

Deeds matter. Daily enacted responsiveness and intimacy in couples' daily lives.

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### Abstract

Perceived responsiveness is a fundamental ingredient of satisfying romantic relationships, especially insofar as it facilitates the development of intimacy. This study investigates how partner's concrete responsive or thoughtful acts—named here *enacted responsiveness*—affect the perception of responsiveness in the daily life of dating couples. Additionally, the subsequent association of perceived partner responsiveness with intimacy was examined. Data from both partners in 102 young heterosexual couples were gathered simultaneously several times a day over one week. Multilevel analysis within the framework of the actor-partner interdependence mediation model showed that perception of responsiveness is predicted by partner's enacted responsiveness. However, own enacted responsiveness also predicts own perception of responsiveness in the partner, suggesting a projection process. Perception of responsiveness, in turn, predicts not only own but also partner's feelings of intimacy, demonstrating an intimacy enhancing effect of being perceived as a responsive partner. Mediation analysis showed that perception of responsiveness mediates the effects of both own and partner's enacted responsiveness on intimacy. It can be concluded that the development of intimacy in the daily life of romantic couples is truly an interactive process that ought to be investigated from a dyadic perspective.

*Keywords:* romantic relationships, daily, responsiveness, intimacy, multilevel mediation.

Psychological intimacy is the result of an interaction process between partners which is associated with strong and affectively pleasant interpersonal bonds (Baumeister & Leary, 1995; Mashek & Aron, 2004). It has particular importance in romantic relationships (Levinger & Huston, 1990), where it is associated with better relationship quality (Hassebrauck & Fehr, 2002) and relationship duration (Simpson, 1987). Intimacy is also linked with individual psychological and physical well-being (Berkman, 1995; Kiecolt-Glaser, & Newton, 2001; Reis & Franks, 1994). The goal of the present study is to contribute to the understanding of the development of feelings of intimacy by investigating the role of enacted responsiveness on the intimacy process in dating couples and by looking at the mediational role of perceived partner responsiveness. The use of dyadic data collected in couple's daily lives allows us to assess the relative importance of enacted responsiveness and perceived responsiveness on the development of intimacy, as it occurs in daily life.

The interpersonal process model of intimacy (Reis & Shaver, 1988; Reis & Patrick, 1996) has been an important framework for explaining the development of feelings of intimacy between two partners. According to this model, intimacy refers to the feeling of being understood, validated and cared for by the partner. It arises when one's disclosure is followed by a responsive reaction of the interaction partner. Responsiveness is defined as thoughtful, empathic reactions contingent to the partner's behavior that communicate respect and appreciation (Reis, 1998). It can be communicated in several ways to the partner, both verbally and nonverbally. Only a few studies have empirically tested the interactive nature of the process model of intimacy (i.e. Laurenceau, Feldman Barrett, & Pietromonaco, 1998; Laurenceau, Feldman Barrett, & Rovine, 2005; Manne et al., 2004). However, these studies have focused primarily on the role of disclosure and perceived partner responsiveness. The aim of the present study is to investigate the effect of enacted responsive behaviors -- displayed as a response to the partner's affective state -- on feelings of intimacy toward one's

partner. Therefore, we focus on the later part of the intimacy process model and do not assess in this study the role of disclosure (which has been shown to be clearly related to intimacy of the disclosing person and their partner; Laurenceau, et al., 1998; Laurenceau, et al., 2005; Manne et al., 2004). Moreover, as perception of the partner's responsiveness has been shown to be important for the intimacy process, we investigate (a) whether enacted responsiveness predicts perceived partner responsiveness in daily life and (b) whether perceived partner responsiveness mediates the effect of enacted responsiveness on feelings of intimacy. Figure 1 presents a path diagram of the model we tested, an APIMeM (Actor-Partner Interdependence Mediation Model, Ledermann & Bodenmann, 2006; Ledermann, Macho, & Kenny, 2011), an extension of the APIM (Actor-Partner Interdependence Model; Kenny, Kahsy, & Cook, 2006).

### **Deeds Matter**

There are several ways to show one's partner that one cares for him (Reis, 1998). The more concretely and obviously the responsiveness is displayed, the bigger the effect of responsiveness on partner's perceived responsiveness should be (Lemay & Clark, 2008). In this study, we investigate the relevance of two concrete forms of communicating responsiveness in reaction to the partner's emotional state. We have grouped them under the label of *enacted responsiveness*. The first is *kind gesture* to the partner—including concrete behaviors like cooking a special meal for a partner, leaving a kind letter or sending a warm text message. The second includes forms of showing the partner affection by means of *responsive touch*—like hugging or stroking. Indeed, touch has been shown to intensify the experience of psychological intimacy (Thayer, 1986) and to be linked to relational intimacy (Emmers & Dindia, 1995). In our daily enacted responsiveness measure, the focus is on the behavioral aspect of responsive gestures in the relationship. We rely thereby on a broad concept of responsiveness as a thoughtful behavior communicating concern and validation in

daily life to the romantic partners<sup>1</sup>. As romantic relationships are constituted by psychological intimacy, we expect intimate processes to occur on a regular basis in couple's everyday life. We assume enacted responsiveness to be of particular importance for the experience of intimacy in the daily lives of couples, even if the perception of the contingency between one partner's disclosure and the other partner's responsiveness is not perfect. The ambulatory assessment procedure, a computer-based diary method, queries events occurring within the last 4 hours and should provide valid observations of actual behavior in the relationship (Perrez, Schoebi, & Wilhelm, 2000). Moreover, because these observations refer to a specific situation, they should be minimally biased by factors such as social desirability or retrospective bias (Perrez & Reicherts, 1996).

It has been shown in other areas of research that the perception of partner characteristics is predicted by the actual partner characteristics (the so called "kernel of truth"; Abbey, Andrews, & Halman, 1995; Antonucci & Israel, 1986; Coriell & Cohen, 1995; Simpson, Ickes, & Blackstone, 1995). In this study, we test how the display of enacted responsiveness contributes to the momentary perception of partner responsiveness. In principle, one partner should perceive the other as responsive only if there were, in fact, responsive behaviors displayed by the partner (Reis & Patrick, 1996; Laurenceau, Feldman Barrett, & Pietromonaco, 2004). Thus, over the course of daily interactions, the more a person reports having displayed enacted responsiveness, the more the partner should perceive the displayer as responsive. The effect of enacted responsiveness on perceived responsiveness

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<sup>1</sup> The responsive behavior was assessed as a response to the partner's emotional state. However, it was not explicitly assessed whether the act was a reaction to a concrete disclosive verbal behavior of the other partner. Therefore it may be that we did not only assess responsive behavior in the narrower sense as proposed by Reis and Patrick (1996) but also general thoughtful behavior in response to the partner's general emotional state.

is indicated in Figure 1 by paths labeled P2<sub>w</sub> and P2<sub>m</sub>. These paths represent *partner effects* within the framework of the APIM (Kenny, et al., 2006).

### **The Mediating Role of Perceived Partner Responsiveness**

The interpersonal process theory of intimacy (Reis & Patrick, 1996) states that partner's responsiveness plays a causal role in the development of feelings of intimacy. Several studies have demonstrated that the general perception of the partner as responsive to the self is crucial in close relationships (Reis, Clark, & Homes, 2004) and has a strong influence on intimacy (Laurenceau, Feldman Barrett et al., 2005). However, the perception of responsiveness and the actor's *actual* responsive behaviors (as displayed *and* reported by the actor) are not necessarily expected to be identical. For instance, research in the area of social support shows that the reports of provided (as opposed to perceived) social support do not have equal effects on the target of the social support (Bolger & Amarel, 2007; Shrout, Herman, & Bolger, 2006). Surprisingly, support which was reported as provided by the partner but was not perceived as such by the recipient—so called invisible support—had the most positive consequences on momentary affect. In contrast, support that was perceived as such was associated with negative effects on the recipient of social support. Consequently, the assumption that enacted responsive behavior will lead to psychological intimacy only if it is perceived as such should be tested. In order to assess the process occurring when one person displays responsiveness and the other person perceives it, we believe it is important to test whether perceived responsiveness mediates (fully or partially) the effect of responsiveness on the experience of intimacy.

In Figure 1, the mediated pathway between enacted responsiveness and partner's experience of intimacy consists of paths P2<sub>m</sub> and A3<sub>w</sub> for women's feelings of intimacy and paths P2<sub>w</sub> and A3<sub>m</sub> for men's feelings of intimacy. Paths A3<sub>w</sub> and A3<sub>m</sub> represent actor effects within the framework of the APIM. Note that these paths are tested while controlling

for the direct effect of the partner's enacted responsiveness on feelings of intimacy (labeled  $P1_w$  and  $P1_M$ ).

### **Projection of Own Responsiveness**

In projection, the perceiver tends to attribute his or her own characteristics to the partner. Lemay and colleagues have found that projection of responsiveness has a strong influence on perceived partner responsiveness (Lemay & Clark, 2008; Lemay, Clark, & Feeney, 2007); the perception of responsiveness is more strongly predicted by own responsiveness to partner than by actual partner responsiveness. Thus, to obtain an unbiased test of whether the partner's enacted responsiveness predicts the actor's perceived responsiveness (paths  $P1_w$  and  $P1_M$ ), it must be estimated while controlling for projection. As can be seen in Figure 1, the extent to which the actor's own enacted responsiveness predicts his or her perception of partner responsiveness (i.e., projection) is represented by paths  $A2_w$  and  $A2_M$ . Projection has been found to play a relationship enhancing role, as it is associated with greater relationship satisfaction and disclosure (Lemay & Clark, 2008). Therefore, projection can be expected to have a positive effect on the intimacy experience.

In summary, we investigate three theory-driven hypotheses about the development of intimacy in dating relationships. First, we test whether enacted responsiveness enhances the receiver's concurrent or succeeding feelings of intimacy (path  $P1$ ). Next, we investigate the effect of enacted responsiveness on the responsive person's own feelings of intimacy (path  $A1$ ). Finally, as we are interested in the process of intimacy as it arises in the daily life of couples, we test whether the effect of enacted responsiveness on the partner's experience of intimacy is mediated by the partner's perception of that responsiveness. We investigated two mediation paths: a first path where partner enacted responsiveness predicts own perceived responsiveness (path  $P2$ ), which in turn predicts own experience of intimacy (path  $A3$ ). This mediational path corresponds to the process model of intimacy (Reis & Patrick, 1996). The

second mediational path corresponds to the intimacy enhancing function of projection.

According to this path own enacted responsiveness predicts own perceived responsiveness (path A2), which in turn predicts own experience of intimacy (path A3). Applying a dyadic perspective and relying on minimally retrospective measures of actual behavior in everyday life brings a unique level of methodological rigor to this investigation.

## Method

### Participants

102 non-married heterosexual couples in committed relationships participated in this study. We recruited them mainly through electronic messages sent to different universities and colleges, but also through posters, flyers and announcements in student journals. Participants were recruited as part of a larger project about intra- and interpersonal emotion regulation in couples. As inclusion criteria, participants had to be aged between 18 and 40 years (actual age:  $M = 25.40$ ,  $SD = 5.08$ ). Additionally, couples had to consider themselves to be in a committed relationship for at least three months. The actual mean relationship duration was approximately 3 years ( $M = 35.48$  months,  $SD = 32.31$ , min. = 4, max. = 180). Moreover, the partners had to see each other regularly (i.e., a minimum of three times a week). In fact, 43.3 % of the couples were cohabitating. Including those living in different apartments, 90.0 % indicated sleeping regularly in the same room. Only four couples reported having children. The vast majority of the sample had finished high school (89.8%) and 27 % had a masters degree. 54.4% of the participants were students and 45.6% had a paid job. We measured their relationship satisfaction with a German version of the Relationship Assessment Scale (Hendrick, Dicke, & Hendrick, 1998; Hendrick, 1988; Sander & Böcker, 1993). The mean score was 30.97—corresponding to a score between satisfied and very

satisfied; min. = 16 (*unsatisfied*); max. = 35 (*very satisfied*)—suggesting a rather high level of relationship satisfaction in this sample.

### **Procedure**

Potential participants were screened by phone or e-mail to determine if they met all inclusion criteria. Couples accepted into the study were asked to choose a “study week” that would be representative of their daily lives. They were explicitly asked to exclude weeks that included holidays, visits, or other special events. The first research meeting took place in our laboratory. Participants completed informed consent, completed various questionnaires, and were given manualized instruction on the use of palm-top computers for collection of the daily diary items of the ambulatory assessment. The seven-day ambulatory assessment period took place between the first and the second meeting. At the second meeting, they again completed a set of questionnaires and participated in a short interview about their experience with the ambulatory assessment. All participating couples received the equivalent of \$100 US after having completed the 6-months follow-up questionnaire (which is not analyzed in this study).

The palm-top computers were programmed to ring four times a day, simultaneously for both partners, always around nine a.m., one p.m., five p.m. and nine p.m., for seven consecutive days. This resulted in 28 measurement points per person. Participants had two hours to respond to the questionnaire after the computer had rung. After this time, the questionnaire automatically closed. In total, participants responded to 91.4% of the requested ratings. The mean answering time after the ring tone was 9:03 min. Because we were interested in the momentary effects of concrete responsive acts toward the partner, we only used the reports where at least one partner indicated having had a direct contact with the other

(that is being in the physical presence of each other)<sup>2</sup>. This represents 62.0% of the reports.

The procedure was approved by the ethics in research with human participants committee of the German Association of Psychology (Deutsche Gesellschaft für Psychologie).

The ambulatory assessment procedure has several psychometric strengths. First, compared to observational methods, the assessment occurs in the real setting of the participants, improving the ecological validity (Bolger, Davis, & Rafaeli, 2003; Reis, 2012). It is also a less intrusive procedure for collecting data that participants consider private, such as feelings (Schwarz, 2012). Compared to a single retrospective questionnaire assessment, it minimizes the retrospection bias and thus reduces effects of motivated and biased social perception (Fahrenberg, Myrtek, Pawlik, & Perrez, 2007).

## Measures

The following items of the ambulatory assessment questionnaire were used.

**Enacted responsiveness to partner.** The participants were asked if they had had any contact with their partner—either directly or indirectly by phone or e-mail—since the last entry, or at the first entry of the day, since getting up. There had been direct or indirect contact in 71.2 % of the reports. At each occasion of measurement, participants were asked to report their own current affective state and to estimate their partner’s affective state (variables that are not of interest for the current study) in terms of affective valence (pleasant to unpleasant). Accordingly, participants were instructed that, whenever persons are conscious, their affective state can be stated along this dimension. If there had been contact, they were asked whether, as a response to the earlier reported partner’s affective state, certain behaviors were performed. Among the choices, two implied a concrete responsive act toward the partner. The first was named *kind gesture*, indicated by endorsement of the item: “As a

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<sup>2</sup> This did not include indirect contact, like for example via phone or e-mail.

response to my partner's affective state, I showed responsiveness to him/her through my behaviors (i.e. help for cooking, gift, nice text message etc.)." The second was named *responsive touch*, indicated by endorsement of the item: "As a response to my partner's affective state, I have hugged him/her or I have shown tenderness physically." Both items were rated on a 5-point scale from 0 = *does not apply* to 4 = *applies very strongly*. The person's mean scores across all occasions of measurement over the week for the *kind gesture*-item ranged from .00 to 3.86 ( $M = 1.28$ ,  $SD = .90$ ) for women and from .00 to 3.62 ( $M = 1.39$ ,  $SD = .88$ ) for men. Males and females did not differ on this measure,  $t(101) = 1.06$ , *ns*. For the *responsive touch*-item, mean scores of individuals across all occasions over the week ranged from .29 to 4.00 ( $M = 2.48$ ,  $SD = .94$ ) for women and from .57 to 4.00 ( $M = 2.70$ ,  $SD = .79$ ) for men. Women scored significantly higher on this item,  $t(101) = 2.81$ ,  $p < .01$ .

We tested whether it made sense to aggregate the two items to form one indicator of enacted responsiveness. In a multivariate multilevel framework, we calculated the correlation between the two indicators (kind gesture and responsive touch) at both the person and occasion level (i.e. four times a day for seven days, in total 28 occasions) levels. The correlation at the person level was  $r = .70$ ,  $p < .001$  and at the occasion level was  $r = .30$ ,  $p < .001$ . This indicates that partners who show more kind gestures also display more responsive touch. Furthermore, in moments where partners display kind gestures, they are significantly more likely to display responsive touch. Possibly, this association is smaller at the occasion level as compared to the person level because certain situations suggest different ways of responsive actions. Therefore, we concluded that it is meaningful to aggregate both indicators at the occasion of measurement level.

**Intimacy.** In the ambulatory assessment questionnaire, we also asked about momentary feelings participants had toward their partner (independently of whether they had had any contact with each other). Four items operationalized the experience of intimate

feelings toward partner: feelings of being secure, cared for, close to, and understood by the partner. These items were rated on 5-point scales with response options ranging from 0 = *does not apply* to 4 = *applies very strongly*. Confirmatory factor analysis of this measurement model was made using averaged data over the assessment week and was computed using AMOS (Arbuckle, 2009). It showed very good model fit and the factor loading of each item was statistically significant for both men and women (cf. Figure 1 in Appendix), indicating that the items reliably assess the same construct. To assess intimacy, these four items were averaged on each assessment occasion. The mean individual scores across all occasions over the assessment period for the *intimacy*-items ranged from .80 to 3.96 for women ( $M = 3.05$ ,  $SD = .61$ ) and from 1.68 to 4.00 ( $M = 3.05$ ,  $SD = .60$ ) for men. No gender difference was found,  $t(101) = .072$ ,  $p = .94$ .

**Perceived Partner Responsiveness.** The general perception of the partner as responsive was measured by a single item: “My partner was responsive to me.” rated on a 5-point scale from 0 = *does not apply* to 4 = *applies very strongly*. It was only asked when participants indicated having had contact with the partner since the last entry. It referred to the period of time between the last and the current report. As mentioned, when introducing the diary to the participants, each item—including this one—was explained (face to face) to the participants and they additionally received a written manual with detailed instructions and explanations. At the person level, averaged scores over the assessment period for this item ranged from .54 to 3.74 ( $M = 1.97$ ,  $SD = .77$ ) for women rating their male partner and from .00 to 3.88 ( $M = 1.66$ ,  $SD = .86$ ) for men rating their female partner. Men rated their partner as significantly higher in responsiveness than women did,  $t(101) = 3.36$ ,  $p = .001$ .

### Statistical Analysis

The present data have two sources of non-independence: a first due to the repeated measurement of each participant’s variables and second due to the fact that each participant

belongs to a couple. In order to take these dependencies into account, we used a dyadic multilevel modeling approach. We estimated a two-level Actor-Partner Interdependence Model (APIM) with two intercepts (one for the female and one for the male partner, representing the person level; Kenny et al., 2006). Thus, participant's daily reports on the multiple measurement occasions (Level 1) are regarded as nested within couples (Level 2; Laurenceau & Bolger, 2005). Intercepts and the parameter estimates for the actor and partner effects were allowed to vary across persons. We were not expecting any particular gender difference. Thus, we tested successively if the corresponding intercept or actor or partner effect of the partner was different. The only parameter that differed significantly between men and women was the intercept of perceived partner responsiveness, with men perceiving more responsiveness by their partner,  $\chi^2_{diff}(1) = 8.16, p < .001$ . Except for this parameter, all other intercepts and effects were set equal across gender.

Our hypotheses concern actor and partner associations at the within-subject level (Level 1, distinguishable dyads). Hence, to remove the effect due to general individual tendencies at level 2 (i.e. mean of each participant over the assessment period), all predictors were centered at the person's mean. Besides, in order to control for autoregressive influences, we adjusted for the score of the dependent variable reported at the previous time point<sup>3</sup>. Thus, the outcome represents the residualized change since the preceding assessment.<sup>4</sup>

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<sup>3</sup> We first added actor and partner score of the outcome at the previous occasion. The partner previous outcome was not significant, neither for intimacy nor for perceived partner responsiveness. Moreover, the investigated effects were not affected by the integration of these variables. Thus, we did not keep them in the model. Rather, we only controlled for the actor previous outcome.

<sup>4</sup> As relationship duration could have an influence on the studied variables, we added the variable in the model. Relationship duration was negatively correlated with perceived responsiveness but showed no significant association with intimacy. However, it did not affect the significance level or direction of the studied effects. Thus, for parsimony reasons and as it was not the focus of this article, we did not keep it in the model.

Equation 1 displays the Level 1 model for predicting changes in feelings of intimacy due to enacted responsiveness and perceived partner responsiveness (for simplicity reasons, we show the equations only for one of the partners). It estimates both the direct actor and partner effects of enacted responsiveness on intimacy feelings (paths A1 and P1) and the direct actor and partner effects of perceived responsiveness on the experience of intimacy (paths A3 and P3 on Figure 1), constituting the second path of the tested mediation .

$$\begin{aligned} Intimacy_{ij} = & b_{0j} + b_{1-1j}(\text{previous intimacy}) + b_{2j}(\text{actor enacted responsiveness}) + b_{3j}(\text{partner} \\ & \text{enacted responsiveness}) + b_{4j}(\text{actor perceived responsiveness}) + b_{5j}(\text{partner} \\ & \text{perceived responsiveness}) + e_{ij} \end{aligned} \quad (1)$$

*Intimacy<sub>ij</sub>* represents the current feelings of intimacy of a partner from couple *j* at time *i* felt toward his/her partner. The estimate for *b<sub>0j</sub>* is the average of the participant's intimacy, adjusted for all predictors in the model. The estimate for *b<sub>1-1j</sub>* reflects the actor's feelings of intimacy at the previous occasion. The estimate for *b<sub>2j</sub>* captures the effect of the actor's enacted responsiveness on own the own intimate experience (path A1). The estimate for *b<sub>3j</sub>* represents the partner effect of enacted responsiveness on feelings of intimacy (path P1). The estimate for *b<sub>4j</sub>* is the effect of the perceived responsiveness on the own experience of intimacy (path A3) and *b<sub>5j</sub>* the corresponding partner effect (path P3). Finally, *e<sub>ij</sub>* is the Level-1 error term.

Equation 2 represents the prediction of the change in one partner's perceived responsiveness by actor (path A2) and partner enacted responsiveness (path P2):

$$\begin{aligned} Perceived\ responsiveness_{ij} = & b_{0j} + b_{1-1j}(\text{previous perceived responsiveness}) + b_{2j}(\text{actor} \\ & \text{enacted responsiveness}) + b_{3j}(\text{partner enacted responsiveness}) + e_{ij} \end{aligned} \quad (2)$$

*Perceived responsiveness<sub>ij</sub>* represents the current perceived partner responsiveness of a person from couple *j* at time *i*. The estimate for *b<sub>0j</sub>* is the average participant's perceived responsiveness, adjusted for all predictors in the model. The estimate for *b<sub>1-1j</sub>* reflects the

actor's perceived responsiveness at the previous occasion. The estimate for  $b_{2j}$  captures the effect of enacted responsiveness on own intimacy feelings (path A2). The estimate for  $b_{3j}$  represents the effect of the partner's display of enacted responsiveness on one's perceived responsiveness (path P2).

To determine whether the hypothesis that the perception of partner responsiveness mediates the association between enacted responsiveness and the experience of intimacy among couples at Level 1, the Monte Carlo Method for Assessing Multilevel Mediation was used (MCMAMM; Bauer, Preacher, & Gil, 2006). This method gives a confidence interval for the distribution of the estimate of both direct paths being tested. If zero falls outside the interval, the null hypothesis of no mediation is rejected. We used a 95% confidence level and estimations were based on 20,000 repetitions. We applied a multivariate model using the MLwiN software (Rabash, Steele, Brown, & Goldstein, 2009). This allowed us to compute simultaneously one equation for the independent variable (intimacy; Equation 1) and one for the mediator variable as outcome (perceived responsiveness; Equation 2).

## Results

### Preliminary Analyses

Intraindividual and interindividual Pearson correlations among the study variables (individual mean across all measurement occasions) are shown in Table 1. All study variables are significantly correlated to each other. The coefficients of the empty multilevel models—where there is only the intercept of both partners for each study variable—showed that all variables correlate significantly between partners at both levels (measurement occasions and partners). For enacted responsiveness, within-dyad correlation at level 2 is  $r = .50, p < .001$  and at level 1 is  $r = .19, p < .001$ ; for perceived responsiveness, the correlation

at level 2 is  $r = .39, p < .001$  and at level 1  $r = .17, p < .001$ ; for intimacy, the correlation at level 2 is  $r = .67, p < .001$  and at level 1  $r = .41, p < .001$ .

### **Multilevel analyses**

The results of the multilevel APIMeM (Actor-Partner Interdependence Mediation Model) model are presented in Table 2. We begin by describing the direct effects of enacted responsiveness on feelings of intimacy. First, the path between actor's enacted responsiveness and actor's feelings of intimacy is significant (path A1:  $b = .137, SE = .013, p < .001$ ). When one acts responsively to the partner, one feels more intimate toward him or her. Thus, even when controlling for the effect of actor's and partner's perceived responsiveness and earlier feelings of intimacy, there is still a significant direct effect of acting responsively on one's own feelings of intimacy toward the partner. This suggests a partial mediation of perceived responsiveness. Second, the direct partner effect between enacted responsiveness and the intimate experience was also significant (path P1:  $b = .047, SE = .014, p < .001$ ). This confirms that engaging in concrete acts of responsiveness toward the partner increases the partner's feelings of intimacy. Considering that the paths constituting the mediating effect of perceived responsiveness are controlled, this later result indicates that the effect of enacted responsiveness on partner's feelings of intimacy is only partially mediated by the partner's perception of the actor's responsiveness.

We continue by describing the effects mediated by perceived responsiveness. First, according to the projection model (Lemay & Clark, 2008), a person's own responsiveness should predict own perception of the partner's responsiveness. The results show that an actor's enacted responsiveness did significantly predict their perceptions of the partner's responsiveness (path A2:  $b = .304, SE = .033, p < .001$ ). Second, as suggested by the process model of intimacy (Reis & Patrick, 1996), an actor's enacted responsiveness should predict the partner's perception of responsiveness. The results supported this hypothesis as well (path

P2:  $b = .206$ ,  $SE = .035$ ,  $p < .001$ ), demonstrating that the perception of the partner as responsive is based on a so called “kernel of truth”. Third, as suggested by earlier studies of the process model of intimacy (i.e. Laurenceau et al., 1998; Manne et al., 2004), perceptions of partner responsiveness significantly predicted feelings of intimacy toward the partner (path A3:  $b = .134$ ,  $SE = .011$ ,  $p < .001$ ). Fourth, when an actor perceives his/her partner to be responsive, this significantly predicts the partner’s level of intimacy (path P3:  $b = .050$ ,  $SE = .010$ ,  $p < .001$ ), above and beyond the other effects in the model. This suggests that there are benefits associated with of being perceived as a responsive partner.

Finally, on an exploratory basis, we investigated whether the actor effect representing the projection process (i.e., when own enacted responsiveness predicts own perception of partner responsiveness) differs from the partner effect representing the “logical effect” (when partner’s enacted responsiveness predicts the recipient’s perception of partner responsiveness). The difference was marginally significant,  $\chi^2_{diff}(1) = 3.80$ ,  $p = .051$ . The “projection effect” (A2:  $b = .304$ ) was slightly larger than the “logical effect” (P2:  $b = .206$ ).

### **Testing Mediation: The Monte Carlo Method**

In order to test the different mediational paths hypothesized within the APIMeM (Ledermann & Bodenmann, 2006; Ledermann, Macho, & Kenny, 2011), and thus to truly capture the mediational function of perceived responsiveness in our model, we used the Monte Carlo method for assessing multilevel mediation (MCMAM; Bauer et al., 2006; MacKinnon, Lockwood, & Williams, 2004; Selig & Preacher, 2008). With this method, the variance and covariances of the tested effects are needed. As these were not set equal across gender, we obtain separate results for the effect on men and women.

First, we tested the compound path corresponding to the process model of intimacy (Reis & Patrick, 1996). According to this mediational hypothesis, the actor’s enacted responsiveness predicts partner’s perception of the actor’s responsiveness (path P2) which in

turn, predicts partner's intimate feelings for the actor (path A3). The 95% confidence intervals (CI) showed that this compound path (P2 followed by A3) was significant (effect on men's feelings of intimacy: CI [.010, .045]; effect on women's feelings of intimacy: CI [.012, .044]). These results are consistent with the interactional process described in the intimacy process model. They show that when one person displays responsiveness, the partner perceives it and this, in turn, increases the partner's experience of intimacy.

Next we tested the compound path reflecting the intimacy-enhancing function of projecting one's own responsiveness onto the partner. Specifically, we tested whether own enacted responsiveness predicts own perception of partner responsiveness (path A2), which in turn predicts own felt intimacy (path A3). This "A2–A3 path," which is only composed of actor effects, was also significant (effect on men's intimacy: CI [.012, .051]; effect on women's intimacy: CI [.036, .068]). Thus, projecting one's own responsiveness seems to enhance one's feelings of intimacy toward one's partner.

### **Discussion**

This study investigated the role of enacted responsiveness on the development of mutual feelings of intimacy in couples on a moment to moment basis in real daily life. Most centrally, it tested whether the perception of partner responsiveness mediates the effect of enacted partner responsiveness on the recipient's intimacy experience. Our results indicate that daily enacted responsiveness does predict changes in both own and partner's experience of intimacy over different situations in everyday life. Deeds do matter, not only for the receiver of the responsive acts but also for the provider of responsiveness, him- or herself. Concrete acts of responsiveness to a partner's emotions seem to have a direct positive effect on the momentary feelings of intimacy of the partner, even after controlling for the perception of partner responsiveness and earlier intimacy. Thus, it appears that to some extent, the responsive deeds of the partner do not necessarily need to be perceived by the

partner to have an impact on the intimate process inside the relationship. Moreover, acting responsively seems to make the actor feel more intimate toward the partner, even when the partner's enacted responsiveness and intimacy are controlled. This direct effect of enacted responsiveness on own intimate experience is partially mediated by the perception of partner responsiveness. Consequently, the effect of enacted responsiveness on own felt intimacy seems to act through several pathways that will be detailed below.

### **The Kernel of Truth**

The degree to which individuals perceive their partner as responsive in their daily lives is partially determined by the partner's actual responsive behavior. This corresponds with what has been named "the kernel of truth" in different domains of social perception (see Abbey et al., 1995; Gable, Gonzaga, & Strachman, 2006; Lemay & Clark, 2008; Priem, Solomon, & Steuber, 2009) and is consistent with research in the area of accuracy in interpersonal perception (Simpson, Oriña, & Ickes, 2003; Wilhelm & Perrez, 2004). This underscores the importance of concrete displays of responsiveness. When situations in daily life evoke concrete gestures of care and concern, the partner will perceive these gestures as responsive. This finding persists even when we control for the general level of each individual's perceived responsiveness and the interdependence of the partners—an interdependence that could reflect a shared level of responsiveness in the couple.

### **The Projection of Responsiveness**

We found a marginally significant trend for one's own enacted responsiveness to predict one's perceptions of the partner's responsiveness better than does the partner's enacted responsiveness. This suggests a pattern where the actor effect is more important than the corresponding partner effect (Kenny & Ledermann, 2010). This finding may be somewhat surprising but is consistent with results of Lemay and colleagues (Lemay & Clark, 2008;

Lemay et al., 2007). Our results show that projection processes remain important despite of the behaviorally defined quality of enacted responsiveness. Lemay and Clark (2008) also suggested that the projection effect might be weaker when partners express their care in an unequivocal way. Our results do not support this view, but rather underscores the robustness of the projection effect.

There is one methodological concern to keep in mind when considering the strength of the projection process. Partner effects have been shown to be generally weaker and harder to find than actor effects (Bodenmann, Ledermann, & Bradbury, 2007; Kenny & Malloy, 1988; Kenny, Mohr, & Levesque, 2001). This is partly due to shared method variance (e.g., shared response sets) in the actor effects. Thus, a methodological artifact could explain why the projection path—an actor effect—is marginally larger than the “logical path”—a partner effect. In this study, however, enacted responsiveness was assessed with minimally retrospective reports (max. time lag is of 4 hours) of concrete acts of responsiveness. Moreover, the items constituting enacted responsiveness (kind gesture and responsive touch) were particularly explicit and provided less room for interpretation. Consequently, concluding that the difference in the size of these effects is due to a methodological artifact is somewhat less plausible.

### **Projection Enhances Feelings of Intimacy**

Our results support the view that projection can serve a beneficial function, enhancing relationship quality in romantic couples. Projecting one’s own responsiveness onto the partner was associated with an increase in own intimacy feelings, above and beyond the effect of partner’s actual behavior.

As mentioned earlier, we did not assess the extent to which a person’s responsive behavior was a response to self-disclosure by the partner. Rather, responsiveness was assessed as a response to the partner’s emotion. As highlighted in the introduction, most of

the studies of Reis and Patrick's (1996) intimacy process model have assessed perceived partner responsiveness and not actual partner responsiveness as predictor of intimacy (Laurenceau et al., 1998; Laurenceau et al., 2004; Manne et al., 2004). Treating perceived partner responsiveness as equivalent to actual partner responsiveness is tempting, and some authors have not always distinguished clearly between these constructs (Laurenceau et al., 1998; Maisel & Gable, 2009). The present study demonstrates the importance of treating actual responsiveness and perceived responsiveness as two different constructs. The effect of responsive acts on felt intimacy was not fully mediated by perceived responsiveness. This highlights the potential importance of "invisible" (i.e. not explicitly perceived) supportive processes in the relationship (Bolger & Amarel, 2007).

### **Being Seen as a Responsive Partner**

The perception of the partner as responsive not only promoted own intimacy feelings, but also significantly increased the intimate experience of the partner. Being perceived as a responsive person by one's partner seems to enhance own intimacy felt toward one's partner. This result suggests a new pathway through which intimacy is enhanced. It indicates that the individual's perception of the partner as responsive has some positive effect on the partner. To our knowledge, no other study has shown such an effect. The psychological mechanisms behind this are still unclear. Possibly, there are similarities with the effect of idealization as discussed by Murray, Holmes & Griffin (1996a, 1996b); being idealized by one's partner is associated with enhanced relationship satisfaction and perceived interpersonal qualities. Accordingly, it could be hypothesized that the partner's positive view of the self as a good, responsive companion is somehow perceived by the self and in turn, enhances one's own positive self view. This may reinforce the sense of communality and cohesion (Williamson & Clark, 1989, Williamson & Clark, 1992) and therefore enhance intimacy feelings toward the partner. Further research is needed to investigate possible variables that mediate this effect.

### **Limitations**

Interpretation of these results has to be qualified by some factors. First, the use of a convenience sample (rather young and well-educated couples) limits generalizability of the results. Second, our measure of responsiveness was not operationally defined in the same way as our measure of perceived responsiveness, in contrast to other projection studies (Lemay & Clark, 2008). In fact, our measure of responsiveness was assessed by two items that indicate a specific kind of responsiveness (kind gestures and responsive touch), whereas perception of responsiveness was assessed generally (“My partner was responsive to me”). However, the results suggest that these enacted responsive behaviors significantly contribute to own and partner perceptions of responsiveness. Third, concerning the measurement of the variables with several items, using the average does not allow a separation of the true and error component. This would be possible by using latent variables. However, using the average is likely to result in an underestimation of the effect. As we found statistically significant effects, we can postulate that the present results are valid. Fourth, our data relied on self-reports and thus there is no guarantee that what we have referred to as actual or enacted responsiveness would also be rated as such by an external observer.

Finally, despite the strengths of this study, we cannot draw firm causal conclusions from the results. The study has the advantage of (a) strong theoretical guidance on the selection of the relevant variables as well as models specifying the expected relations among the variables, (b) observations of concrete indicators of responsiveness reported relatively close temporally to the point at which they occurred, and (c) multiple observations over time that allow for the determination of the direction of the effects. However, in the absence of a randomized controlled experiment, we cannot rule out the possibility that some of these findings are due to factors we have not measured. On the other hand, if these results do reflect legitimate causal processes, the direction of causality might also go in the other

direction at several points in the causal chain. Further research would benefit from cross-lagged regression analyses that allow disentangling the possible two-way temporal associations in the intimacy process of couples.

### **Concluding Comments**

The variety of pathways to feelings of intimacy in romantic relationships reflects the complexity of the intimacy process. Concrete responsive deeds towards the partner do matter, as does projection (i.e., cognitive constructions) in the course of everyday life. Taking both partners' perspectives into account is necessary to reveal the nature of interactional processes. It would be interesting to investigate in more detail the short and long term dynamics of these processes (i.e. Canevello & Crocker, 2010; Hagedoorn et al., 2011). One implication for therapeutic or preventive interventions with romantic couples might be that intimacy can be fostered by encouraging the display of concrete acts of responsiveness. This would not only promote the partner's perception of responsiveness but also one's own perception of responsiveness, and in turn, the partner's and the own experience of intimacy. These conclusions are consistent with recent developments in couple therapy. For example, Beach, Dreifuss, Franklin, Kamen, and Gabriel (2008) advocate the overt expression of caring gestures at the beginning of marital therapy for depression in order to foster couple cohesion. The importance of positive and supportive processes in couples as a means to compensate for negative or conflictive processes has also been emphasized (i.e. Bradbury & Karney, 2004). Further research is needed to determine how, for whom, and at which stage of a therapeutic intervention the promotion of responsive acts toward the partner would be most beneficial.

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## Tables

Table 1

*Intercorrelations among study variables, for women (above diagonal) and men (below diagonal) and dyads (along the diagonal)*

Variables	1.	2.	3.
1. Enacted responsiveness	<b>.50***</b>	.33***	.31**
2. Perceived responsiveness	.45***	<b>.33***</b>	.40***
3. Intimacy	.40***	.58***	<b>.63***</b>

*Note.* We present the correlations between the dyad members in bold. \*\*  $p < .01$ , \*\*\*  $p \leq .001$  (two tailed).

Table 2

*Actor and partner effects of the APIMeM from the multivariate multilevel model.*

Predictor	Predicting intimacy			Predicting perceived responsiveness		
	<i>b</i>	<i>SE</i>	p value	<i>b</i>	<i>SE</i>	p value
Intercept	2.575	.058	.000	M: 1.724	M: .086	M: .000
				W: 1.978	W: .085	W: .000
Previous outcome	.206	.015	.000	.136	.019	.000
Actor enacted responsiveness	.137	.016	.000	.304	.033	.000
Partner enacted responsiveness	.047	.014	.000	.206	.035	.000
Actor perceived responsiveness	.134	.011	.000	-	-	-
Partner perceived responsiveness	.050	.010	.000	-	-	-

*Note.* M = man, W = woman, *SE* = standard error.

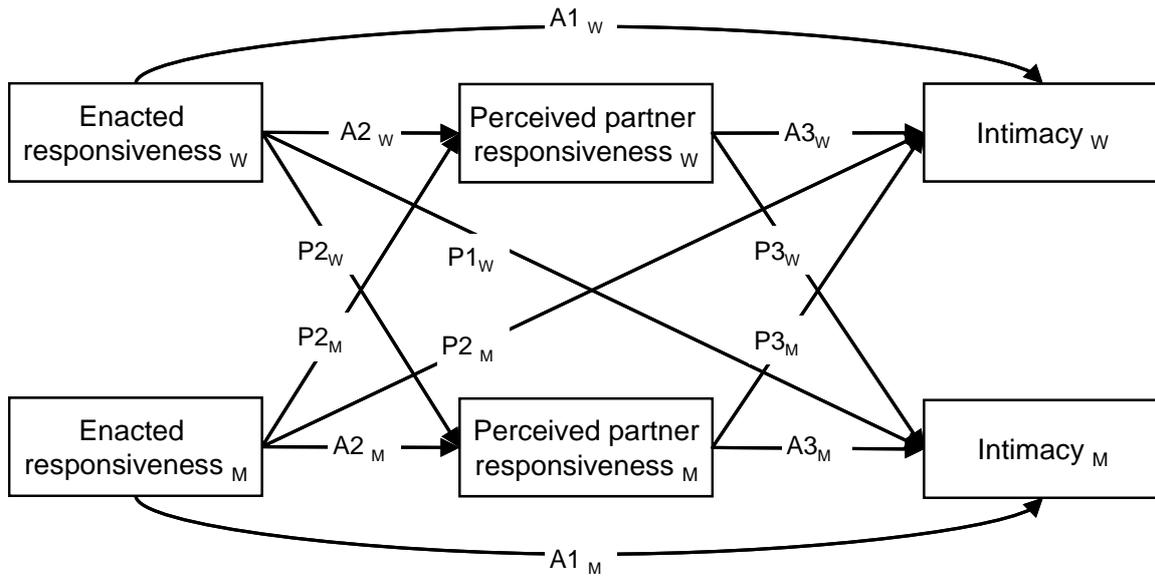


Figure 1. Actor-Partner Interdependence Mediation Model. W = woman; M = man; A = actor effect; P = partner effect.

Appendix

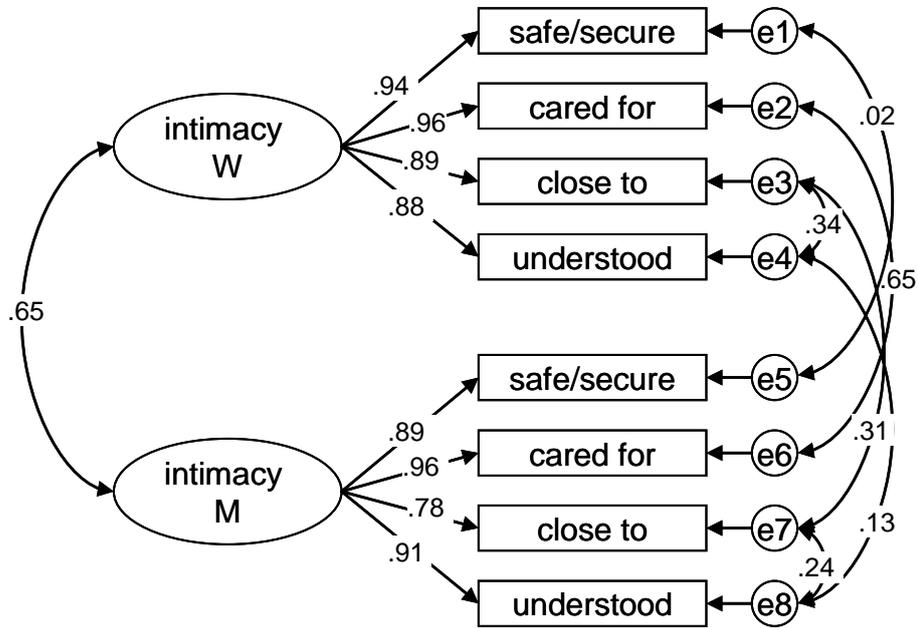


Figure A1: Confirmatory Factor Analysis (CFA) of Intimacy Feelings. W = woman; M = man.  $\chi^2(13) = 9.48$ ;  $p$ -value = .74;  $GFI = .98$ ;  $RMSEA = .000$ ;  $RMR = 0.01$ ;  $p$ -value of close fit = .88.