducted using equations similar to Equations 1 and 2, except that we used a linear multilevel model given that satisfaction was more normally distributed.

The results of these analyses are presented in Table 3. The predicted values for white participants who did not have children at the time of marriage are plotted in Figure 2. None of the values differed significantly between husbands and wives for perceived regard (Panel A), disclosure and intimacy (Panel B), or partner valuing (Panel C). The intercepts and the linear effects of time differed across husbands and wives for satisfaction, so husbands' and wives' satisfaction levels are presented separately in Panel D. The lines in these graphs reflect overall trends over time for the sample (i.e., these lines represent sample averages for each time point).

As can be seen, each relationship perception follows a similar pattern over time. Averaged across the sample, all four relationship perceptions demonstrate a significant linear trend toward more negative perceptions. However the quadratic effect was also significant for each relationship perception, indicating that these perceptions got better in the later years of

assessment. These patterns are similar to those found in prior research (e.g., Karney & Bradbury, 1997; Kurdek, 1999; Murray et al., 2011). Additionally, as reported in Table 3, people who were non-white experienced lower relationship perceptions relative to people who were white, and people who had children at the time of marriage experienced lower relationship perceptions than people who did not have children at the time of marriage.

Does Perceived Regard Predict Dependence?

Although the passage of time clearly predicts changes in average relationship perceptions across the sample, we were more interested in *why* those changes might occur. In other words, we were interested in the possible causal associations between relationship perceptions for each couple. Specifically, we predicted that changes in perceived regard over time would cause changes in levels of dependence over time. As a first step in evaluating this prediction, we examined whether or not changes in perceived regard had temporal precedence over changes in levels of dependence (Hypothesis 1).

To examine this hypothesis, we conducted additional multilevel modeling analyses similar to those conducted for the growth curve analyses. In this set of analyses, however, rather than explicitly modeling the effects of time, we regressed each dependent variable on the lagged effect of the dependent variable and on the lagged effect of perceived regard (see Murray et al., 2003; Murray et al., 2002, for other examples using this analysis strategy in daily diary analyses). In other words, we examined the effect of perceived regard at one time point on the dependent variable at the next time point, controlling for autocorrelations in the dependent variable. Another way to describe these analyses is to say that we used perceived regard at one time point to predict changes in the dependent variable from that time point to the next. All continuous variables were centered at the mean for the person; thus, significant effects reflect within-subject deviations from that person's own mean over time (rather than deviations from the sample mean, as was the case in the growth curve analyses). A positive association between lagged perceived regard and current partner valuing, for example, would suggest that being higher (lower) than their average on perceived regard at the previous time point leads people to be higher (lower) than their average on partner valuing at the current time point.⁵

As recommended by the Actor-Partner Interdependence Model (Kenny et al., 2006), we included both *actor* and *partner* effects in all of our analyses. We also included a random effects intercept and control variables. Coefficients that did not differ significantly across husbands and wives were pooled across gender. The results of the following analyses are presented in Table 4.

Disclosure and intimacy—We used the following equations to examine the effect of perceived regard on disclosure and intimacy over time:

⁵Note that we refer to different time points, rather than different years. Our data were not collected at evenly spaced intervals. The lagged effect, therefore, is the average of effects that occur across one year (i.e., from Year 0 to Year 1, Year 1 to Year 2), across two years (i.e., from Year 2 to Year 4, Year 7 to Year 9), and across three years (i.e., from Year 4 to Year 7). In using this approach, we make the assumption that our effect is invariant across different lengths of time (e.g., one year versus three years). Lagged variables refer to data at the previous time point (e.g., year 7 in year 9) rather than the previous year.

$$\ln(Y_{Ht}) = \beta_{0H} + \beta_{1H}C + \beta_{2H}R + \beta_{3H}YA_{t-1} + \beta_{4H}YP_{t-1} + \beta_{5H}IVA_{t-1} + \beta_{6H}IVP_{t-1} + v_{0H} + u_H \quad (3)$$

$$\ln(Y_{Wt}) = \beta_{0W} + \beta_{1W}C + \beta_{2W}R + \beta_{3W}YA_{t-1} + \beta_{4W}YP_{t-1} + \beta_{5W}IVA_{t-1} + \beta_{6W}IVP_{t-1} + v_{0W} + u_W \quad (4)$$

Equation 3 represents the effects for husbands (H); Equation 4 represents the effects for wives (W). Again, we utilized a Poisson multilevel model to account for the nonlinear structure of the data. We predicted one time point's level of disclosure and intimacy (Y) from an average level term (β_0 , an intercept that varies across people and is a random coefficient), whether or not they had a child at the time of marriage (β_1 , a fixed effect that is time invariant, coded 0 = no, 1 = yes), race (β_2 , a fixed effect that is time invariant, coded 0 = white, 1 = non-white), the level of the actor's disclosure and intimacy at the previous assessment (β_3 , a fixed effect that varies over time, included to control for autocorrelations), the level of the partner's disclosure and intimacy at the previous assessment (β_4 , a fixed effect that varies over time, included to control for the correlation between spouses' variables), the actor effect of perceived regard (β_5 , a fixed effect that varies over time), the partner effect of perceived regard (β_6 , a fixed effect that varies over time), an error term (v_0) that reflects the deviation of each person's average from the overall average, and an error term (u) that reflects each person's deviation from his or her own mean on Y across assessments. Coefficients that did not differ significantly between husbands and wives were pooled across gender.

The results of this analysis revealed several significant effects involving the control variables (see Table 4). People who were non-white reported significantly lower levels of disclosure and intimacy than people who were white, and people who had a child at the time of marriage reported significantly lower levels of disclosure and intimacy than people who did not. The lagged actor effect of disclosure and intimacy also demonstrated a significant negative effect. This suggests that people have a tendency to report levels of disclosure and intimacy that alternate above and below their own mean over time. In other words, people who feel less intimate and close with their partner at one time point, relative to their own mean over time, tend to feel more intimate and close with their partner at the next time point, relative to their own mean over time (and vice versa). The lagged partner effect of disclosure and intimacy was not significant.

As hypothesized, the actor effect of perceived regard on disclosure and intimacy was significant and positive. When participants experienced lower perceived regard at one time point, relative to their own mean, they experienced lower disclosure and intimacy at the next time point. Importantly, this effect occurred over and above the tendency for people's reports to fluctuate over time (i.e., the negative autocorrelation). The partner effect of perceived regard on disclosure and intimacy was not significant.

Partner valuing—We used equations identical to Equations 3 and 4 to examine the effect of perceived regard on partner valuing over time. Again, the results of this analysis revealed several significant effects involving the control variables (see Table 4). People who were non-white reported significantly lower levels of partner valuing than people who were white,

and people who had a child at the time of marriage reported significantly lower levels of partner valuing than people who did not. The lagged actor effect of partner valuing was negative, again reflecting the fact that people's reports fluctuate around their own mean over time. The lagged partner effect of partner valuing was not significant.

As hypothesized, the actor effect of perceived regard on partner valuing was significant and positive (see Table 4). When participants experienced lower perceived regard at one time point, relative to their own mean, they experienced lower partner valuing at the next time point. Again, this effect occurred over and above the tendency for people's reports to fluctuate over time. The partner effect of perceived regard on partner valuing was not significant.

Satisfaction—We used equations nearly identical to Equations 3 and 4 to examine the effect of perceived regard on satisfaction over time, but we used a linear rather than a Poisson model. The results of this analysis also revealed several significant effects involving the control variables (see Table 4). People who were non-white reported significantly lower levels of satisfaction than people who were white, and people who had a child at the time of marriage reported significantly lower levels of satisfaction than people who did not. The lagged actor effect of satisfaction was negative, reflecting the fact that people's reports fluctuated over time. The lagged partner effect of satisfaction was also significant but positive, indicating that when the partner experienced lower satisfaction at one time point, relative to his or her own mean, the actor experienced lower satisfaction at the next time point.

As hypothesized, the actor effect of perceived regard on satisfaction was significant and positive (see Table 4). When participants experienced lower perceived regard at one time point, relative to their own mean, they experienced lower satisfaction at the next time point. The partner effect of perceived regard on satisfaction was also marginally significant. When the partner experienced lower perceived regard at one time point, relative to his or her own mean, the actor experienced lower satisfaction at the next time point.

Does Dependence Predict Perceived Regard?

According to the Dependence Regulation Model (Murray et al., 2006; Murray et al., 2000), perceived regard and dependence should not have a reciprocal relationship; in other words, we did not expect changes in levels of dependence to prospectively predict changes in perceived regard (Hypothesis 2). To examine the effect of changes in dependence on changes in perceived regard, we conducted analyses identical to those we conducted to examine Hypothesis 1 (i.e., Equations 3 and 4). The results of these analyses are presented in Table 5.

These analyses revealed several significant effects involving the control variables that are consistent across analyses. People who were non-white reported significantly lower levels of perceived regard than people who were white, and people who had a child at the time of marriage reported significantly lower levels of perceived regard than people who did not. The lagged actor effect of perceived regard was negative, indicating that people reported alternating between values lower and higher than their means on perceived regard over time.

The lagged partner effect of perceived regard was also significant but positive, indicating that when the partner experienced lower perceived regard at one time point, relative to his or her own mean, the actor experienced lower perceived regard at the next time point. Turning next to the primary effects (see Table 5), neither the actor effect nor the partner effect of disclosure and intimacy, partner valuing, or satisfaction significantly predicted perceived regard. Thus, across all three variables, the data are inconsistent with a reciprocal causation explanation.

Is There an Alternative Explanation?

The results thus far have provided evidence for the temporal precedence of perceived regard over disclosure and intimacy, partner valuing, and satisfaction. At least two potential alternative explanations for these results remain. First, given the similar trajectories for all of these variables over time (see Figure 2), it may be the case that concurrent changes in time are responsible for the apparent association between perceived regard and levels of dependence. If we are correct in our supposition that changes in perceived regard cause changes in levels of dependence, the effect of time should not account for these associations. Accordingly, we repeated the previous analyses controlling for the linear and quadratic effects of time. Both the linear and quadratic effects of time were significant in all of the analyses (all $ps < .01$ and all $ps < .05$, respectively). The actor effect of perceived regard (see Table 4) remained marginally significant for disclosure and intimacy, $OR = 1.01$, $SE = .005$, $p = .07$, significant for partner valuing, $OR = 1.01$, $SE = .005$, $p = .03$, and significant for satisfaction, $b = .622$, $SE = .265$, $p = .02$. The actor effect of each dependence variable (see Table 5) remained non-significant, $OR = 1.01$, $SE = .006$, $p = .41$ for disclosure and intimacy, $OR = 1.00$, $SE = .006$, $p = .51$ for partner valuing, and $OR = 1.00$, $SE = .001$, $p = .32$ for satisfaction. Thus, time cannot account for these effects.

A second potential alternative explanation for the results concerns the relatively high rates of attrition over the course of the study. As described previously, people who were not successfully re-assessed over the course of the study differed from those who were re-assessed in terms of race and employment. Additionally, those who were not successfully reassessed over the course of the study provided lower reports than those who were reassessed in terms of wives' disclosure and intimacy ($M = 7.60$, $SD = 1.71$ vs. $M = 7.87$, $SD = 1.41$, $p = .03$) wives' perceived regard ($M = 7.48$, $SD = 1.85$ vs. $M = 7.88$, $SD = 1.56$, $p = .004$), wives' partner valuing ($M = 7.96$, $SD = 1.42$ vs. $M = 8.15$, $SD = 1.27$, $p = .08$), and wives' marital satisfaction ($M = 119.10$, $SD = 21.10$ vs. $M = 122.17$, $SD = 18.76$, $p = .06$) at the beginning of the study. They did not differ in terms of the husbands' reports on these variables, all $ps > .14$. It may be the case that differential attrition can account for the fact that perceived regard prospectively predicts dependence, but dependence does not lead to perceived regard.

Accordingly, we repeated the analyses including a dummy variable representing attrition (0 = completed all assessments or dropped due to divorce, 1 = ever dropped for an unknown reason), the two-way interaction between attrition and the lagged actor effect of the independent variable, and the two-way interaction between attrition and the lagged partner effect of the independent variable. Attrition did not moderate the lagged actor effect of

perceived regard on disclosure and intimacy, $OR = 1.00$, $SE = .009$, $p = .74$, partner valuing, $OR = .99$, $SE = .008$, $p = .45$, or satisfaction, $b = -.052$, $SE = .497$, $p = .92$. Attrition also did not moderate the lagged effect of disclosure and intimacy, $OR = 1.00$, $SE = .009$, $p = .82$, partner valuing, $OR = 1.00$, $SE = .010$, $p = .69$, or satisfaction, $OR = 1.00$, $SE = .001$, $p = .32$, on perceived regard.⁶ Therefore, it seems unlikely that the results are solely due to attrition.

Divorce as Dependence Regulation

Next, we wanted to examine the possibility that changes in perceived regard would prospectively predict the likelihood of divorce occurring (Hypothesis 4) and that levels of dependence would mediate this association (Hypothesis 5). To examine the effect of perceived regard on divorce, we used the following equation:

$$\text{logit}(Y) = \beta_0 + \beta_1 C + \beta_{2H} R + \beta_{3W} R + \beta_{4H} P_{t-1} + \beta_{5W} P_{t-1} + u \quad (5)$$

In this case, we used only one equation since husbands' (H) and wives' (W) responses to the divorce outcome were coded as one divorce variable (0 = no, 1 = yes). Because divorce is a dichotomous outcome, we used a binomial multilevel model with a logit link to analyze the data. We predicted one time point's divorce (Y) from an average level term (β_0 , an intercept that varies across people and is a random coefficient), whether or not they had a child at the time of marriage (β_1 , a fixed effect that is time invariant, coded 0 = no, 1 = yes), husband's race (β_2 , a fixed effect that is time invariant, coded 0 = white, 1 = non-white), wife's race (β_3), the level of the husband's perceived regard at the previous assessment (β_{4H} , a fixed effect that varies over time), the level of the wife's perceived regard at the previous assessment (β_{5W} , a fixed effect that varies over time), and an error term (u) that reflects the deviation of each couple's score from the overall score. Neither the effect of race nor the effect of perceived regard differed significantly between husbands and wives and were constrained to be equal.

The effect of race on the probability of divorce was not significant, $OR = 1.08$, $SE = .128$, $p = .56$. People who had a child at the time of marriage were significantly more likely to experience divorce over the course of the following nine years than people who did not, $OR = 2.61$, $SE = .253$, $p < .001$. As hypothesized, the effect of perceived regard on divorce was significant and negative, $OR = 0.77$, $SE = .039$, $p < .001$. When participants experienced lower perceived regard at one time point, relative to their own mean, they experienced greater likelihood of divorce occurring by the next time point.

Did levels of dependence mediate the association between perceived regard and the likelihood of divorce occurring (Hypothesis 5)? To examine this hypothesis, we followed Baron and Kenny's (1986) four-step procedure for testing mediation. First, the independent variable (the lagged actor effect of perceived regard) should predict the mediator (disclosure

⁶Attrition did not moderate the partner effect of perceived regard on disclosure and intimacy, $OR = 1.00$, $SE = .009$, $p = .99$, partner valuing, $OR = 1.00$, $SE = .008$, $p = .71$, or satisfaction, $b = .745$, $SE = .491$, $p = .13$. Attrition also did not moderate the partner effect of disclosure and intimacy, $OR = 1.00$, $SE = .009$, $p = .99$, partner valuing, $OR = 1.00$, $SE = .010$, $p = .37$, or satisfaction, $OR = 1.00$, $SE = .001$, $p = .99$, on perceived regard.

and intimacy, partner valuing, and satisfaction), as it did. Second, the independent variable (the lagged actor effect of perceived regard) should predict the dependent variable (divorce), as it did. Third, the mediator (disclosure and intimacy, partner valuing, and satisfaction) should predict the dependent variable, controlling for the independent variable (the lagged actor effect of perceived regard). Fourth, the effect of the independent variable (the lagged actor effect of perceived regard) on the dependent variable (divorce) should be reduced when controlling for the mediator (disclosure and intimacy, partner valuing, and satisfaction). We conducted an additional set of analyses to examine the third and fourth steps for mediation.

For each analysis, we used an equation similar to Equation 5 in which we included husband and wife race, whether or not they had children at the time of marriage, lagged husband and wife effects for each of the potential mediators (disclosure and intimacy, partner valuing, and satisfaction), and lagged husband and wife effects for perceived regard. None of the terms differed by gender, so we constrained each set of effects to be equal across husbands and wives. The results of these analyses are presented in Table 6.

As can be seen, disclosure and intimacy, partner valuing, and satisfaction each significantly predicted divorce when controlling for perceived regard. The effect of perceived regard falls to non-significance when controlling for disclosure and intimacy and when controlling for satisfaction. Unexpectedly, the effect of perceived regard was still significant when controlling for partner valuing. Thus, levels of disclosure and intimacy and of satisfaction appear to mediate the association between changes in perceived regard and the occurrence of divorce.

Discussion

Despite the closeness and commitment implied by the act of getting married, people continue to regulate their dependence on their partner over the first nine years of marriage. They gauge how much to trust in their partner's regard and responsiveness in order to determine their willingness to enter interdependent situations, the symbolic value they should attach to their partner, and the symbolic value they should attach to the relationship. Decreases in dependence (at least in disclosure and intimacy and in satisfaction) were ultimately associated with the complete severance of the relationship through divorce. These results suggest that the apparent security entailed by marriage is, for some, ephemeral. Those who are unable to continue trusting in their partner's regard are less likely to maintain their marriages over the longer term.

In the current study, we found evidence consistent with the causal role of perceived regard. Changes in perceived regard predicted changes in disclosure and intimacy, partner valuing, and satisfaction over time, but changes in disclosure and intimacy, partner valuing, and satisfaction failed to predict perceived regard. Therefore, perceived regard has temporal precedence over levels of dependence, and no reciprocal effect appears to exist. Additionally, these effects held when controlling for the linear and quadratic effects of time and were not moderated by attrition, ruling out important potential confounds. Thus, we were unable to find evidence that would disprove our hypothesized causal model. Decreases

in perceived regard were also associated with divorce, and changes in the levels of two out of three indicators of dependence mediated this association.

The results of the current study extend prior work on risk regulation in four important respects. First, this study is the first to show prospectively that risk regulation occurs in married couples. Prior work has shown this association over 4-12 months in dating couples, but only cross-sectionally in married couples (Murray et al., 2000). Second, this study demonstrated evidence consistent with a causal explanation. Two competing alternatives, a reciprocal causal explanation and a third variable explanation, were ruled out. This is the first study to rule out reciprocal causation prospectively (see Murray et al., 2006; Murray et al., 2000). Although dependence regulation has been examined experimentally (e.g., Derrick & Murray, 2007; Murray et al., 2008; Murray et al., 1998; Murray et al., 2002), those studies manipulated perceived imbalance and acute rejection, not perceived regard itself. Third, this is the first study to demonstrate that decreasing dependence in response to declines in perceived regard leads to divorce (see Murray & Holmes, 2009; Murray et al., 2006, for reviews). Finally, this study is the first to demonstrate the far-reaching temporal effects of dependence regulation. Previous research has examined dependence regulation cross-sectionally (Murray et al., 2000; Murray et al., 2001), experimentally (Derrick & Murray, 2007; Murray et al., 2008; Murray et al., 1998; Murray et al., 2002), within a daily diary (Murray et al., 2003), and over 4-12 months (Murray et al., 2000). The waves in our study were spaced over one to three years. The fact that perceived regard in one year can affect levels of dependence three years later (e.g., from Year 4 to Year 7) speaks to the extreme importance of perceiving that one's partner will be responsive to one's needs.

Two limitations of the current work deserve mention. First, while the recruitment and retention rates were quite good for a sample of newlywed couples, there were husbands and wives who were not successfully re-assessed over the nine year follow-up period. While there were some sociodemographic factors associated with recruitment (see Homish & Leonard, 2007), these effects were small and were controlled for in the analysis. Over the nine years of marriage, 130 couples divorced. The reported analyses included data from these couples for the assessments prior to their divorce, and so the findings were not influenced by the selective attrition of these couples. An additional 247 couples were not successfully re-assessed at one or more of the follow-up time points. Analyses examining whether their attrition moderated the reported results were not significant. Thus, it is unlikely that the results were unduly influenced by the loss of these couples.

A second limitation was that our measures of perceived regard, disclosure and intimacy, and partner valuing were one-item measures. The potential difficulties associated with single item measures are well known. For example, single items often may not represent the full range of meanings for a given construct. Although the items we used were part of a brief scale of relationship functioning, each single item was composed of several descriptions of the construct to provide the participant with a broader understanding of the construct. Our pilot analyses also suggest that these items tapped the constructs of interest. Additionally, single item measures are less reliable than multiple item measures. While this is very likely the case with respect to the constructs of interest in the current study, they were reliably correlated at each time point and operated in the predicted manner despite the attenuated

precision of single item measures. Additionally, perceived regard, disclosure and intimacy, and partner valuing were all one-item measures, so they face the same problems with reliability. Therefore, poor reliability is not responsible for the predicted differential effects (i.e., Hypotheses 1 and 2).

Conclusion

The perception that one's partner will be caring and responsive is an important part of not only dating relationships, but also of marital relationships. Without this perception, people are less able to risk seeking interdependence, attaching value to their partner, and attaching value to the relationship. Such decreased dependence in turn leads to the termination of the relationship. Those who manage to continue believing in their partner's love and responsiveness are better able to maintain the marriage over the longer term.

Acknowledgments

This research was supported by National Institute on Alcohol Abuse and Alcoholism (NIAAA) Grant R37-AA09922 awarded to Kenneth E. Leonard. Preparation of the manuscript was also supported by NIAAA postdoctoral training grant T32-AA007583.

References

- Barnett RC, Marshall NL, Raudenbush SW, Brennan RT. Gender and the relationship between job experiences and psychological distress: A study of dual-earner couples. *Journal of Personality and Social Psychology*. 1993; 64:794–806. [PubMed: 8505708]
- Barnett RC, Raudenbush SW, Brennan RT, Pleck JH, Marshall NL. Change in job and marital experiences and change in psychological distress: A longitudinal study of dual-earner couples. *Journal of Personality and Social Psychology*. 1995; 69:839–850. [PubMed: 7473034]
- Baron RM, Kenny DA. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality & Social Psychology*. 1986; 51:1173–1182. [PubMed: 3806354]
- Buhrmester M, Kwang T, Gosling SD. Amazon's Mechanical Turk. *Perspectives on Psychological Science*. 2011; 6:3–5.
- Cherlin AJ. Demographic Trends in the United States: A Review of Research in the 2000s. *Journal of Marriage and the Family*. 2010; 72:403–419. [PubMed: 22399825]
- Davila J, Sargent E. The Meaning of Life (Events) Predicts Changes in Attachment Security. *Personality and Social Psychology Bulletin*. 2003; 29:1383–1395. [PubMed: 15198088]
- Derrick JL, Murray SL. Enhancing relationship perceptions by reducing felt inferiority: The role of attachment style. *Personal Relationships*. 2007; 14:531–549.
- Eastwick PW, Finkel EJ. The attachment system in fledgling relationships: An activating role for attachment anxiety. *Journal of Personality and Social Psychology*. 2008; 95:628–647. [PubMed: 18729699]
- Goldstein, H.; Rasbash, J.; Plewis, I.; Draper, D.; Brown, W.; Yang, M., et al. A user's guide to MLwiN. London: Multilevel Models Project, Institute of Education, University of London; 1998.
- Holmes, JG.; Rempel, JK. Trust in close relationships. In: Hendrick, C., editor. *Close relationships*. Thousand Oaks, CA US: Sage Publications, Inc; 1989. p. 187-220.
- Homish GG, Leonard KE. Marital quality and congruent drinking. *Journal of Studies on Alcohol*. 2005; 66:488–496. [PubMed: 16240556]
- Homish GG, Leonard KE. The drinking partnership and marital satisfaction: The longitudinal influence of discrepant drinking. *Journal of Consulting and Clinical Psychology*. 2007; 75:43–51. [PubMed: 17295562]

- Karney BR, Bradbury TN. The longitudinal course of marital quality and stability: A review of theory, methods, and research. *Psychological Bulletin*. 1995; 118:3–34. [PubMed: 7644604]
- Karney BR, Bradbury TN. Neuroticism, marital interaction, and the trajectory of marital satisfaction. *Journal of Personality and Social Psychology*. 1997; 72:1075–1092. [PubMed: 9150586]
- Kearns JN, Leonard KE. Social networks, structural interdependence, and marital quality over the transition to marriage: A prospective analysis. *Journal of Family Psychology*. 2004; 18:383–395. [PubMed: 15222845]
- Kelley, HH. *Personal relationships: Their structures and processes*. Hillsdale, NJ: Erlbaum; 1979.
- Kenny, DA.; Kashy, DA.; Cook, WL. *Dyadic data analysis*. NY: Guilford Press; 2006.
- Kurdek LA. The nature and predictors of the trajectory of change in marital quality for husbands and wives over the first 10 years of marriage. *Developmental Psychology*. 1999; 35:1283–1296. [PubMed: 10493654]
- Laurenceau J-P, Bolger N. Using Diary Methods to Study Marital and Family Processes. *Journal of Family Psychology*. 2005; 19:86–97. [PubMed: 15796655]
- Locke HJ, Wallace KM. Short marital adjustment and prediction tests: Their reliability and validity. *Marriage and Family Living*. 1959; 21:251–255.
- Murray SL, Bellavia GM, Rose P, Griffin DW. Once hurt, twice hurtful: How perceived regard regulates daily marital interactions. *Journal of Personality and Social Psychology*. 2003; 84:126–147. [PubMed: 12518975]
- Murray SL, Derrick JL, Leder S, Holmes JG. Balancing connectedness and self-protection goals in close relationships: A levels-of-processing perspective on risk regulation. *Journal of Personality and Social Psychology*. 2008; 94:429–459. [PubMed: 18284291]
- Murray SL, Griffin DW, Derrick JL, Harris B, Aloni M, Leder S. Tempting fate or inviting happiness? Unrealistic idealization prevents the decline of marital satisfaction. *Psychological Science*. 2011; 22:619–626. [PubMed: 21467549]
- Murray SL, Holmes JG. The architecture of interdependent minds: A motivation-management theory of mutual responsiveness. *Psychological Review*. 2009; 116:908–928. [PubMed: 19839690]
- Murray SL, Holmes JG, Collins NL. Optimizing assurance: The risk regulation system in relationships. *Psychological Bulletin*. 2006; 132:641–666. [PubMed: 16910746]
- Murray SL, Holmes JG, Griffin DW. The benefits of positive illusions: Idealization and the construction of satisfaction in close relationships. *Journal of Personality and Social Psychology*. 1996; 70:79–98.
- Murray SL, Holmes JG, Griffin DW. Self-esteem and the quest for felt security: How perceived regard regulates attachment processes. *Journal of Personality and Social Psychology*. 2000; 78:478–498. [PubMed: 10743875]
- Murray SL, Holmes JG, Griffin DW, Bellavia G, Rose P. The mismeasure of love: How self-doubt contaminates relationship beliefs. *Personality and Social Psychology Bulletin*. 2001; 27:423–436.
- Murray SL, Holmes JG, MacDonald G, Ellsworth PC. Through the looking glass darkly? When self-doubts turn into relationship insecurities. *Journal of Personality and Social Psychology*. 1998; 75:1459–1480. [PubMed: 9914664]
- Murray SL, Rose P, Bellavia GM, Holmes JG, Kusche AG. When rejection stings: How self-esteem constrains relationship-enhancement processes. *Journal of Personality and Social Psychology*. 2002; 83:556–573. [PubMed: 12219854]
- Murray SL, Rose P, Holmes JG, Derrick J, Podchaski EJ, Bellavia G, et al. Putting the partner within reach: A dyadic perspective on felt security in close relationships. *Journal of Personality and Social Psychology*. 2005; 88:327–347. [PubMed: 15841862]
- Muthén, LK.; Muthén, BO. *Mplus User's Guide*. Sixth ed.. Los Angeles, CA: Muthén & Muthén; 2010.
- Reis, HT.; Clark, MS.; Holmes, JG. Perceived partner responsiveness as an organizing construct in the study of intimacy and closeness. In: Mashek, D.; Aron, AP., editors. *Handbook of closeness and intimacy*. NJ: Lawrence Erlbaum; 2004. p. 201-225.
- Reis, HT.; Shaver, P. Duck, Steve (Ed); Hay, Dale F (Ed); et al (1988) *Handbook of personal relationships: Theory, research and interventions*. Oxford, England: John Wiley & Sons; 1988. Intimacy as an interpersonal process; p. 367-389.

- Simpson JA. The dissolution of romantic relationships: Factors involved in relationship stability and emotional distress. *Journal of Personality and Social Psychology*. 1987; 53:683–692.
- Smock PJ. Cohabitation in the United States: An appraisal of research themes, findings, and implications. *Annual Review of Sociology*. 2000; 26:1–20.
- Solomon DH, Knobloch LK. A model of relational turbulence: The role of intimacy, relational uncertainty, and interference from partners in appraisals of irritations. *Journal of Social and Personal Relationships*. 2004; 21:795–816.

Figure 1.
The behavioral response component of the Risk Regulation system (i.e., the dependence regulation system) as operationalized in the current study.

A

B

C

D

Figure 2.

A – 2D. Predicted values for the linear and quadratic effects of time on A) perceived regard, B) disclosure and intimacy, C) partner valuing, and D) relationship satisfaction. The values graphed are for participants who are white (race = 0) and did not have a child at the time of marriage (child = 0).

Table 1

Descriptive statistics for relationship perceptions for husbands and wives.

	Perceived Regard	Disclosure/ Intimacy	Partner Valuing	Satisfaction	Divorce ^a
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	%
Husbands					
Year 0	7.71 (1.65)	7.56 (1.58)	7.82 (1.49)	117.85 (20.77)	0
Year 1	7.14 (2.05)	6.98 (2.00)	7.31 (1.86)	108.64 (28.22)	1.6
Year 2	6.78 (2.21)	6.73 (2.17)	7.04 (2.07)	106.53 (29.98)	4.0
Year 4	6.82 (2.19)	6.62 (2.22)	7.08 (2.05)	106.04 (28.84)	9.8
Year 7	6.50 (2.28)	6.51 (2.19)	6.91 (2.05)	104.12 (30.96)	17.2
Year 9	6.75 (2.17)	6.67 (2.10)	7.06 (1.99)	107.10 (27.16)	20.5
Wives					
Year 0	7.66 (1.74)	7.72 (1.58)	8.05 (1.36)	120.47 (20.13)	0
Year 1	6.91 (2.40)	6.99 (2.22)	7.38 (2.01)	109.15 (29.51)	1.6
Year 2	6.61 (2.41)	6.65 (2.36)	7.05 (2.13)	106.03 (32.73)	4.0
Year 4	6.47 (2.46)	6.50 (2.39)	6.98 (2.13)	105.60 (31.79)	9.8
Year 5	6.11 (2.57)	6.26 (2.43)	6.70 (2.32)	103.02 (31.33)	17.2
Year 9	6.57 (2.35)	6.57 (2.28)	7.00 (2.02)	106.80 (27.34)	20.5

^aPercent divorced represents the total number of known divorced couples out of 634 each year. Thus, this column is cumulative.

Table 2

Bivariate correlations of relationship perceptions for husbands and wives.

	1	2	3	4	5
1. Perceived Regard	.49 _{HW}	.79 _H	.74 _H	.69 _H	-.14 _H
2. Disclosure/Intimacy	.82 _W	.53 _{HW}	.80 _H	.72 _H	-.11 _H
3. Partner Valuing	.75 _W	.82 _W	.44 _{HW}	.68 _H	-.13 _H
4. Satisfaction	.73 _W	.75 _W	.74 _W	.59 _{HW}	-.17 _H
5. Divorce	-.16 _W	-.16 _W	-.17 _W	-.17 _W	-

Note. The values above the diagonal are for husbands, the values below the diagonal are for wives, and the values on the diagonal are intercorrelations between husbands and wives. The presented correlations are for grand mean values (i.e., the values are averaged across all of the years completed). All correlations are significant at $p < .001$. H = husband; W = wife.

Table 3

Growth curve analyses examining each relationship perception.

	Perceived Regard			Disclosure/Intimacy			Partner Valuing			Satisfaction		
	OR	SE	z	OR	SE	z	OR	SE	z	b	SE	z
Intercept (Random)	8.10			8.00			8.22			121.82 _H 125.83 _W		
Time (Linear)	0.94	.008	-8.25***	0.94	.008	-8.00***	0.95	.008	-6.63***	-5.428 _H -5.838 _W	0.404 _H 0.405 _W	-13.44 _H *** -14.42 _W ***
Time (Quadratic)	1.01	.001	5.00***	1.01	.001	5.00***	1.00	.001	4.00***	0.484	0.045	10.76***
<i>Control Variables</i>												
Children T0 _H	0.91	.019	-5.21***	0.91	.019	-4.95***	0.93	.016	-4.44***	-8.941	1.783	-5.015***
Children T0 _W	0.85	.020	-8.05***	0.88	.019	-6.84***	0.91	.016	-5.69***	-14.288	1.794	-7.964***
Race	0.97	.017	-1.71 ⁺	0.96	.016	-2.44*	0.96	.014	-2.86**	-4.440	1.489	-2.982**

Note. Perceived regard, disclosure and intimacy, and partner valuing were all analyzed using Poisson models. Satisfaction was analyzed using a linear model. The intercept was modeled as a random effect; all other effects were modeled as fixed. Children at time of marriage (0 = no, 1 = yes) and race (0 = white, 1 = non-white) were modeled as invariant over time. Time was coded 0, 1, 2, 4, 7, 9. Coefficients that differed significantly between husbands and wives include subscripts; all other coefficients were pooled across gender. OR = odds ratio; SE = standard error; z = z-score; b = regression coefficient; T0 = Time 0 or the time of marriage; H = husband; W = wife.

⁺ $p < .10$,

* $p < .05$,

** $p < .01$

*** $p < .001$

Table 4

Predicting levels of dependence from perceived regard over time.

	Disclosure/Intimacy			Partner Valuing			Satisfaction		
	OR	SE	z	OR	SE	z	b	SE	z
Intercept (Random)	7.11			7.46			112.046 _H 114.410 _W		
Lagged Perceived Regard (Actor)	1.01	.005	2.40*	1.01	.005	2.60**	0.872	0.267	3.27***
Lagged Perceived Regard (Partner)	1.01	.005	1.60	1.01	.005	1.60	0.498	0.267	1.87+
<i>Control Variables</i>									
Lagged DV (Actor)	0.98	.006	-4.17***	0.97	.006	-4.67***	-0.129	0.022	-5.86***
Lagged DV (Partner)	1.01	.006	0.83	1.00	.006	0.00	0.064	0.022	2.91**
Children T0 _H	0.91	.023	-3.96***	0.93	.020	-3.60***	-9.898	2.188	-4.52***
Children T0 _W	0.86	.024	-6.29***	0.90	.020	-5.40***	-16.607	2.206	-7.53***
Race	0.95	.020	-2.55*	0.95	.018	-2.61***	-5.037	1.833	-2.75**

Note. Disclosure and intimacy and partner valuing were both analyzed using Poisson models. Satisfaction was analyzed using a linear model. The intercept was modeled as a random effect; all other effects were modeled as fixed. The actor and partner effects of perceived regard in each set of analyses are lagged effects that varied over time. The actor effect and partner effect of the dependence variables (disclosure and intimacy, partner valuing, and satisfaction) are all lagged effects that varied over time. Children at time of marriage (0 = no, 1 = yes) and race (0 = white, 1 = non-white) were modeled as invariant over time. Time was coded 0, 1, 2, 4, 7, 9. Coefficients that differed significantly between husbands and wives include subscripts; all other coefficients were pooled across gender. OR = odds ratio; SE = standard error; z = z-score; b = regression coefficient; T0 = Time 0 or the time of marriage; H = husband; W = wife.

+ $p < .10$,

* $p < .05$,

** $p < .01$,

*** $p < .001$

Table 5

Predicting perceived regard from levels of dependence over time.

	Disclosure/Intimacy			Partner Valuing			Satisfaction		
	OR	SE	z	OR	SE	z	OR	SE	z
Intercept (Random)	7.17			7.17			7.17		
Lagged IV (Actor)	1.01	.006	1.50	1.01	.006	1.33	1.00	.001	1.00
Lagged IV (Partner)	1.01	.006	1.17	1.01	.006	1.33	1.00	.001	1.00
<i>Control Variables</i>									
Lagged Perceived Regard (Actor)	0.97	.006	-4.50***	0.98	.005	-5.00***	0.97	.005	-5.40***
Lagged Perceived Regard (Partner)	1.01	.006	2.17*	1.01	.005	2.80**	1.01	.005	2.20*
Children T0 _H	0.91	.023	-4.26***	0.91	.023	-4.26***	0.91	.023	-4.22***
Children T0 _W	0.83	.024	-7.75***	0.83	.024	-7.79***	0.83	.024	-7.75***
Race	0.96	.020	-1.95*	0.96	.020	-1.95*	0.96	.020	-1.91+

Note. All analyses were conducted using Poisson models. The intercept was modeled as a random effect; all other effects were modeled as fixed. The actor and partner effects for dependence (disclosure and intimacy, partner valuing, satisfaction, and divorce) in each set of analyses are lagged effects that varied over time. The actor effect and partner effect of perceived regard are lagged effects that varied over time. Children at time of marriage (0 = no, 1 = yes) and race (0 = white, 1 = non-white) were modeled as invariant over time. Time was coded 0, 1, 2, 4, 7, 9. Coefficients that differed significantly between husbands and wives include subscripts; all other coefficients were pooled across gender. OR = odds ratio; SE = standard error; z = z-score; T0 = Time 0 or the time of marriage; H = husband; W = wife.

+ $p < .10$,

* $p < .05$,

** $p < .01$,

*** $p < .001$

Table 6
Examining levels of dependence as mediators of the association between perceived regard and divorce.

	Disclosure/Intimacy			Partner Valuing			Satisfaction		
	OR	SE	z	OR	SE	z	OR	SE	z
Intercept (Random)	0.02			0.02			0.02		
Lagged Perceived Regard	0.96	.067	−0.66	0.85	.060	−2.73**	0.92	.267	−1.42
Lagged Mediator	0.76	.070	−3.86***	0.87	.067	−2.05*	0.98	.004	−4.50***
<i>Control Variables</i>									
Children T0	2.61	.255	3.77***	2.60	.254	3.76***	2.58	.256	3.70***
Race	1.05	.129	0.43	1.07	.128	0.54	1.08	.129	0.56

Note. All analyses were conducted using a binomial multilevel model with a logit link. The intercept was modeled as a random effect; all other effects were modeled as fixed. The effects of perceived regard and the potential mediator in each set of analyses are lagged effects that varied over time. Children at time of marriage (0 = no, 1 = yes) and race (0 = white, 1 = non-white) were modeled as invariant over time. Time was coded 0, 1, 2, 4, 7, 9. None of the coefficients differed across husbands and wives and so were pooled across gender. OR = odds ratio; SE = standard error; z = z-score; b = regression coefficient; T0 = Time 0 or the time of marriage.

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