

Perceived Partner Responsiveness Forecasts Behavioral Intimacy as Measured by Affectionate Touch

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Abstract

Affectionate touch is an important behavior in close relationships throughout the lifespan. Research has investigated the relational and individual psychological and physical benefits of affectionate touch (Jakubiak & Feeney, 2017), but the situational factors that give rise to it have been overlooked. Theorizing from the interpersonal process model of intimacy, the current studies tested whether perceived partner responsiveness forecasts affectionate touch in romantic couples. Following a preliminary integrative data analysis (N = 842), three prospective studies use ecologically-valid behavioral (Studies 1 and 2) and daily (Studies 2 and 3) data, showing a positive association between perceived partner responsiveness and affectionate touch. Further, in Study 3, we tested a theoretical extension of the interpersonal process of intimacy, finding that affectionate touch forecasts the partner's perception of the touch giver's responsiveness the next day. Findings suggest affectionate touch may be an untested mechanism at the heart of the interpersonal process of intimacy.

Keywords: affectionate touch, close relationships, perceived partner responsiveness, intimacy

Perceived Partner Responsiveness Forecasts Behavioral Intimacy as Measured by Affectionate Touch

Affectionate touch is an important behavior for establishing and maintaining social bonds. It occurs frequently within close relationships, from infancy through older adulthood. It is defined as warm physical contact that communicates fondness and positive regard, as well as love and support (Jakubiak & Feeney, 2017). Across the lifespan, touch manifests in many ways, such as cuddling babies, kissing a romantic partner, and hugging a friend (Gulledge, Stahmann, & Wilson, 2004). The current work in relationship science has established affectionate touch as a common, normative behavior within close romantic relationships (Jones & Yarbrough, 1985; van Anders, Edelstein, Wade, & Samples-Steele, 2014, Suvilehto, Glerean, Dunbar, Hari, & Nummenmaa, 2015) that can be distinct from sexual touch (Gulledge, Stahmann, & Wilson, 2004), and promotes individual and relational well-being (Jakubiak & Feeney, 2017).

However, what gives rise to affectionate touch within romantic relationship remains an open question. The current research investigates one theoretically plausible precursor to affectionate touch: perceived partner responsiveness. Demonstrating responsiveness during interpersonal interactions is one way to express care and support for another person (Reis & Shaver, 1988); the extent to which that responsiveness is perceived may then translate to enhanced psychological intimacy for the perceiver (Laurenceau, Barrett, & Pietromonaco, 1998). In turn, we expect this increased psychological intimacy to manifest as increased behavioral intimacy, as measured by affectionate touch, towards the partner who is perceived as responsive. After a preliminary concurrent analysis, we prospectively test the association between perceived partner responsiveness and ecologically valid affectionate touch in three studies of romantic couples.

Affectionate Touch

While a host of behaviors can be considered touch (Jones & Yarbrough, 1985; Pisano, Wall, & Foster, 1986), touch is only affectionate if it is implicitly meant to communicate love, care and affection to the person receiving it (Floyd, 2006). Warm interpersonal contact like holding hands, hugging, kissing and lying close together are prototypical examples of affectionate touch. Affectionate touch is common; touch is prevalent across culture (Andersen, 2011; DiBiase & Gunnoe, 2004), gender (Miller, Denes, Diaz, & Ranjit, 2014; Stier & Hall, 1984) and context (e.g., during mutual grooming, Nelson & Geher, 2007; between athletic teammates, Anderson & McCormack, 2015). However, affectionate touch most commonly occurs within close relationships, such as between family, close friends and romantic relationships (rather than between acquaintances or strangers; Jakubiak & Feeney, 2017; Jones & Yarbrough, 1985).

Affectionate Touch in Close Relationships

Touch is a social behavior (Dunbar, 2010) and serves an important function for social bonding (Harlow, 1971; Citation Blinded). Beginning with the first prototypical “bond” affectionate touch is a pathway through which caregivers (e.g., mothers) develop an intimate bond with their infants (e.g., secure attachment, Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1973). Much work has investigated the role of affectionate touch in child rearing and development (Ferber, Feldman, & Makhoul, 2008; Field, 2014; Hertenstein, 2002; Montagu, 1971) while the benefits of the receipt of affectionate touch within close adult relationships have been the focus of recent exploration in relationship science (for review, see Jakubiak & Feeney, 2017). In their review, Jakubiak and Feeney (2017) outline a framework of theoretical

mechanisms through which receiving affectionate touch may be associated with relationship quality.

One possible reason affectionate touch receipt may be integral to romantic relationships, specifically, is its role in promoting intimacy. The experience of receiving touch is often perceived as intimate and the relationship therein is perceived similarly (Burgoon, Buller, Hale, & deTurck, 1984; Debrot, Schoebi, Perrez, & Horn, 2013; Hertenstein, Verkamp, Kerestes, & Holmes, 2006; Johnson & Edwards, 1991; Mackey, Diemer, & O'Brien, 2000; Pisano et al., 1986; Thayer, 1986). Because social bonds are crucial to survival, affectionate touch may be a fundamental behavior necessary for strengthening such bonds – such as romantic relationships – by way of promoting intimacy.

Consistent with this theory, affectionate touch is also associated with long-term relationship outcomes. Affectionate touch receipt is positively associated with greater overall relationship satisfaction (Bell, Daly, & Gonzalez, 1987; Gullede, Gullede, & Stahmann, 2003; Muise, Giang, & Impett, 2014). Moreover, accumulating evidence suggests that in the moment, receiving touch promotes attachment security (Jakubiak & Feeney, 2016), helps to regulate emotions by enhancing positive affect (Debrot et al., 2013) and signals closeness or a desire for closeness (Ben-Ari & Lavee, 2007). Notably, most empirical work has focused on outcomes of those *receiving* affectionate touch.

Other research has explored individual and cultural characteristics that may make someone more likely to prefer receiving touch, such as attachment orientation (e.g., Brennan, Wu, & Loev, 1998; Chopik et al., 2014), gender (e.g., Johnson & Edwards, 1991; Stier & Hall, 1984) and culture (e.g., dominance, DiBiase & Gunnoe, 2004; contact versus noncontact societies, Remland, Jones, & Brinkman, 1995; Western versus East Asian countries, Suvilehto et

al., 2019). While individual and cultural moderators help to explain *for whom* affectionate touch may occur and thus, provide the most relationship benefits, existing literature on affectionate touch does not reveal *why* that touch occurs, and specifically, the underlying situational precursors to the act of affectionate touch itself. That is, rather than focus on the recipient of touch, like prior research, we are interested in the touch giver and what prompts their affectionate touch behavior. By focusing on a step earlier in the interpersonal process to consider possible situational or behavioral antecedents to affectionate touch provision, the field can begin to understand the conditions under which affectionate touch occurs. As such, beyond scholarly advances, this work could have translational impact.

One Key Context: Moments of Intimacy

We propose one situation that may give rise to affectionate touch is when one romantic partner has already created a moment of intimacy within a dyadic interaction. Broad consensus in the close relationship literature is that one's demonstration of responsiveness to a partner's needs creates a feeling of intimacy for that partner, as outlined in the intimacy process model (Reis & Shaver, 1988; Reis, Clark, & Holmes, 2004). For example, when Issa tells her partner, Gene, about a stressor at work, Gene has an opportunity to respond to Issa's disclosure. Issa's perception of Gene's response (e.g., was Gene supportive?) and the extent to which Issa interprets that interaction as intimate depends on whether Issa feels understood, validated and cared for by Gene. Being responsive to the needs of a partner can be signaled in a variety of diverse situations, including during gratitude expressions (e.g., Algoe, Fredrickson, & Gable, 2013), positive event disclosures (e.g., capitalization, Gable, Gonzaga, & Strachman, 2006) and negative event disclosures (Maisel, Gable, & Strachman, 2008). However, regardless of context,

in situations when Issa perceives Gene as being truly responsive, it translates to feelings of psychological intimacy (Laurenceau et al., 1998; Reis, Clark & Holmes, 2004).

The intimacy process model suggests that Issa's perception of Gene's responsiveness also translates to Issa's behavior back toward Gene (Reis, 2007; Reis, Clark, & Holmes, 2004). Other researchers have documented behavioral outcomes after perceiving a partner's responsiveness, such as proximity-seeking via approach behaviors toward a robot (Birnbaum, Mizrahi, Hoffman, Reis, Finkel, & Sass, 2016) and greater expression of anxiety toward a partner during a stressful situation following manipulated thoughts about that partner's responsive behavior (Ruan, Reis, Clark, Hirsch, & Bink, 2020). In the current investigation, we focus on affectionate touch as another behavioral outcome of perceiving a partner as responsive. Our focus on affectionate touch is a novel contribution to the literature for at least two reasons. First, in their groundbreaking model, Reis and Shaver call out touch, specifically, as a behavioral mechanism within the intimacy process (1988). Moreover, there is now strong consensus in the field, reviewed above, that affectionate touch is a behavior that is perceived as intimate (Burgoon et al., 1984; Debrot et al., 2013; Floyd, 2006; Hertenstein et al., 2006; Johnson & Edwards, 1991; Mackey et al., 2000; Pisano et al., 1986; Thayer, 1986). As such, although we do not measure intimacy in this paper, we situate affectionate touch within the intimacy process model in our theorizing, considering it an instantiation of behavioral intimacy.¹

Specifically, the current work focuses in on this theoretically-derived but understudied first step of the mechanistic model in which perceiving a partner's responsiveness to the self – that is, perceiving that person as more understanding, validating, and caring of the self – will

¹ Since first proposed in the intimacy process model, perceived partner responsiveness has consistently been theorized as an instantiation of intimacy. Behavior, like affectionate touch, being an instantiation of intimacy is less well established, but very consistent with evidence.

translate to the perceiver's greater likelihood of affectionately touching that partner, thereby theoretically converting perceived psychological intimacy (measured in perceived responsiveness) to enacted behavioral intimacy (measured by affectionate touch, Hypothesis 1). Second, consistent with the assumption that these are iterative interpersonal processes (Reis & Shaver, 1988), we predict the participant's affectionate touch then feeds forward to predict the partner's perception of the touch giver's responsiveness, which we test in Study 3 (Hypothesis 2).

The Current Research

In the present investigation, we used multiple methods, with a strong emphasis on ecological validity, to triangulate evidence regarding our theorized path from perceiving a partner as responsive to affectionate touch. We did this using four dyadic datasets (N = 824). First, to better understand the general association between perceiving a partner as responsive and frequency of affectionate touch, we ran an Integrative Data Analysis as a Preliminary Study. We pooled data using the same two standardized measures across four existing datasets (N = 824) to provide an initial concurrent test of the hypothesized association and a robust estimate of the effect. Then, Studies 1, 2, and 3 involved prospective tests of the hypothesized association in three of those independent samples of romantic couples. In the first behavioral test of the theoretical model in action, Study 1 used general perceived partner responsiveness to forecast moments of affectionate touch in daily life, using spontaneously-reported behavior from across 14 nightly reports. In a strong test of Hypothesis 1, in Study 2, we zoom in to the situation of interest, provided a clear initial test of examining whether responsiveness perceived in one laboratory task forecasts the perceiver's touch of the partner in the next task, during a single lab visit. Study 3 used 28 nightly reports from both members of the dyad, using standardized scales,

to test within-person variability in perceptions of partner responsiveness predicting greater affectionate touch of that partner that day, parsing within- and between-person variance. We also used this study to test a theoretical extension of the interpersonal process we are proposing. Due to past research implicating touch in the intimacy process (Debrot et al., 2013; 2014; Reis & Shaver, 1988), we specifically test whether one's affectionate touch one day would subsequently forecast the *partner's* perception of the toucher's responsiveness the next day, i.e., documenting the intimacy cycle (Hypothesis 2).

Because the present study's definition of affectionate touch does not require it to be sexual in nature (e.g., intercourse), and in fact sex may be driven by a host of other factors (Birnbaum, 2010; Buss & Schmitt, 1993; Davis, Shaver, & Vernon, 2004; Regan & Berscheid, 2001), in all possible studies (except Study 1, elucidated below) we take the conservative approach of operationalizing affectionate touch as *excluding* sex to more carefully focus on the types of affectionate touch that momentarily facilitate relationships in everyday life. Additionally, in Studies 1 and 2, we wanted to address the possibility of a third variable, specifically, a dispositional or relational orientation, that could explain both greater perceived partner responsiveness and affectionate touch. Secure attachment, which is a trait-level orientation that relationship partners are and will be available and responsive (Mikulincer & Shaver, 2007; controlled in Study 1), communal strength, which is the unconditional motivation to meet a relationship partner's needs (Mills & Clark, 1992; controlled in Study 2), and relationship satisfaction (controlled in Study 2) fit the bill. Then, moving away from a trait-level third variable to a situational variable that can vary within and between days and may also simultaneously explain both affectionate touch and perceptions of partner responsiveness, in Study 3 we controlled for daily relationship satisfaction.

Preliminary Study

Integrative Data Analysis: Testing the Basic Concurrent Association across Four Samples

The first aim was to determine whether a positive association between perceived partner responsiveness and affectionate touch exists. Four dyadic datasets had been collected in the third author's laboratory prior to the development of this hypothesis yet contained general versions of each variable of interest: general perceptions of the partner's responsiveness, and reports of the frequency of affectionate touch in the past month. This enabled us to take advantage of a powerful statistical technique, Integrative Data Analysis (Curran & Hussong, 2009; Hussong, Curran, & Bauer, 2013) to conduct a key initial test of the hypothesis. As implied by the label, this approach uses the raw data from all (four, in this case) datasets together; it is recommended over meta-analysis when possible because it uses rather than compresses the variance (e.g., into one effect size per study; Hofer & Piccinin, 2009) and does not rely on summarizing the data from only the mean and the variance. Using this method, we gain statistical power from the increased sample size of couples (824 members of 412 couples), and have representation across years, allowing an optimal statistical test of the key prediction (which is sensitive to detect a small effect $|\rho| > .09$ at power = 80% assuming independence among data).²

Method

Participants and Procedure

All participants were couples (N = 824 individuals) recruited from the community around Chapel Hill, North Carolina by means of Craigslist volunteer ads and opt-in informational emails

² Assuming independence, or purposefully overestimating independence and randomness to their maximum, means underestimating the relative sizes of effects and, therefore, estimating the data to the conservative lower bound of their power. We use this approach throughout the manuscript.

sent to university staff and students.³ Couples were eligible to participate if they had been in an exclusive romantic relationship for at least six months in Sample A and at least one year for Samples B, C, and D. In addition, they must have been living together for at least six months in Sample C. Across all four samples, couples had been together for on average 4.42 years, ($SD = 4.75$) with the majority of the total sample in an exclusive, committed relationship, i.e., married (29.5%), engaged (8.6%), or dating exclusively (56.8%). Of the sample of couples, 63.1% were living together. The average participant was 26.39 years old ($SD = 7.95$, range = 55). Participants self-identified as White/Caucasian (64.6%), Black/African-American (9.1%), East Asian (5.6%), South Asian (2.5%), American Indian or Alaskan Native (0.4%), or Other (7.2%). In a separate question, 6.4% of the sample identified as Hispanic. All measures were collected within baseline questionnaires of larger studies.

Measures

Perceived Partner Responsiveness

The extent to which participants feel their partner is responsive to them in general was assessed with an 18-item scale assessing understanding, validation, and caring (Reis, Crasta, Rogge, Maniaci, & Carmichael, 2017). Items include, “My partner understands me,” “My partner is responsive to my needs,” and “My partner sees the ‘real’ me” measured on a 7-point Likert scale ranging from 1 (*not at all true/never*) to 7 (*very true/true all of the time*). Sample D used the 12-item scale (Reis, Maniaci, Caprariello, Eastwick, & Finkel, 2011). Although these use a different number of items across studies, given the fact that these scales effectively measure the same thing in our data and the relative homogeneity of these particular methods, we did not conduct a moderated nonlinear factor model (Curran et al., 2014) to extract a latent factor

³ Please see Studies 1-3 for more information about each individual sample (Sample A, B and C, respectively), with descriptive information about a fourth sample, Sample D, reported in Online Supplementary Materials (OSM).

as one would in an IDA with more complicated methodologies across studies (Hussong et al., 2013). Instead, because we also did not have hypotheses about between-study mean-level differences, we standardized the variables by dataset, which removed any between-dataset effects while preserving the heterogeneity of the within-dataset effect. The average reliability across the four samples was acceptable, $\alpha = .94$; $\alpha_{\min} = .92$ and $\alpha_{\max} = .95$.

Affectionate Touch

Participants reported on the frequency of physical affection with their partner in the past month (Light, Grewen, & Amico, 2005). The scale evaluates how frequently each behavior occurred in the past month from 0 (*never or almost never*) to 6 (*five or more times a day*). The items were: “how often do you hold hands with your spouse/partner?”, “how often do you sit close together or lie down close together with your spouse/partner while reading, watching TV or other leisurely activities?”, “how often do you give each other neck rubs, back massages or any other warm touching activities?”, “how often do you give your spouse/partner hugs lasting for more than a few seconds?”, “how often do you kiss your spouse/partner?”. We computed the mean of the five items as our indicator of affectionate touch. For reasons stated above, all scales were standardized within the sample before merging and the average reliability across the four samples was satisfactory, $\alpha = .81$; $\alpha_{\min} = .78$ and $\alpha_{\max} = .84$.

Sexual Intercourse

An additional item, “how often do you and your partner have sex (intercourse)?,” which was measured on the same scale as the affectionate touch items, from 0 (*never or almost never*) to 6 (*five or more times a day*), was included to test as a potential covariate.

Results and Brief Discussion

Pooling the four dyadic datasets, we fit the harmonized data to a two-level (individual nested within couple) random-intercept model where affectionate touch was predicted by perceived partner responsiveness, data source was added as a 4-category (Sample A to D) factorial predictor, and the interaction between data source and perceived partner responsiveness was tested (for the full analytic strategy for the IDA, see OSM). The results support the hypothesis that perceived partner responsiveness is positively associated with affectionate touch. Specifically, the association was statistically significant across the merged dataset ($\beta = 0.29$, $SE = 0.07$, $df = 638.68$, $t = 4.00$, $p < .001$, $CI_{95\%} = [0.15, 0.43]$) and not moderated by data source, $F(3, 751.98) = 0.23$, $p = .88$. This association explains 3% of the variance at the person-level and 6% of the variance at the dyad-level. We also tested a second model in which we controlled for sexual intercourse to address the possibility that in this romantic context, the affectionate touch might have been driven by having sex. The results confirmed that perceived partner responsiveness significantly positively predicted affectionate touch ($\beta = 0.26$, $SE = 0.07$, $df = 647.43$, $t = 3.74$, $p < .001$, $CI_{95\%} = [0.12, 0.40]$) above and beyond sexual intercourse ($\beta = 0.25$, $SE = 0.03$, $df = 787.59$, $t = 7.42$, $p < .001$, $CI_{95\%} = [0.19, 0.32]$), and the effect was again not moderated by data source, $F(3, 756.51) = 0.42$, $p = .74$.

Overall, this cross-sectional test of an association between generally perceiving one's partner as responsive and the frequency of affectionate touch over the past month provides support for moving forward with the present investigation, which focuses on prospective tests of the hypothesis that perceiving responsiveness in the partner may prompt an individual's affectionate touch toward that partner.

Study 1: Prospective Link from General Perceptions of Responsiveness to Everyday Spontaneously-Reported Affectionate Touch

In Study 1, we start with an ecologically valid assessment of the behavior of interest: affectionate touch spontaneously reported in mundane end-of-day descriptions of interactions with the partner across 14 days. Those daily responses, in which participants provided an open-ended description of a notable interaction with their partner each day, provide vibrant detail of not only how people recall their daily interactions with their partner, but importantly, how affectionate touch emerges spontaneously throughout everyday life. We took advantage of what participants described in those situations to code for the number of unique instances of affectionate touch described within the reports to test the present hypothesis. Specifically, we predicted general perceptions of partner responsiveness would predict more unprompted reports of affectionate touch behavior within the daily descriptions of notable partner interactions. Given the nature of the descriptions,⁴ in which it was not always obvious who initiated the touch, we opted to be inclusive of all mentions of affectionate touch during the interactions, regardless of partner, to take advantage of this rich initial opportunity to test links between perceived partner responsiveness and affectionate touch behavior in everyday life; the intimacy process model accounts for either explanation for effects (i.e., perceived responsiveness driving affectionate touch or partner's affectionate touch driving responsiveness; Hypotheses 1 and 2). Because attachment styles are associated with touch (for review, see Jakubiak & Feeney, 2017), we also ran a model testing secure attachment as a possible dispositional third variable explanation.

Method

Participants

⁴ Due to how touch is often described in first person plural (e.g., “we cuddled on the couch,” “we kissed”), we chose to include all mentions of touch. This means reports where the participant initiated, reports where the partner initiated, and reports where initiation was ambiguous were all counted.

Both members of 80 couples ($N = 160$ individuals) enrolled in a larger, two-week study on “Everyday Experiences and Feelings of People in Romantic Relationships” (for more information, see Citation Blinded). Sample size was determined for the goals of the original study. Couples had been together for approximately 4 years ($M = 4.34$, $range = 6$ months – 35 years) and were either dating exclusively (48.8%) or committed for life (i.e., engaged or married; 41.9%). The majority of the couples identified as heterosexual ($N=77$) while three identified as same-sex. Participants were between 18 and 57 years of age ($M = 28.09$, $SD = 8.05$). The majority self-identified as White/Caucasian (74.4%) with the remaining participants identifying as East Asian (1.9%), African-American (12.5%), South Asian (2.5%) or other races/ethnicities (5.0%). In a different question, 3.8% participants identified as Hispanic.

A sensitivity analysis reveals the sample size (multiplied by number of nightly reports) is sensitive to detect a small effect $|\rho| > .07$ at power = 80% assuming no interdependence among data.

Procedure

Both members of the couple attended the initial lab session, where they completed a set of initial online questionnaires, participated in a series of lab tasks together, then received instructions about a two-week nightly diary portion of the study they would complete before attending a second lab session. The focus of the present investigation is the self-reported general perception of responsiveness from the initial lab session (described and included in the IDA, Sample A; $\alpha = .92$) and a novel nightly measure in which participants briefly described the most notable interaction with their partner that day.

Specifically, each night, participants were asked to complete a 10-minute questionnaire at the end of each day; they were asked to do so at about the same time each day. On average,

individuals completed 11.63 nightly questionnaires in the 14-day study period (thus 1860 reports of a possible 2240), showing a high compliance rate (83.07%), and only five participants did not complete any nightly reports. The specific measure of interest from the nightly questionnaire was an open-ended response that participants gave to a prompt to briefly describe an interaction with their partner that “made the biggest impression today.” For this item, 380 reports out of the received 1860 (79.57% compliance) did not contain any content and thus were not coded for analysis.

Spontaneously-Reported Affectionate Touch Behavior

As described above, the prompt participants received did not explicitly instruct them to write about affectionate touch. The actual events participants wrote about may have been minor or major, positive or negative, but critically, upon reading the whole corpus, we noticed that the interactions with the partner that made the biggest impression contained several instances of explicit mention of affectionate touch. Hence, we coded the text for the number of spontaneous reports of affectionate touch. Two independent judges were trained to code the nightly data. After training, coders practiced by independently working through the same 150 responses to establish reliability (8% of the total nightly responses in the study). Then, the remaining 1710 responses were independently coded by each rater. Throughout, all coders were unaware of the hypothesis.

To code for touch in the daily reports, coders were instructed: “Count each unique instance of affectionate touch mentioned in the nightly event description.” For instance, this participant’s response, “[my partner] came by work and saw me real quick. its always nice to see her in the middle of the day and give her a hug and kiss” would have been coded as a 2 (i.e., hug, kiss). Notably, some participants mentioned desiring affectionate touch from their partner

and not receiving it. Any mention of a touch “deficit” was not included in the count. In addition, some phrases seemed highly likely to include affectionate touch, so were included, despite the fact that they also may have included sexual activity (e.g., “get intimate”, “spent the night together”); because of this, the count code also included explicit mentions of “sexual intercourse.” Verbatim instructions are in the OSM.

Coders noted anywhere from 0 to 5 instances of affectionate touch (ICC = .89) in a given entry. For 4.2% of responses (N = 79) coders had different counts of affectionate touch and a third rater (the first author) arbitrated based on fidelity to the definition.

Sexual Intercourse. The presence (coded 1 versus absence = 0) of sexual intercourse was also coded separately to be used as a control variable. See OSM for details of that coding procedure.

Attachment. The 35-item Experiences in Close Relationships Scale (Brennan, Clark & Shaver, 1998) measured an anxious (e.g., “I worry about being alone.”) and avoidant (e.g., “I try to avoid getting too close to my partner”) dimension on a scale from 1 = *strongly disagree* to 7 = *strongly agree*. Reliability was acceptable for both anxious attachment and avoidant attachment, $\alpha_{\text{anx}} = .90$, $\alpha_{\text{avoid}} = .91$, and the two dimensions were positively correlated in the sample, $r = .28$, $p < .001$.

Results

Planned Statistical Models

We used two-level cross-classified model in which partners are nested within dyads, then crossed by report days because both partners filled out reports on the same days (Kenny, Kashy, & Cook, 2006). We allowed intercepts to randomly vary, while slopes of the day-level predictors

were modeled as fixed effects. We had no a priori hypothesis about gender, so dyads were treated as indistinguishable and we used a diagonal residual matrix.⁵

Validation: Daily Affectionate Touch

As one assessment of the validity of the behavioral codes, we conducted a multilevel linear model using baseline general affectionate touch in the prior month to predict the daily affectionate touch count code; the positive association was significant, $B = 0.03$, $SE = 0.01$, $t = 2.43$, $p = .02$, $CI_{95\%} = [0.01, 0.05]$.

Affectionate Touch in Everyday Life

We next conducted a two-level cross-classified linear model wherein each person's daily-level affectionate touch was predicted by his/her individual-level, general baseline perceptions of partner responsiveness. Supporting the theoretical model, the results showed that those who reported perceiving higher responsiveness in their partners in general at study entry reported more affectionate touch in the subsequent everyday interactions with the partner, $B = 0.03$, $SE = 0.02$, $df = 395.51$, $t = 2.04$, $p = .043$, $CI_{95\%} = [0.00, 0.07]$. We then controlled for explicit mention of sexual intercourse and results remain consistent, with general perceptions of partner responsiveness remaining positively associated with more affectionate touch in everyday life, $B = 0.03$, $SE = 0.01$, $df = 292.82$, $t = 2.12$, $p = .035$, $CI_{95\%} = [0.00, 0.06]$, controlling for sexual intercourse, $B = 1.24$, $SE = 0.06$, $df = 1856.00$, $t = 22.05$, $p < .001$, $CI_{95\%} = [1.13, 1.35]$. General responsiveness predicts 0.05% of the variance at the person level and 4.53% of the variance at the couple level.

Analyses of Alternative Hypotheses

⁵ We note that some suggest using an unstructural matrix (see syntax in Bolger & Laurenceau, 2013). This means the two partners are still distinguished, statistically, in a cross-classified model, whereas using the diagonal matrix in the cross-classified model allows for the assumption that they are indistinguishable in their effects.

Addressing the possibility that these findings could be explained by more securely attached individuals having both greater general perceptions of partner responsiveness and engaging in more affectionate touch in everyday life, our additional analysis controlling for attachment styles documented that general perceptions of partner responsiveness remained a significant predictor of spontaneously-reported touch, whereas neither attachment anxiety nor avoidance predicted touch in this model. Full results are presented in OSM.

Brief Discussion

Study 1 provides the first test of which we are aware linking perceived partner responsiveness with unprompted, spontaneous reports of affectionate touch behavior in everyday life, thereby substantially adding to the slim literature on this topic (e.g., Debrot et al., 2013). One limitation of the coding, however, is that it does not cleanly disentangle the direction of the association (i.e., Hypothesis 1 or Hypothesis 2) due to ambiguity in who initiated the touch in some reports as well as the fact that about 1/3 of responses included mention of partner-initiated affectionate touch. As such, Study 2, we turn to direct observations of the touch-giver.

Study 2: Prospective Link from In-Situ Perceptions of Responsiveness to Subsequent Affectionate Touch in Lab

Study 2 builds on the findings from Study 1 by zeroing in on touch *provision*, cleanly testing whether situational perceptions of a partner's responsiveness predicts in-the-moment observations of touch (Hypothesis 1). The present study provides a prospective test of our hypothesis, testing the link from one situation to the next. We also focus on an objective measure of touch, using observed behavior in a videorecorded laboratory conversation. Specifically, we operationalized perceived responsiveness in an initial situation by having participants rate their partner after the partner expressed gratitude to them in a standardized laboratory task (see Algoe

et al., 2013). Then, we created an opportunity in the lab for partners to spontaneously touch. Specifically, after the partner expressed gratitude to the participant and the participant privately reported the partner's responsiveness, we briefly separated them, then allowed the participant to rejoin the partner to "hang out" while experimenters ostensibly prepared the next portion of the study in a different room. Experimenters recorded the first five minutes of this reunion as participants were seated together on a couch. During this time there was variability in affectionate touch, with some couples not touching at all to others who kissed or enacted idiosyncratic affectionate touches like foot rubs and sitting on laps.

Modeling our behavioral coding scheme on the coding used in Study 1, we coded these interactions for the participant's affectionate touch of the responsive partner. Specifically, we coded the number of unique instances of affectionate touch demonstrated from the perceiver toward their partner. During the interactions, a subset of couples kissed. We were somewhat surprised, but also saw an opportunity: kissing is a well-documented display of affection in the United States (e.g., Hughes, Harrison, & Gallup, 2007; Welsh, Haugen, Widman, Darling, & Grello, 2005), signifies social connection worldwide (Eibl-Eibesfeldt, 1970), and yet its presence in this laboratory context is not normative. As such, we view the presence of kissing as a strong signal of the construct of interest – behavioral intimacy as measured by affectionate touch. Thus, separately, we coded whether or not kissing occurred in the video to test whether the perceptions of partner's responsiveness following the gratitude expression predicted a greater likelihood of kissing during the subsequent interaction.

Because of work showing communal strength feeds into perceptions of responsiveness (Lemay & Clark, 2008; Reis et al., 2004) and relationship satisfaction could explain between-person differences in situational perceptions of responsiveness and affectionate touch, we control

for communal strength and separately, relationship satisfaction, as dispositional third variable explanations.

Method

Participants

Both members of 129 heterosexual couples ($N = 258$ individuals) who were romantically involved for at least one year and living in the area surrounding Chapel Hill, North Carolina were recruited to participate in the study. Most couples were exclusively dating (76.7%) and 23.3% reported being engaged, married or “living as married”. Fifty-six of the 129 couples (43.4%) were living together at the time of the study. Participants ages ranged from 18 to 50 ($M = 23.7$, $SD = 5.64$) and most identified as Caucasian (70.9%). The rest identified as East Asian (11.2%), African-American (7.4%), South Asian (4.7%), or other racial backgrounds (5.8%). In a separate question, 9.9% of the sample identified as Hispanic. Sample size was determined a priori to test a different hypothesis (see Citation Blinded). However, it was estimated that the 125 participant videos (4 participants did not produce an analyzable video, explained below) still allowed us to detect an effect as small as $|\rho| > .24$ at 80% power assuming no interdependence among data, which is a purposefully conservative assumption.

Procedure Overview

Both members of the couple attended the lab together as part of a larger study (Citation Blinded). This aspect of the procedure was designed to address the impact of hearing an expression of gratitude (i.e., perceiving responsiveness of the expresser, the primary measure in a larger program of research; e.g., Citation Blinded) on behavior within a subsequent interaction. As such, one member of the couple was randomly assigned to express gratitude to the other; for clarity, we will refer to these dyad members as the *Expresser* and the *Target* of the expression,

respectively. The Target's perception of and behavior toward the Expresser are the focus of this investigation.

After the gratitude expression task, the Target privately rated their perceptions of the Expresser's responsiveness within a brief questionnaire. Experimenters then used a cover story to have the Target leave the primary lab room and relocate to a room across the lab suite, rearrange the primary lab room so the Expresser was sitting on a couch with no other chairs in the room, and disappear into the control room within the lab suite; then when the Target returned to the primary lab room of his or her own volition when done with the minor task, the experimenters videorecorded the first five minutes of the couple's reunion on the couch. The video camera was on the wall directly across from the small couch, so the couch and participants were fully framed within the image. The experimenters re-entered the room after recording for 5 minutes to administer the final tasks of the session (unrelated to the current investigation) and to debrief the couple before they left the lab.

Perceived Expresser Responsiveness After Expressed Gratitude Conversation

Instructions for selecting the event and having the expressed gratitude conversation followed the standard paradigm (Citation Blinded), with the caveat that just prior to the conversation, in a different room across the lab suite, the Expresser had been privately given additional guidance about *how* to express, without the Target's knowledge. The expresser was randomly assigned to one of two instruction conditions; that experimental manipulation, the fact that it had no effect on the outcome of interest – Target's perceived partner responsiveness – and why that may have been, are all extensively documented in a prior publication (Citation Blinded). Here, our interest was in whether perceptions of partner responsiveness (which were not affected by the manipulation) forecasted a subsequent behavior, so we collapse across

condition in analyses. Nevertheless, because the instructions may have influenced the Expresser's behavior in the interaction, we control for condition in analyses (coded as either 0 = positive active control or 1 = other-praising).

Immediately following the conversation, Targets rated their perceptions of the Expresser's responsiveness during the previous interaction using a 10-item situational measure of responsiveness (Gable, Gonzaga, & Strachman, 2006). The scale ranged from 0 (*not true at all/never true*) to 6 (*very true/true all of the time*), with 3 representing (*moderately true/true all of the time*), and higher numbers representing greater perceived partner responsiveness during the gratitude expression task. The reliability the Target's rating of these items was satisfactory ($\alpha = .94$).

Responsiveness ratings were missing from 1 participant due to a procedural error. We also excluded 3 participants who had exceptionally low scores on this scale, consistent with and justified in a prior publication using these data (Citation Blinded). For transparency, we present results including those participants in the OSM.

Private Leisure Time

After completing the brief measures, the couple was told that there would be about 20 minutes before the next lab task, while the experimenters prepared some materials. The experimenter then used the stated gap of time as an "incidental" reason to ask for the Target's help pilot testing some materials for a different study in another room, across the lab suite (see OSM for information on the task). The Target was informed that s/he could go back across to the primary lab room (where the partner was), whenever s/he was done. In reality, the pilot testing task was a ruse to get the Target out of the primary lab room.

After the Target left, the second experimenter went into the primary room, where the Expresser was, to rearrange it, stating that the two chairs and laptop tables were not needed anymore, and inviting the Expresser to move to the couch along the wall of the same room. After quickly moving everything to one side, incidentally leaving the couch as the only natural place for the Target to sit upon re-entering the room, the experimenter offered the Expresser a magazine while s/he waited then left the room to join the first experimenter in a control room within the lab suite; once in the control room, experimenters closed their door to the rest of the suite to enhance participants' perceived privacy.

The couch was directly across from a video camera that the participants were aware had been used to videorecord their prior gratitude conversation but was not mentioned again as the experiment continued. After the Target completed the ratings of pilot materials, s/he crossed the lab suite to re-enter the room with the Expresser, joining the partner on the couch to relax until the next part of the study. Experimenters recorded video for five minutes from the time the Target sat down on the couch with the Expresser. Videos were not obtained for 4 couples due to procedural errors.

Behavioral Coding: Affectionate Touch. Two trained coders separately watched the five-minute video without sound and coded it for the Target's affectionate touch of the Expresser. The coders received thorough training that included two weeks of practice coding (15 videos) with regularly scheduled meetings to discuss and recalibrate codes. After reliable scores were reached, the two coders independently coded the 125 videos for the focal behavior: affectionate touch. Throughout the behavioral coding, coders were kept unaware of the hypothesis.

Affectionate touch was defined as “warm physical contact that communicates fondness and positive regard, as well as love and support” that “can take many forms but some instantiations are hugging, kissing, stroking, and cuddling” and be done with “the hand, the whole body, or any other part such as head, foot, and lips.” Affectionate touch did not include functional touches, such as accidentally brushing hands when turning the pages of the magazine, or aggressive touches, such as intentionally hurtful, non-playful pinches or pokes. The judges coded affectionate touch in two ways.

First, two coders documented each unique instance of when the Target touched the Expresser affectionately (ICC = .88), which created a count variable of the number of enacted affectionate touches from Target to Expresser during the five minutes. For example, if the Target 1) leaned into the crook of the Expresser’s open arm, during which s/he 2) patted the Expresser’s leg, 3) nudged the Expresser with his/her foot and 4) patted the Expresser’s leg again, the coders would code the Target as having demonstrated affectionate touch 4 unique times during that set of behavior. Coders observed anywhere from 0 to 32 instances of affectionate touch within the 5-minute period. A difference score was computed between the two coders. For any videos with a difference score of 3 or less, the two coder’s scores were averaged together. For 8% of videos (N = 10), coders reported a difference score of more than 3 and a third rater (the first author) arbitrated based on fidelity to the training instructions.

Second, coders also provided an overall affectionate touch *rating* for each video. Because results are similar and the touch count is the more objective of the two measures, we describe this rating measure and results in the OSM to save space.

Behavioral Coding: Kissing. Separately, videos had been coded by a prior team for whether the couples kissed, and this included kisses that had been initiated by the Expresser (ICC

= .97). Most of the kisses were brief and although many were kisses on the partner's lips, some were kisses on top of the partner's head, on the partner's shoulder, or on a hand. For the present investigation, the first author (unaware of participants' ratings of responsiveness) eliminated instances where the only kiss within the video was obviously initiated by the Expresser, resulting in a code documenting any evidence of target-initiated kissing within a video as indicating the presence (1) of this strong signal of behavioral intimacy; videos that did not include a kiss from the target to the expresser were coded as (0). These criteria eliminated six videos where the only kiss was initiated by the expresser (coded as 0), leaving a total of 27 videos that included a kiss initiated by the Target.⁶

Behavioral Coding: Expresser Engagement. We observed variability in Expresser behavior upon Target's re-entry to the room with the couch, including disengagement (e.g., Expresser had head buried in the magazine and didn't look up). To address the possibility that the proposed effect on Target's affectionate touch could be influenced by the Expresser's new behavior, rather than the Target's perception of the Expresser's responsive behavior in the prior situation, four coders rated how interested and engaged the Expresser was toward the Target from the time the Target entered the primary lab room until they sat down on the couch.

Expresser engagement was rated at the following levels: 1=disinterested (i.e., unaware or disinterested in partner's return); 2=acknowledgement (i.e., looks up upon partner's return); 3=interested and welcoming (i.e., smiles or has look of anticipation upon partner's return); 4=excited and very welcoming (i.e., high levels of engagement upon partner's return, such as continued positive facial expressions, making physical room on the couch, displaying welcoming arm gestures), $M = 2.50$, $SD = 0.89$. ICC for the four coders was 0.94. We control for Expresser

⁶ In one video, it was ambiguous as to whether the target or expresser initiated the kiss, but this observation was retained to keep as much data as possible. Results do not change if video was recoded as 0.

engagement in all forthcoming analyses; results without this pre-planned covariate are in the OSM.

Communal Strength. Using the Communal Strength Scale (Mills, Clark, Ford, & Johnson, 2004), participants responded to 10 items (e.g., “how easily could you accept not helping [*your partner*]?”) on a 10-point scale (1 = *not at all* to 10 = *extremely*). Reliability was acceptable, $\alpha = .84$.

Relationship Satisfaction. Relationship Satisfaction was measured globally (e.g., “how much do you love your partner?”) with seven items on a 7-item Likert scale (Hendrick, 1988), $\alpha = .86$.

Results

Table 1. Means, Standard Deviations, and Correlations Among All Study 2 Variables.

Measures	1	2	3	4	5	6	7
1. Self-reported perceived partner responsiveness following conversation	---						
2. Coded target affectionate touch of partner: count	.22*	---					
3. Coded kisses	.28**	.69**	---				
4. Coded expresser engagement	.09	-.004	.13	---			
5. Baseline self-reported frequency of affectionate touch in prior month	.23*	.27**	.28**	.04	---		
6. Baseline communal strength	.49**	.14	.03	.05	.28**	---	
7. Baseline relationship satisfaction	.42**	.06	.16	-.01	.35**	.35**	---
Mean	5.45	6.19	.22	2.50	4.39	7.38	6.29
SD	.58	7.01	.42	.69	.92	.90	.51
Min-max	[3.6, 6.0]	[0, 32]	[0, 1]	[1, 4]	[1.2, 6.0]	[4.4, 9.2]	[4.43,7.0]

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

Validation: Target Affectionate Touch

The correlations presented in Table 1, row 5, indicate that the coded affectionate touch is consistent with the definition of affectionate touch: Target's self-reported frequency of affectionate touch in the prior month (described and included in the IDA, Sample A $\alpha = .81$) is positively correlated with each code of their behavior in the private leisure time interaction.

Affectionate Touch Behavior

Due to the distribution of the touch count, we conducted a linear regression using bootstrapped estimates (1,000 repetitions) of the confidence intervals to test whether perceptions of a partner's responsiveness following a gratitude expression would prospectively predict affectionate touch in a subsequent interaction. As predicted, perceived expresser responsiveness was positively associated with the target's affectionate touch of the expresser in the lab, $b = 2.55$, $B = .22$, $SE = 0.98$, $t = 2.30$, $p = .016$, bootstrapped $CI_{95\%} = [0.67, 4.50]$). The bootstrapped estimate of the confidence interval did not include zero, thus supporting our prediction. Target's affectionate touch was not significantly predicted by condition, $b = 0.39$, $B = .03$, $SE = 1.29$, $t = 0.30$, $p = 0.76$, bootstrapped $CI_{95\%} = [-2.06, 3.04]$) or Expresser engagement, $b = -0.20$, $B = -0.02$, $SE = 1.03$, $t = -.21$, $p = 0.86$, bootstrapped $CI_{95\%} = [-2.33, 1.81]$). As Targets perceived their partner as more responsive in one situation, they engaged in a greater degree of affectionate touch toward their partner during "private time" in a later interaction.

Kissing

A multiple logistic regression model showed that standardized perceived Expresser responsiveness predicted a greater likelihood of kissing during private leisure time, $\beta = 1.13$, $SE = 0.40$, $df = 1$, $p = .005$, $OR = 3.08$, $CI_{95\%} = [1.42, 6.71]$, whereas kissing was not significantly predicted by condition, $\beta = 0.42$, $SE = 0.47$, $df = 1$, $p = .37$, $OR = 1.53$, $CI_{95\%} = [.60, 3.86]$ or Expresser engagement, $\beta = 0.54$, $SE = 0.35$, $df = 1$, $p = .12$, $OR = 1.72$, $CI_{95\%} = [.87, 3.42]$, due to

the confidence intervals of these odds ratios including 1, indicating non-significance. After standardizing the responsiveness scale for interpretation, this translates to the following: a one-standard deviation increase in the Target's perception of the partner responsiveness was associated with a 308% greater likelihood of kissing the Expresser in the subsequent interaction.

Analyses of Alternative Hypotheses

To test the possibility that a dispositional or relational third variable was driving the hypothesized effect, we also ran models controlling for general communal strength and global relationship satisfaction. The effect of perceived responsiveness following the gratitude expression remained significant in predicting both coded affectionate touch and kissing (tested separately), even when accounting for communal strength or relationship satisfaction (tested separately, neither of which significantly predicted affectionate touch. For space, we present full model results in the OSM.

Brief Discussion

In a tight prospective test of our hypothesis, the current evidence documents that perceiving responsiveness in the partner in one situation forecasts the participant's greater affectionate touch of the partner in the next. We assessed affectionate touch behavior two ways: by counting all instances, and by observed kissing. Participants who perceived their partners as more responsive when expressing gratitude in the lab subsequently engaged in more overall spontaneous affectionate touch of their partner and specifically were more likely to kiss their partner when given an opportunity to spend private time with them later.

Other research demonstrates the power of perceived partner responsiveness – particularly after receiving an expression of gratitude – in shaping future relationship outcomes (Citation Blinded; Citation Blinded). Here we used one partner's gratitude expression to conduct a time-

sensitive test of whether in-the-moment perceptions of partner responsiveness would forecast greater likelihood of affectionate touch in a subsequent interaction.

One strength of this study is the use of coded behavioral demonstrations of affectionate touch. Investigations using real touch behavior – versus self-reports – are rare, and Study 2 demonstrates the prevalence and power of real-life affectionate touching. For example, one couple laid down to “spoon” each other on the couch, many participants stroked their partner’s head, one man gave his partner a foot rub. These moments of physical connection, which followed feeling more understood and cared for by their partners a few minutes prior, support our underlying theoretical assumption of a conversion of perceived psychological intimacy into behavioral intimacy. Further, in one of the first tests examining the link between communal strength and affectionate touch behavior, we find these effects cannot be explained by communal strength or relationship satisfaction.

The affectionate touch coding focused only on the Target’s touch allowed for a precise test of our hypothesis, using a nice range of affectionate touch behaviors as well as one high-fidelity signal of affection in the lab setting, a spontaneous kiss.

Study 3: Day-To-Day Variability in Perceptions of Responsiveness and Affectionate Touch

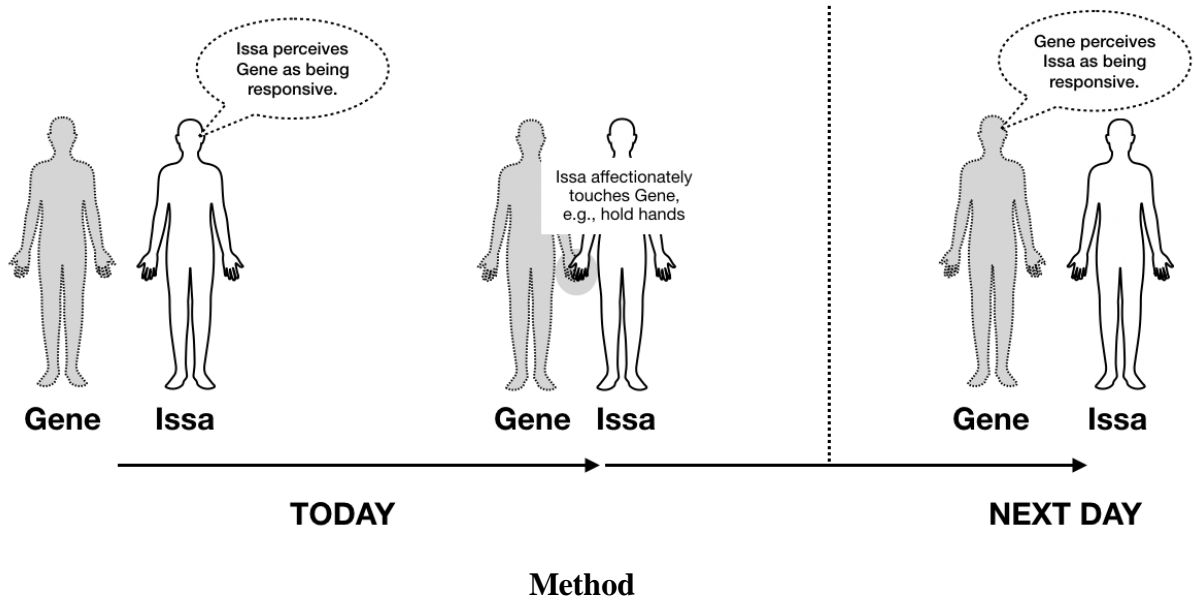
Thus far, evidence from concurrent and prospective analyses, as well as in-lab behavior and daily behavior, support the hypothesis that perceived responsiveness forecasts affectionate touch. In Study 3, we use nightly reports from each member of the couple to illuminate the daily dynamics of this association. Across 28 days, participants reported their perception of their partner’s responsiveness and the affectionate touch they provided to their partner, both in the past 24 hours. With data that include both the independent and dependent variable each day, we

are able to disaggregate the variance to (1) variance attributed across people – the between-person effects – and (2) variance attributed within-person (Curran & Bauer, 2011). The between-person effect explains what happens, on average, across individuals, as has been our focus in the manuscript thus far. The within-person effect provides a tighter test of our hypothesis that situational variability in perceived partner responsiveness is significantly positively associated with situationally variable *changes* in affectionate touch of that partner. Specifically, in the within-subjects model, we predicted that on days that Issa perceives Gene to be *more responsive than she usually does* (i.e., taking into account her own average), Issa would demonstrate greater affectionate touch toward Gene that same day, controlling for Issa’s affectionate touch the day before. By controlling for affectionate touch the previous day, we interpret effects as representing the change in affectionate touch that day.

Next, we test whether the affectionate touch Issa reports providing in one day may feed forward to Gene’s perception of Issa’s responsiveness on the next day (Hypothesis 2). We test this in a second model, disaggregating between- and within-person effects and controlling for perceived responsiveness of the touch giver that present day. See Figure 1 for the conceptual model of this two-step process.

We also attempted to rule out a fluctuating situational variable – daily relationship satisfaction – that could alternatively explain the hypothesized effects. For Hypothesis 1, we focused on participant’s relationship satisfaction. For Hypothesis 2, we ran two theoretically-reasonable tests, one relevant to the independent and the other relevant to the dependent variable: 1) touch provider’s satisfaction on the day they touched and 2) touch receiver’s satisfaction on the day they perceived touch giver’s responsiveness.

Figure 1. Schematic of two-step, recursive daily dyadic process



Participants

Both members of 53 heterosexual couples ($N = 106$ individuals) who had been cohabitating for at least six months and living in the area surrounding Chapel Hill, North Carolina were recruited to participate in the study, “Understanding Romantic Relationships”; sample size was determined for the goals of the original study (Citation Blinded), however the design also provides good power to test our present hypothesis. Most couples were married (58.0%), engaged (11.0%) or dating exclusively (27.0%). All couples were cohabiting and had been together for more than 5 years ($M = 5.41$ year, $range = 1-15$ years). Participants’ ages ranged from 23 to 53 ($M = 29.76$, $SD = 4.80$). Most self-identified as White/Caucasian (77.9%) and the rest identified as African-American (10.5%), East or South Asian (5.8%), American Indian or Pacific Islander (5.8%). In a separate question, 1.0% identified as Hispanic.

Procedure

Participants – both members of the couple – independently completed 28 nights of brief online reports, including their perceptions of partner responsiveness and reports of physical affection from that day, as part of a larger study (Citation Blinded). A fuller description of the

overall study procedure, which included an experimental manipulation at the first lab visit, where couples were randomly assigned to either express gratitude or self-disclose to their partner regularly over the course of the next month, and another lab visit after this 28-day period, can be found in Citation Blinded. Critically, the hypotheses in the current study are about daily associations between variables, and we had no reason to predict that the in-lab manipulation would further influence the strength of those associations, so we do not take condition into account other than to use it as a control variable in analyses and to conduct an exploratory test of whether condition moderates effects (results are reported in OSM).

At the end of the first lab session, participants received instructions about what to expect in the coming weeks of the study, including an emphasis on the value of the nightly reports. Three couples did not send in any nightly questionnaires and were not included in the analyses. After excluding these non-compliant couples, the remaining participants completed 77.9% of the nightly questionnaires in the 28-day study (2181 out of a possible 2800 total reports), together achieving a sensitivity to detect a small effect $|\rho| > .06$ at power = 80% assuming no interdependence among data.

Daily Measures

Perceived Partner Responsiveness. Participants reported on their partner's responsiveness that day with one item ("I felt that my partner responded to my needs/wishes") on a 5-point scale with anchors 1 (*very little or not at all*) to 5 (*very much*), $M=4.08$ (SD at the day, individual, and couple level are 0.75, 0.43, and 0.34, respectively). Across the submitted 2181 nightly reports, 36 responses for this item were missing, or a 98.35% completion rate.

Affectionate Touch. Participants reported on three items about their affectionate touch in the past 24 hours with their partner, selected from the general affectionate touch measure

reported in the IDA (Light, Grewen, & Amico, 2005; fewer were used for brevity in the nightly report). Specifically, we asked how often (0 = *not in the last 24 hours*, 1 = *once in the last 24 hours*, 2 = *several times in the last 24 hours*, 3 = *five or more times in the last 24 hours*) they held hands; gave each other neck rubs, back massages or any other warm touching activities; and gave hugs lasting for more than a few seconds. These three items were averaged together to assess touch each day. Twenty responses to this item were missing, leaving 99.08% compliance.

Sexual Intercourse. Participants reported how often they had engaged in sexual intercourse that day, “including any actions that you, as a couple, consider sex.” The single item was measured on the same scale the affectionate touch items (0 = *not in the last 24 hours* to 3 = *five or more times in the last 24 hours*). Thirty-two responses to this item were missing (a 98.35% compliance rate).

Relationship Satisfaction. Daily relationship satisfaction was measured on a scale from 1 (*terrible*) to 9 (*terrific*) with one item, “today our relationship was” ($M = 7.6$, $SD = 1.19$). Responses were missing from 19 nights (99.13% compliance rate).

Results and Discussion

Conceptual Models and Data Analysis Plan

We tested our two hypotheses in two-level cross-classified models with random intercepts and fixed slopes of day-level predictors, in which individual partners were nested within couples and days were crossed to account for each partner completing a daily report (Kenny et al., 2006), using a diagonal residual matrix, as in Study 1, to assume indistinguishability within the dyad. In the full results presented in Table 2, we parse daily variance into between-person effects and within-day deviations (Raudenbush, Bryk, Cheong, & Congdon, 2004).

The first model tests Hypothesis 1, the theorized first step in the interpersonal process from Figure 1. Specifically, we tested for the effects of within- and between-person-level variability of perceived partner responsiveness on affectionate touch, by centering perceived partner responsiveness within individuals and predicting affectionate touch using both individual deviations in perceived partner responsiveness and the individual mean perceived partner responsiveness used for the centering. The means address the between-subjects effects, whereas the deviation term sets up a more conservative test of our theorized association from increases in perceived responsiveness to increases in affectionate touch. The second model tests Hypothesis 2, the theorized second step in the interpersonal process from Figure 1. Specifically, we tested for within- and between-person effects of daily affectionate touch on the *partner's* perceptions of the touch giver's responsiveness the next day, using mean-centered affectionate touch to assess day-level changes and between-individual effects, and controlling for partner's prior day perceptions of touch giver's responsiveness.

All models control for experimental condition (0 = active control; 1 = expressed gratitude). Additional models controlling for sexual intercourse produced consistent results and are reported in the OSM. We also tested relationship satisfaction as an alternative explanation, controlling for it in all models. Finally, we ran ancillary analyses to explore the possible temporal sequence of Hypothesis 1 and Hypothesis 2; we ran a model using present day perceptions of partner responsiveness to predict affectionate touch the *next* day (i.e., prospective Hypothesis 1) and we conducted a test of present day affectionate touch predicting *same day* perceptions of touch giver's responsiveness (i.e., concurrent Hypothesis 2).

Table 2. Test of Hypothesis 1 and 2 Using Disaggregated Within- and Between-Person Variance

	B	SE	df	t	95% CI	
					Low	High
Hypothesis 1: perceived partner responsiveness → same day affectionate touch						
Within-person deviations of perceived partner responsiveness	0.16	0.02	1682.29	9.81***	0.13	0.19
Prior day affectionate touch	0.38	0.02	1712.79	17.92***	0.34	0.42
Between-individual differences in perceived partner responsiveness	0.16	0.06	71.78	2.75**	0.05	0.28
Experimental condition	-0.02	0.09	39.13	-0.22	-0.19	0.15
Hypothesis 2: affectionate touch → next day perceptions of touch giver's responsiveness						
Within-person deviations of affectionate touch	0.07	0.04	1586.41	1.98*	0.00	0.14
Present day perceptions of touch giver's responsiveness	0.14	0.02	1639.18	5.79***	0.10	0.19
Between-individual differences in affectionate touch	0.11	0.10	76.02	1.09	-0.09	0.32
Experimental condition	0.04	0.12	40.45	0.36	-0.20	0.29

* $p < .05$. ** $p < .01$ *** $p < .001$. CI = confidence interval.

Hypothesis 1: Perceived Partner Responsiveness Predicting Same Day Affectionate Touch

The results presented in the upper panel of Table 2 demonstrate that a tendency to perceive a partner as responsive (i.e., the average across days) accounts for a significant portion of the variance in change in affectionate touch from the prior day. Further, even accounting for this general association, the results showed significant within-individual variation of perceived partner responsiveness predicting affectionate touch. Specifically, on any given day, participants who perceived their partner as more responsive than their own average daily perceptions reported greater affectionate touch of the partner on those days, even when controlling for their own prior-day affectionate touch of the partner and between-individual mean-level differences in perceived responsiveness.

Hypothesis 2: Affectionate Touch Predicting Partner's Perception of Touch Giver's Responsiveness Next Day

Moving to the second hypothesis, and second step in a theoretical interpersonal process, the results presented in the lower panel of Table 2 support Hypothesis 2. Specifically, one's average affectionate touch toward the partner across days significantly predicted the *partner* perceiving the touch giver as more responsive the next day (i.e., at the between-person level), even when controlling for the partner's perception of the touch-giver's responsiveness on the present day. Critically, we also found significant associations with the within-individual daily deviations, such that on days where one's affectionate touch was higher than their own average, the partner reported greater perceptions of the touch giver's responsiveness the next day, controlling for the partner's present day perceptions of the touch giver's responsiveness and between-individual differences in affectionate touch.

Analyses of Alternative Hypotheses

Although we have demonstrated the two-step within-person associations between perceived partner responsiveness and affectionate touch day-to-day, it is possible that another daily situational variable, such as daily relationship satisfaction, is driving these effects. For Hypothesis 1, within-person fluctuations of perceived partner responsiveness continued to predict affectionate touch when present day's relationship satisfaction was added to the model, even taking into account the between-person effect, which was no longer significant. For Hypothesis 2, after controlling for the relationship satisfaction of the *touch provider* on the day they provided touch, affectionate touch no longer predicted the touch receiver's perceptions of their responsiveness the next day. When controlling for *recipient's* relationship satisfaction on the day they reported perceiving responsiveness, the within-person effect of participant's

reported affectionate touch (prior day) on partner perceptions of participant responsiveness remained significant. Due to space constraints, full results for analyses can be found in the OSM.

Ancillary Analyses: Perceived Partner Responsiveness Predicting Next Day Affectionate Touch

Hypothesis 1 tests theoretically ephemeral associations between perceived responsiveness and affectionate touch, so we focused on analyses within day (controlling for prior day touch); however, for exploratory purposes we included lagged-day analysis of Hypothesis 1: perceived partner responsiveness predicting affectionate touch the *next day*, controlling for affectionate touch the present day. As in the original test, on average, greater perceptions of partner responsiveness (i.e., the between-subjects test) was associated with greater affectionate touch the next day, $B = 0.16$, $SE = 0.06$, $df = 69.30$, $t = 2.66$, $p = .01$, $CI_{95\%} = [0.04, 0.27]$ when controlling for present day affectionate touch, $B = 0.40$, $SE = 0.02$, $df = 1646.00$, $t = 18.25$, $p < .001$, $CI_{95\%} = [0.36, 0.45]$ and experimental condition, $B = -0.02$, $SE = 0.08$, $df = 38.45$, $t = -0.31$, $p = .76$, $CI_{95\%} = [-0.19, 0.14]$. However, the tests revealed no evidence of a within-person lagged effect in this model, $B = 0.01$, $SE = 0.02$, $df = 1699.37$, $t = 0.60$, $p = .55$, $CI_{95\%} = [-0.02, 0.04]$. See OSM for model and results controlling for present day relationship satisfaction.⁷

Discussion

Despite a wealth of literature on the benefits of touch receipt (Jakubiak & Feeney, 2017), the extant literature reveals a gap regarding the potential situational precursors to affectionate touch. The current research presented some of the first empirical evidence related to this question, focusing on ecologically rich evidence from people in romantic couples. We proposed

⁷ For those interested, we also conducted an exploratory model of Hypothesis 2, using present day affectionate touch to predict partner's perceptions of touch giver's responsiveness the *same day*, controlling for that perception the prior day. Full results, including those controlling for relationship satisfaction, are in the OSM.

that perceiving a partner as responsive, a putative marker of psychological intimacy, would promote behavioral intimacy as measured by affectionate touch toward that partner. Our results, which marshal evidence from four distinct methodological approaches, are consistent with this hypothesis, and open the door to future work on affectionate touch a behavioral instantiation of intimacy.

Specifically, an initial Integrative Data Analysis (IDA, Curran & Hussong, 2009) with four dyadic samples ($N = 412$ couples) documented a small positive association between greater general perceptions of the partner as responsive and greater frequency of self-reported affectionate touch of that partner over the prior month. Studies 1 and 2 focused on observations of affectionate touch behavior as it naturally arose between couple-members. In Study 1, general perceptions of partner responsiveness at study entry forecasted unprompted reports of affectionate touch in subsequent daily descriptions of notable interactions with the partner. In Study 2, perceptions of partner responsiveness in one laboratory situation forecasted naturally-occurring affectionate touch toward the partner and kissing when hanging out on a couch in a subsequent situation. Study 1 and 2 findings held when controlling for powerful individual differences in relational orientation, as well as relationship satisfaction (Study 2). Study 3 capitalized on the strength of within-person daily fluctuations across 28 days to show that the more a partner was perceived as responsive the more the participant affectionately touched that partner the same day, controlling for affectionate touch the day before. Critically, these effects could not be explained by daily fluctuations in the participant's relationship satisfaction. Finally, though the focus has been on the touch-giver, in an extension of our theorizing about how this instantiation of the interpersonal intimacy process might unfold between people, related analyses documented that increases in affectionate touch on one day (relative to one's average) predicted

positive changes in the *partner's* perception of the touch-giver's responsiveness the following day. Together, these findings have implications for the literature on affectionate touch, bringing novel evidence to bear on one situational precursor to affectionate touch. They also contribute evidence to the interpersonal process of intimacy.

Everyday Affectionate Touch

Affectionate touch is a normative behavior within close relationships. Our data show that touch is pervasive in the everyday moments between couples. Touch happens when sitting with a partner on a couch in the laboratory (Study 2) and over the course of a normal day (Studies 1 and 3). The use of natural behavioral data in Studies 1 and 2, including, respectively, coded affectionate touch in daily interactions with a partner and coded real-time affectionate touch, such as face caresses, light tickles, and kisses, provide a meaningful contribution to literature on affectionate touch. First, the observed behavior reiterates that affectionate touch is spontaneously demonstrated within close relationships and naturally-occurring in everyday life. As an intimate gesture itself (Floyd, 2006), touch injects these seemingly small moments with feelings of intimacy that help facilitate high-quality connections. Although affectionate touch has been used as an experimental manipulation (Jakubiak & Feeney, 2016; 2019) or as part of a functional magnetic resonance imaging (fMRI) study (Coan, Schaefer, & Davidson, 2006), self-reported in everyday life (e.g., romantic couples, Debrot et al., 2013; middle-aged women, Burlison, Trevathan, & Todd, 2007), and categorized (e.g., from self-reports, Jones & Yarbrough, 1985), this research is some of the first to use behaviorally-coded affectionate touch as the outcome of interest.

Moreover, we believe it is one of the first to capture this behavioral intimacy as it emerges naturally between romantic couples. The affectionate touch behavioral codes, which

were validated against participant's self-reports of affectionate touch, are easy to train on and replicate, and may be useful for other labs to apply to future work. Notably, a recent study by Jakubiak & Feeney (2019) had objective raters code for touch (i.e., categorizing affectionate, casual, and playful touch) demonstrated in videorecorded stressor discussions between couple members. While those researchers used touch as a predictor rather than an outcome, it might be interesting to examine whether perceived responsiveness predicts categorically different types of touch in various dyadic interactions.

Critically, the current research focused intentionally on non-sexual affectionate touch (e.g., touch in the lab in Study 2; holding hands, neck rubs, back massages in Study 3), and analyses in all studies controlled for sexual intercourse, to indirectly rule out affectionate touch that was motivated by communicating feelings of attraction or sexual interest (Jones & Yarbrough, 1986). We have demonstrated that the study of everyday affectionate touch can be independent from the study of everyday sexual intercourse, and specifically, that perceived responsiveness can independently predict everyday affectionate touch apart from the likelihood of having sexual intercourse (a useful distinction from work showing responsiveness promotes sexual desire; Birnbaum, Reis, Mizrahi, Kanat-Maymon, Sass, & Granovski-Milner, 2016). However, evidence from Study 1 and Study 3 highlights that sexual intercourse is also predictive of affectionate touch behavior. This links well with work on the importance of affectionate behavior following sexual intercourse for sexual and relationship satisfaction (Hughes & Kruger, 2011; Muise et al., 2014; van Anders et al., 2013). Of interest, we did *not* observe correlations between ecologically valid affectionate touch and important individual differences like attachment (Study 1), communal strength, nor relationship satisfaction (Study 2). Collectively,

these findings raise intriguing questions about the most important precursors to affectionate touch behavior that we look forward to examining in future work.

Situational Precursors to Affectionate Touch

Beyond documenting that affectionate touch happens in everyday life, our central question was about what situations might give rise to it. While previous work has examined the cultural or individual factors that may increase the likelihood of preferring or receiving touch, the situational antecedents of touch have been overlooked in the literature. Here, we rested on the threads of evidence already present within theory on the interpersonal process model of intimacy as well as within the affectionate touch literature to make our prediction.

Although all evidence is correlational, our findings are consistent with the theorized direction of effects, such that perceiving a partner as responsive – an instantiation of psychological intimacy – is associated with greater subsequent affectionate touch – an instantiation of behavioral intimacy. As our strongest evidence, we see prospective associations in the laboratory that cannot be explained by an individual's communal orientation (Study 2), and the within-person analyses documenting greater perceptions of partner responsiveness from one's own average perception being associated with positive change in affectionate touch on the same day (i.e., controlling for prior day) and that cannot be explained by concomitant deviations in daily relationship satisfaction (Study 3). At the same time, the breadth of situations we cover – in terms of potential for responsive behavior as well as everyday situations in which touch arises – helps add strength to our argument that these processes likely exist in everyday life and merit researchers' attention. Of course, we also cannot and do not rule out the potential reverse causal pathway in Studies 1 and 3. In Study 1, because we were effectively assessing general perceptions of responsiveness and general tendencies to enact touch behavior in daily life, we do

not have evidence about which came first; further, in Study 3, because perceived responsiveness and affectionate touch were measured simultaneously at the end of the day, we cannot determine order. Nonetheless, taken together the present package of tests fills a gap in the affectionate touch literature by critically examining a viable situational precursor to affectionate touch.

Affectionate Touch as Part of an Intimate Interpersonal Process

Prior work has documented the role of perceived partner responsiveness in facilitating other relationship behaviors (e.g., sexual desire, Birnbaum et al., 2016; approach behavior, Birnbaum et al., 2016; emotion expression, Ruan et al., 2020). Our findings add affectionate touch to the list of possible behavioral outcomes of perceiving a partner as responsive. Critically, affectionate touch, a behavior which manifests spontaneously in small moments throughout the day, is particularly important for relationship functioning (Debrot et al., 2013; Jakubiak & Feeney, 2017; 2019) and is a behavior that is perceived as intimate (Debrot et al., 2013; 2014; Guerrero & Andersen, 1991; Thayer, 1986). Given this growing body of evidence, it is an opportune moment within the field to pick up on Reis & Shaver's original discussion of affectionate touch within the interpersonal intimacy process, that given: "the prominence of touch, gazing, etc., in adult romantic interactions, and the importance of nonverbal behaviors in communicating openness, nonverbal components of intimacy are especially central in a process meant to apply...across the lifespan (1988, p. 373).

Beyond our evidence related to the question of whether there is a within-person effect, such that one person's perceptions of a partner's responsiveness could make them reach out and touch the partner, we considered the subsequent theoretically plausible step, which was that there would be a cross-partner effect, such that the touch giver's partner would perceive them as more responsive. Indeed, our research provides initial evidence in support of the theoretical model

suggesting affectionate touch is a mechanism at the heart of the interpersonal intimacy process. In Study 3, one's own greater behavioral intimacy as measured by self-reported affectionate touch on a given day was associated with the partner's greater perceptions of the touch-giver's responsiveness that same day and the next day. The within-person analyses lend strong support of our theorizing at the state- or day-level while between-person effects suggest more trait-level processes. At the same time, controlling for relationship satisfaction called into question the robustness of the finding between days and alludes to a more fine-grained temporal sequence (i.e., contemporaneous) of this step in the interpersonal process.

We could find only two other studies that conduct similar tests as our second hypothesis (Debrot et al., 2013; 2014), reporting concurrent daily associations between “responsive touch” or “enacted responsiveness” and partner's psychological intimacy, but with no support for lagged effects as we find in Study 3. In that research, however, both the independent and dependent variables were operationalized in different ways than in our present investigation, suggesting the need for additional research to fully test the conceptual model of interest. Altogether, these data support the interpersonal process model put forth by Reis and Shaver (1988), specifically suggesting a process of mutual cyclical growth. We hope this potentiates mechanistic tests of the interpersonal process model in future work.

Limitations and Future Directions

Although we conceptually replicated our finding across four well-powered tests, we acknowledge some important limitations to this work. The data presented are correlational in nature. In order to determine the true causal nature of the relationship between perceived responsiveness and affectionate touch, we need experimental evidence that greater perceived responsiveness (compared to lower) leads to greater affectionate touch. Unfortunately,

affectionate touch is not a behavior that can be easily observed via online experiments, unlike some other social behaviors (e.g., generosity; Haley & Fessler, 2005), so creativity and additional resources will be needed to measure situational touch induced from manipulated perceptions of partner responsiveness.⁸ Further, the current study focused on romantic couples in the United States. Although work suggests touch may operate differently based on relationship type (Suvilehto et al., 2019), we have no reason to predict that this theorized intimate process should function differently, albeit perhaps of a different magnitude, in non-romantic relationships. However, the possible moderation of our findings by relationship type or other contextual factors such as culture, remains an empirical question.

We also note that while touch is important in a wide array of situations (e.g., making up after conflict, consoling someone suffering), we do not have strong evidence about whether this particular process we propose – perceiving a partner as responsive causing one to reach out and touch that person – happens in situations that are negative in valence; another possibility is that the effect size is different depending on the valence of the situation. Specifically, Study 2 is a situation that is positive in valence. Studies 2 and 3 likely include touch in situations that are negative in valence, but we do not have direct evidence related to that question. Yet it is a theoretically interesting one, in part because some positive interpersonal processes – that is, social interactions fueled by positive valence (Algoe, 2019) – have had more robust relationship-promoting effects than beneficial social interactions involving negative emotions in prior research (e.g., Algoe et al., 2013; Gable et al., 2012).

⁸ We acknowledge that two studies manipulate thoughts about partner responsiveness; however, they do not document an influence on *perceptions* of partner responsiveness, our mechanism of interest (Reis, Lee, O’Keefe, & Clark, 2018; Ruan et al., 2020) so more work is needed in this domain.

Beyond a scholarly contribution, the present research might have useful translational consequences. It is well documented that touch – especially affectionate touch -- seems to provide physiological benefits (Ditzen, Hoppman, & Klumb, 2008; Holt-Lunstad, Birmingham, & Light, 2008; Light et al., 2005). As such, increasing opportunities for safe affectionate touch among couples is an important area for consideration in the research community. The current evidence suggests that finding ways to *promote perceived responsiveness* within romantic relationships can make way for more affectionate touch within them. This is true for both members of the dyad, as the interpersonal process may theoretically jump start a mutual process that translates to cumulative physiological benefit by way of increases in affectionate touch.

Conclusion

Our study documents the normative, spontaneous, myriad ways affectionate touch occurs in couple's everyday life, and highlights the value of employing behavioral data in the study of touch. Reis and Shaver (1988) argue that fundamental intimacy-building behaviors are present during development; affectionate touch is a keystone behavior in infant-caregiver interactions (Ferber et al., 2008; Hertenstein et al., 2006) and remains important for social bonds throughout the lifespan (Burluson et al., 2007; Guerrero & Andersen, 1991). The present research provides the first tests of a theorized situational precursor to affectionate touch and begins to unpack whether perceived partner responsiveness, as a gesture of psychological intimacy, undergoes a translation of motivation to promote behavioral intimacy as measured by affectionate touch. If so, this would implicate affectionate touch as a theoretical mechanism for relational, psychological and physical benefits of perceived partner responsiveness (e.g., Caprariello & Reis, 2011; Maisel & Gable, 2009; Reis & Clark, 2013; Pansera & La Guardia, 2012; Selcuk, Gunaydin, Ong, & Almeida, 2016; Selcuk, Stanton, Slatcher, & Ong, 2017; Slatcher, Selcuk, &

Ong, 2015; Stanton, Slatcher, & Reis, 2019). Altogether, the current findings offer a substantial advance in the literature on affectionate touch and provide meaningful considerations for its role in the intimacy process as it unfolds in couples' everyday lives.

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Full Analytic Strategy for Preliminary Study (Integrative Data Analysis)

We conducted an integrative data analysis to test the association between general perceived partner responsiveness and frequency of affectionate touch in the past month in four unique dyadic samples. Because we were not investigating the differences between data source, we harmonized the variables by standardizing them within their respective studies before integrating. Although this standardization removed the mean differences in the variables between samples, it conserved the strength of the targeted association between perceived partner responsiveness and affectionate touch within each sample and, thus, did not influence the current investigation. We also treated data source not as a level of random sampling but as a fixed effect at the second- (or couple)-level (estimating a three-level model with a sample-level random slope failed to converge). Subsequently, we fit the merged data to a two-level (i.e., individual nested within couple) random-intercept model where affectionate touch was predicted by perceived partner responsiveness as a continuous predictor, data source as a 4-factor (i.e., Sample A to D) predictor, and the interaction between data source and perceived partner responsiveness.⁹ By setting up the model this way, we harmonized the pooled datasets not only by the scales of variables but also in the association between constructs of interest. We note that this is one of the most simplified versions of Integrative Data Analysis (Curran & Hussong, 2009), which was facilitated by the standard measurement approach and samples within our lab.

⁹ We did not include random slopes because, as in all cross-sectional dyadic designs, there were only two samples—partners—within each couple and this made random-slope models saturated and not estimable.

Participant Information for Sample D from the Preliminary Study**(Integrative Data Analysis)**

In Sample D, the 272 participants had been together with the partner for about 4.17 years, ($SD = 5.16$) with the majority of the total sample living together (63.6%) and in an exclusive, committed relationship, i.e., married (26.8 %), engaged (10.3%), or dating exclusively (61.0%). The average participant was 27.07 years old ($SD = 9.85$, range = 55). Participants self-identified as White/Caucasian (65.4%), Black/African-American (11.0%), East Asian (4.8%), South Asian (2.6%), American Indian or Alaskan Native (0.4%), or Other (9.2%); 8.5% of the sample identified as Hispanic. Data from this larger study have been reported in (Citation Blinded).

Procedure for Spontaneously-Reported Affectionate Behavior Code in Study 1

The coder followed these instructions when coding the nightly responses for affectionate touch behavior:

Affectionate touch is warm physical contact that communicates fondness and positive regard, as well as love and support. It can take many forms, but some instantiations are hugging, kissing, massaging, and cuddling, and some less obvious versions may be sitting close together or lying down close together doing leisure activities, sleeping/spending the night together or dancing.¹⁰ Further, based on context, there also may be euphemisms of affectionate touch – those count too.

¹⁰ We note that some of the less obvious affectionate touch behaviors – e.g., dancing, spending the night together – are more obvious when considering that in the romantic couple context there is a high likelihood that those behaviors also included or co-occurred with affectionate touch. This assumption might not be made in other contexts, such as applying the same code to reports from friends or acquaintances.

Procedure for Sexual Intercourse Code in Study 1

Participant's nightly responses describing an interaction with their partner that "made the biggest impression today" were also coded for the absence (coded 0) or presence (coded 1) of sexual intercourse (or "get intimate" or other references to sexual activity).

Six independent judges were trained to code the nightly data. All six coders were trained on the behavioral codes, and during the several weeks of practice they met with the first author frequently to discuss and recalibrate the ratings. During practice, coders independently worked through the same 400 responses to establish reliability (21.5% of the total nightly responses in the study). Then, the remaining 1460 responses were divided among the six raters, where every response was coded by three raters (i.e., each of the six raters coded a different third of the dataset). Throughout, all coders were unaware of the hypothesis, and a sensitivity analysis reveal the data are sensitive to detect a small effect $|r| > .07$ at power = 80% assuming no interdependence among data.

Coder reliability was high (all ICCs were at least .85). In the 1860 responses, there were 44 responses that mentioned sexual activity or intercourse.

Results Controlling for Secure Attachment in Study 1

To test the possibility that a dispositional third variable was explaining the hypothesized effects in Study 1, we controlled for secure attachment, which was measured at baseline, like general perceptions of partner responsiveness. Perceived partner responsiveness was negatively correlated with attachment avoidance ($r = -.24, p < .01$) and attachment anxiety ($r = -.18, p < .05$). Both attachment dimensions were entered into the model simultaneously to account for possible covariance ($r = .28, p < .01$). We did not find that anxious attachment was associated with spontaneously-reported affectionate touch behavior, $B = -0.001, SE = 0.01, df = 961.13, t = -0.09, p = .93, CI_{95\%} = [-0.02, 0.02]$, nor did we find avoidant attachment was associated with everyday affectionate touch, $B = -0.002, SE = 0.01, df = 567.62, t = -0.12, p = .91, CI_{95\%} = [-0.03, 0.02]$, but perceived partner responsiveness remained significantly associated with everyday affectionate touch, $B = 0.04, SE = 0.02, df = 430.49, t = 2.02, p = .04, CI_{95\%} = [0.001, 0.07]$ when included in the same model.

Procedure for “Pilot Testing” Task in Study 2

The experimenter requested that, given the gap in time before the next couple-based task, the Target go to a desk in a room across the lab suite from the primary room to play and rate a computer-based video game that the experimenter said the lab was testing for use in a future study; the video game was pinball and the reason given for needing the Target’s (as opposed to the Expresser’s) ratings was his/her gender (i.e., the experimenter told the Target, “we need more ratings by men/women”). The items to be rated were clearly shown on a piece of paper the experimenter placed next to the computer so the Target could know in advance this would not be a time-consuming assessment. The four ratings assessed how interesting, exciting and challenging participants found the game, and if they would recommend it to others. They were told that as soon as they had played long enough to be able to give those ratings, they could go back to the room where their partner was.

Using the Affectionate Touch Rating Scale as the Measure of Behavior in Study 2

In Study 2, the coders also *rated* the video for overall quantity of affectionate touch demonstrated from the Target to the partner across the entire interaction, using the prompt, “how much affectionate touch did the newcomer¹¹ demonstrate? I.e., warm physical contact that communicates fondness, positive regard, love and support” on a scale from 1 (*none at all*) to 5 (*a great deal*), $M = 2.04$, $SD = 0.98$, $ICC = .84$. Ratings were averaged across the two coders to create a composite. Rated affectionate touch was correlated with the primary variables in Study 2 as follows: self-reported perceived partner responsiveness following conversation ($r = .20$, $p < .05$); coded target affectionate touch of partner (count, $r = .93$, $p < .01$); coded kisses ($r = .72$, $p < .01$); coded expresser engagement ($r = .03$, $p = ns$); baseline self-reported frequency of affectionate touch ($r = .30$, $p < .01$).

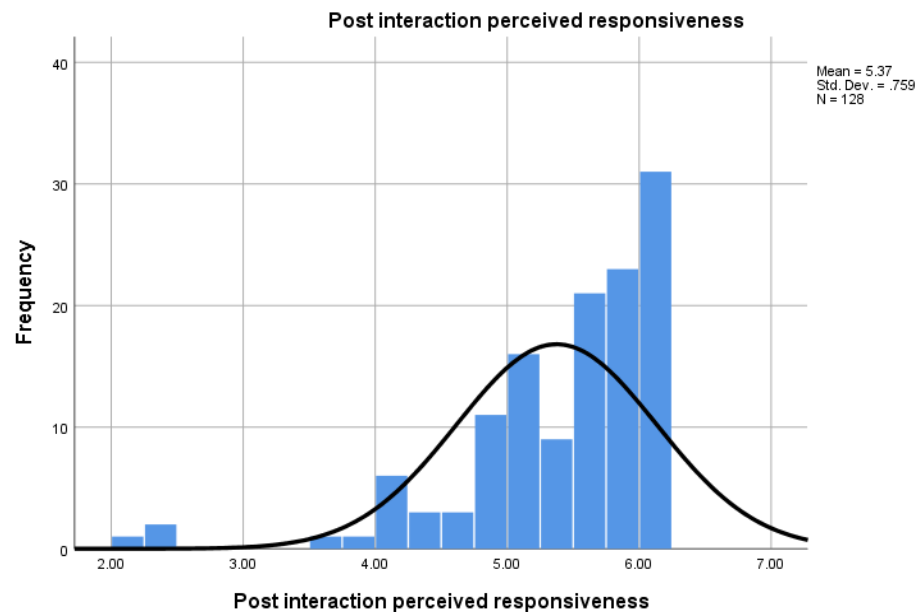
The results for affectionate touch rating were consistent with affectionate touch count results documented in the main text. Perceived partner responsiveness was positively associated with higher global ratings of touch, $\beta = 0.39$, $SE = 0.16$, $t = 2.43$, $p = 0.017$, $CI_{95\%} = [0.07, 0.71]$; the rating of affectionate touch was also not significantly predicted by condition, $\beta = 0.22$, $SE = 0.20$, $t = 1.10$, $p = 0.28$, $CI_{95\%} = [-0.17, 0.6]$ or Expresser engagement, $\beta = -0.21$, $SE = 0.14$, $t = -1.44$, $p = 0.15$, $CI_{95\%} = [-0.5, 0.08]$, which were included in the same model.

¹¹ For the coders, the Target was labeled the “newcomer” because s/he was always the person entering the room at the beginning of the video. We intentionally kept coders unaware of the study procedures (e.g., the expressed gratitude task) and the roles to which participants were assigned in the prior interaction (i.e., Target), so as not to bias their ratings.

Results of Analyses Including Outliers for Perceived Partner Responsiveness in Study 2

As documented in a prior publication (Algoe, Kurtz & Hilaire, 2017), three participants had exceptionally low scores on the independent variable in Study 2, perceived partner responsiveness following the expressed gratitude interaction in-lab. In addition to being statistical outliers by conventional standards (i.e., $> 3SD$ below the mean) and non-normally distributed residuals, the notable 1.2 point gap in the otherwise continuous measure between the highest of these scores, which were 2.00, 2.30, and 2.40, and the low end of the rest of the distribution of data – which ranged from 3.60 to 6.00 -- influences assumptions of measurement underlying the regression; additionally, also as noted in the prior publication, in this situation (i.e., satisfied couples having a very positive social interaction) there is something conceptually different about these participants who gave such low ratings as to not even reach the midpoint of the scale. We excluded these three participants from analyses presented in the main text (consistent with the prior publication), and here present the results with these three participants included.

Supplementary Figure 1. Distribution of Post-Interaction Perceived Partner Responsiveness Ratings Including Outliers



A linear regression using bootstrapped (1,000 repetitions) estimates of the confidence interval was conducted to test the hypothesis for affectionate touch count coding using the entire sample of participants (i.e., including those with outlying perceived partner responsiveness scores). Although trending in the predicted direction, perceived partner responsiveness was no longer a significant predictor of the amount of affectionate touch in the interaction when including the three outliers, $B = 1.46$, $SE = 0.94$, $t = 1.74$, $p = .10$, bootstrapped $CI_{95\%} = [-0.25, 3.54]$ in a model that also controlled for Expresser engagement, $B = 0.22$, $SE = 1.00$, $t = .23$, $p = .84$, bootstrapped $CI_{95\%} = [-1.84, 2.04]$ and experimental condition, $B = -0.01$, $SE = 1.29$, $t = -0.01$, $p = 0.99$, bootstrapped $CI_{95\%} = [-2.56, 2.38]$.

For kissing behavior, with outliers included, we also found the association between standardized perceived partner responsiveness in-lab and likelihood of kissing approaching but not reaching statistical significance, $B = 0.88$, $SE = .46$, $df = 1$, $p = .05$, $OR = 2.41$, $CI_{95\%} = [0.99,$

5.89], controlling for Expresser engagement, $B = 0.59$, $SE = .34$, $df = 1$, $p = .08$, $OR = 1.80$,

$CI_{95\%} = [0.92, 3.50]$ and experimental condition, $B = 0.18$, $SE = .45$, $df = 1$, $p = .68$, $OR = 1.20$,

$CI_{95\%} = [0.50, 2.91]$.

Results without Controlling for Expresser Engagement in Study 2

We removed Expresser engagement from the model and conducted a linear regression with bootstrapped estimates (1000 iterations) of confidence intervals using perceived Expresser responsiveness and condition to predict affectionate touch behavior. Perceived partner responsiveness significantly predicted affectionate touch count code, $b = .21$, $B = 2.53$, $SE = 1.09$, $t = 2.31$, $p = .01$, bootstrapped $CI_{95\%} = [0.67, 4.50]$ and experimental condition remained non-significant, $b = .03$, $B = 0.45$, $SE = 1.29$, $t = 0.35$, $p = 0.74$, bootstrapped $CI_{95\%} = [-2.29, 2.82]$.

We ran a logistic regression to predict kissing from standardized perceived Expresser responsiveness and experimental condition. Our hypothesis held that perceived responsiveness would be significantly associated with kissing, $B = 1.07$, $SE = .38$, $df = 1$, $p = .005$, $OR = 2.92$, $CI_{95\%} = [1.39, 6.12]$, even controlling for condition, which was not a significant predictor, $B = 0.44$, $SE = .47$, $df = 1$, $p = .34$, $OR = 1.56$, $CI_{95\%} = [0.62, 3.88]$.

The perceived responsiveness scale was standardized, meaning the kissing finding is interpreted thus: a one-standard deviation increase in the Target's perception of Expresser's responsiveness was associated with a 292% increase in the likelihood of kissing the Expresser in the next interaction.

Results Controlling for Communal Strength in Study 2

We tested communal strength as an alternative explanation for our findings by controlling for dispositional communal strength measured at baseline alongside perceptions of Expresser responsiveness during the gratitude expression to predict Target's affectionate touch in the laboratory. In a linear regression using bootstrapped (1,000 repetitions) estimates of the confidence interval, communal strength was not associated with affectionate touch behavior, $b = 0.04$, $B = 0.31$, $SE = 0.88$, $t = 0.35$, $p = .74$, bootstrapped $CI_{95\%} = [-1.34, 2.07]$, but perceived responsiveness remained a significant predictor of Target's affectionate touch, $b = 0.20$, $B = 2.34$, $SE = 1.27$, $t = 1.85$, $p = .03$, bootstrapped $CI_{95\%} = [0.27, 4.59]$; affectionate touch continued to not be predicted by Expresser engagement, $b = -0.02$, $B = -0.25$, $SE = 0.99$, $t = -0.25$, $p = .81$, bootstrapped $CI_{95\%} = [-1.34, 1.76]$, or experimental condition, $b = 0.03$, $B = 0.47$, $SE = 1.35$, $t = 0.35$, $p = .73$, bootstrapped $CI_{95\%} = [-2.15, 2.99]$ when included in this same model.

A multiple logistic regression model showed that general communal strength did not predict a greater likelihood of kissing, $\beta = -0.51$, $SE = 0.33$, $df = 1$, $p = .12$, $OR = 0.60$, $CI_{95\%} = [0.31, 1.14]$, but standardized perceived Expresser responsiveness still predicted a greater likelihood of kissing during private leisure time, $\beta = 1.38$, $SE = 0.45$, $df = 1$, $p = .002$, $OR = 3.98$, $CI_{95\%} = [1.64, 9.63]$; kissing was not significantly predicted by Expresser engagement, $\beta = 0.55$, $SE = 0.35$, $df = 1$, $p = .12$, $OR = 1.73$, $CI_{95\%} = [0.87, 3.44]$, or by condition, $\beta = 0.32$, $SE = 0.49$, $df = 1$, $p = .51$, $OR = 1.38$, $CI_{95\%} = [0.53, 3.57]$, when included in the same model.

Results Controlling for Relationship Satisfaction in Study 2

We also tested global relationship satisfaction as an alternative explanation for our findings. Bootstrapping estimates of confidence intervals with 1,000 repetitions, relationship satisfaction did not predict affectionate touch behavior, $b = -0.64$, $B = 1.50$, $SE = -0.04$, $t = -0.43$, $p = .67$, bootstrapped $CI_{95\%} = [-3.53, 2.31]$, but perceived responsiveness remained a significant predictor of Target's affectionate touch on the couch, $b = 0.23$, $B = 2.77$, $SE = 1.23$, $t = 1.85$, $p = .008$, bootstrapped $CI_{95\%} = [0.70, 4.87]$; Expresser engagement, $b = -0.02$, $B = -0.23$, $SE = 0.99$, $t = -0.23$, $p = .83$, bootstrapped $CI_{95\%} = [-2.34, 1.81]$, and experimental condition, $b = 0.03$, $B = 0.38$, $SE = 1.33$, $t = 0.28$, $p = .78$, bootstrapped $CI_{95\%} = [-2.25, 3.01]$ were not significant covariates.

A multiple logistic regression model showed that general relationship satisfaction did not predict a greater likelihood of kissing, $\beta = 0.23$, $SE = 0.55$, $df = 1$, $p = .68$, $OR = 1.25$, $CI_{95\%} = [0.43, 3.66]$, but standardized Expresser responsiveness perceived during the gratitude expression still predicted a greater likelihood of kissing during private leisure time, $\beta = 1.06$, $SE = 0.42$, $df = 1$, $p = .012$, $OR = 2.88$, $CI_{95\%} = [1.26, 6.56]$; kissing was associated with neither Expresser engagement, $\beta = 0.54$, $SE = 0.35$, $df = 1$, $p = .13$, $OR = 1.71$, $CI_{95\%} = [0.86, 3.41]$, nor condition, $\beta = 0.42$, $SE = 0.48$, $df = 1$, $p = .38$, $OR = 1.51$, $CI_{95\%} = [0.60, 3.84]$, when included in the same model.

Results Controlling for Sexual Intercourse in Study 3

To investigate the possibility that daily sexual intercourse may be driving the associations found in Study 3, we conducted the same analyses while controlling for the sexual intercourse item to further rule out the possibility that non-sexual affectionate touch (e.g., hug) is a mere downstream consequence of sexual intercourse. We present full results for both Hypotheses in Supplementary Table 1. The hypothesized conclusions remain the same and are independent of this effect.

Supplementary Table 1. Test of Hypothesis 1 and 2 Using Disaggregated Within- and Between-Person Variance *Including* Controlling for Daily Sexual Intercourse

	B	SE	df	t	95% CI	
					Low	High
Hypothesis 1: perceived partner responsiveness → same day affectionate touch						
Within-person deviations of perceived partner responsiveness	0.02	0.02	1675.57	8.51***	0.10	0.17
Prior day affectionate touch	0.37	0.02	1720.46	17.85***	0.33	0.41
Between-individual differences in perceived partner responsiveness	0.17	0.06	73.34	2.82**	0.05	0.29
Experimental condition	-0.04	0.08	39.81	-0.53	-0.21	0.12
Sexual intercourse	0.26	0.03	1719.60	10.28***	0.21	0.32
Hypothesis 2: affectionate touch → next day perceptions of touch giver’s responsiveness						
Within-person deviations of affectionate touch	0.08	0.04	1577.83	2.06*	0.00	0.15
Present day perceptions of touch giver’s responsiveness	0.15	0.03	1628.12	5.92***	0.10	0.20
Between-individual differences in affectionate touch	0.11	0.10	76.08	1.09	-0.90	0.32
Experimental condition	0.05	0.13	40.45	0.40	-0.20	0.29
Sexual intercourse	-0.04	0.21	1602.88	-0.49	-0.10	0.60

* $p < .05$. ** $p < .01$ *** $p < .001$. CI = confidence interval.

Results Controlling for Daily Relationship Satisfaction in Study 3

For Hypothesis 1, we attempted to rule out a situational alternative explanation, which is that increases in daily relationship satisfaction explain the effects on both perceived partner responsiveness and affectionate touch. Further, Hypothesis 2 could be alternatively explained by relationship satisfaction, such that one's satisfaction drove both their own affectionate touch and their partner's perception that they are more responsive the next day, *or* perhaps the partner's perception of the participant's responsiveness was driven by their own relationship satisfaction that day.

We tested these situational alternative explanations in Hypothesis 1 (contemporaneous and lagged) and present results in Supplementary Table 2. For both versions of the daily satisfaction control in Hypothesis 2 (participant's relationship satisfaction or partner's), see Supplementary Table 3. In all analyses, we disaggregated between- and within-person effects.

Supplementary Table 2. Test of Hypothesis 1 and Hypothesis 1 Lagged Using Disaggregated Within- and Between-Person Variance *Controlling* for Daily Relationship Satisfaction

	B	SE	df	t	95% CI	
					Low	High
Hypothesis 1: perceived partner responsiveness → same day affectionate touch						
Within-person deviations of perceived partner responsiveness	0.08	0.02	1708.70	3.95***	0.04	0.12
Prior day affectionate touch	0.37	0.02	1723.42	17.91***	0.33	0.42
Between-individual differences in perceived partner responsiveness	0.07	0.06	80.81	1.07	-0.06	0.19
Experimental condition	-0.03	0.09	39.67	-0.39	-0.21	0.14
Present day relationship satisfaction	0.11	0.02	1761.21	6.80***	0.08	0.14
Hypothesis 1 Lagged: perceived partner responsiveness → next day affectionate touch						
Within-person deviations of perceived partner responsiveness	0.02	0.02	1720.29	0.92	-0.02	0.06
Present day affectionate touch	0.40	0.02	1603.66	17.96***	0.36	0.45
Between-individual differences in perceived partner responsiveness	0.17	0.06	76.77	2.80**	0.05	0.29
Experimental condition	-0.02	0.08	38.29	-0.27	-0.19	0.14
Prior day relationship satisfaction	-0.01	0.02	1770.89	-0.87	-0.04	0.02

* $p < .05$. ** $p < .01$ *** $p < .001$. CI = confidence interval; PPR = perceptions of partner’s responsiveness; AT = affectionate touch; Exp condition = experimental condition.

Supplementary Table 3. Test of Hypothesis 2 Using Disaggregated Within- and Between-Person Variance *Controlling* for 1) Touch Giver’s Relationship Satisfaction or 2) Touch Receiver’s Satisfaction Next Day

	B	SE	df	t	95% CI	
					Low	High
Hypothesis 2 Version 1: affectionate touch → next day perceptions of touch giver’s responsiveness						
Within-person deviations of affectionate touch	0.06	0.04	1574.87	1.64	-0.01	0.13
Present day perceptions of touch giver’s responsiveness	0.14	0.03	1532.17	5.13***	0.08	0.19
Between-individual differences in affectionate touch	0.12	0.10	74.32	1.14	-0.09	0.32
Experimental condition	0.04	0.12	39.56	0.31	-0.21	0.28
Present day relationship satisfaction of <i>touch provider</i>	0.02	0.02	1547.85	0.98	-0.02	0.06
Hypothesis 2 Version 2: affectionate touch → next day perceptions of touch giver’s responsiveness						
Within-person deviations of affectionate touch	0.15	0.03	1580.04	4.30***	0.08	0.21
Present day perceptions of touch giver’s responsiveness	0.09	0.02	1643.90	3.86***	0.04	0.13
Between-individual differences in affectionate touch	0.15	0.10	80.44	1.47	-0.05	0.35
Experimental condition	-0.01	0.11	79.22	-0.08	-0.22	0.20
Next day relationship satisfaction of <i>partner</i>	0.28	0.02	1640.43	15.11***	0.24	0.31

* $p < .05$. ** $p < .01$ *** $p < .001$. CI = confidence interval; PPR = perceptions of partner’s responsiveness; AT = affectionate touch; Exp condition = experimental condition.

Results of Contemporaneous Hypothesis 2 in Study 3

We ran ancillary non-lagged models of Hypothesis 2, using present day affectionate touch to predict perceptions of touch giver’s responsiveness the *same day*, controlling for perceptions of responsiveness the prior day. In Supplementary Table 4, we present results *not* controlling for touch giver’s relationship satisfaction (top panel) and *while* controlling for touch giver’s relationship satisfaction (bottom panel).

Supplementary Table 4. Test of Non-Lagged Hypothesis 2 Using Disaggregated Within- and Between-Person Variance, *Not Controlling* and *Controlling* for Daily Relationship Satisfaction

	B	SE	df	t	95% CI	
					Low	High
Hypothesis 2 Contemporaneous: affectionate touch → same day perceptions of touch giver’s responsiveness						
Within-person deviations of affectionate touch	0.27	0.03	1582.53	7.78***	0.20	0.34
Prior day perceptions of touch giver’s responsiveness	0.12	0.02	1655.19	4.96***	0.07	0.16
Between-individual differences in affectionate touch	0.13	0.11	77.09	1.25	-0.08	0.34
Experimental condition	0.06	0.12	39.82	0.47	-0.19	0.31
Hypothesis 2 Contemporaneous: affectionate touch → same day perceptions of touch giver’s responsiveness						
Within-person deviations of affectionate touch	0.09	0.03	1597.37	3.02**	0.03	0.14
Prior day perceptions of touch giver’s responsiveness	0.07	0.02	1617.19	3.75***	0.03	0.11
Between-individual differences in affectionate touch	0.11	0.07	73.19	1.56	-0.30	0.24
Experimental condition	-0.04	0.08	40.55	-0.58	-0.20	0.11
Present day relationship satisfaction	0.47	0.02	1599.69	30.17***	0.44	0.50

* $p < .05$. ** $p < .01$ *** $p < .001$. CI = confidence interval; PPR = perceptions of partner’s responsiveness; AT = affectionate touch; Exp condition = experimental condition.

**Moderation Results in Study 3: Exploratory Test of Effect of Condition on
Hypothesis 1 and 2**

This sample underwent an experimental manipulation during the 28 days of nightly diaries. Because it is possible the manipulation unintentionally moderated the associations found in Study 3, we wanted to test for possible moderation of condition on the association between perceived responsiveness and affectionate touch. Full results including testing for possible moderation for both hypotheses can be found in Supplementary Table 5. They provide no evidence that experimental condition moderated the hypothesized effects presented in the main text.

Supplementary Table 5. Test of Hypothesis 1 and 2 Using Disaggregated Within- and Between-Person Variance *Including* Exploratory Test of Moderation by Experimental Condition

	B	SE	df	t	95% CI	
					Low	High
Hypothesis 1: perceived partner responsiveness → same day affectionate touch						
Within-person deviations of perceived partner responsiveness	0.18	0.02	1676.99	8.02***	0.14	0.23
Prior day affectionate touch	0.38	0.02	1708.94	17.96***	0.34	0.42
Between-individual differences in perceived partner responsiveness	0.07	0.09	66.87	0.79	-0.11	0.26
Experimental condition	-0.65	0.50	70.05	-1.29	-1.65	0.35
Within-PPR x Exp cond	-0.05	0.03	1677.92	-1.57	-0.11	0.01
Between-PPR x Exp cond	0.15	0.12	69.37	1.27	-0.09	0.39
Hypothesis 2: affectionate touch → next day perceptions of touch giver's responsiveness						
Within-person deviations of affectionate touch	0.01	0.05	1572.43	0.13	-0.09	0.11
Present day perceptions of touch giver's responsiveness	0.14	0.02	1638.30	5.75***	0.09	0.19
Between-individual differences in affectionate touch	0.09	0.15	77.69	0.62	-0.20	0.39
Experimental condition	-0.02	0.31	68.44	-0.06	-0.63	0.59
Within-AT x Exp cond	0.13	0.07	1571.65	1.82	-0.01	0.26
Between-AT x Exp cond	0.04	0.21	74.89	0.21	-0.37	0.46

* $p < .05$. ** $p < .01$ *** $p < .001$. CI = confidence interval; PPR = perceptions of partner's responsiveness; AT = affectionate touch; Exp condition = experimental condition.