

# Affectionate Touch Promotes Shared Positive Activities

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## Abstract

Shared positive activities, such as engaging conversations and interactive play, enhance relationships and buffer the consequences of negative interactions. The current research tested whether affectionate touch (a prime target for intervention) encourages people to prioritize other shared positive activities and to view shared activities more positively. In a pre-registered dyadic diary study of married couples (Study 1), greater affectionate touch on one day predicted increases in shared positive activities concurrently and prospectively. In a pre-registered dyadic experiment (Study 2), a brief affectionate touch intervention increased self-reported (but not observer-rated) shared positive activities immediately and increased shared positive activities over the following week for people who do not typically engage in such activities. Participants assigned to touch (particularly those low in attachment anxiety) also perceived their partners more positively during shared activities. These results suggest that touch may facilitate positive relationship experiences broadly and supports a theoretical model of affectionate touch.

## Keywords

adult attachment, affectionate touch, romantic relationships, shared activities

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Picture a romantic couple waiting in a grocery line, on a car-ride across town, or lounging on a lazy Saturday afternoon. A multitude of these seemingly trivial moments fuse together to form a relationship's foundation (e.g., Lakey & Orehek, 2011). Whether that foundation is solid (e.g., resilient to threats) or shaky (e.g., susceptible to threats) is, in part, a function of whether couple-members engage—or fail to engage—in shared positive activities during their time together (e.g., Driver & Gottman, 2004; Feeney & Lemay, 2012; Girme et al., 2014; Hill, 1988; Johnson & Anderson, 2013; McDaniel et al., 2021; Milek et al., 2015). Shared positive activities include intimate or engaging conversations, shared leisure, fun activities, joint laughter, and other interactive experiences that are affectively positive for a given couple (e.g., Feeney & Lemay, 2012). These activities are theorized to offer relational benefits because they enhance partners' attachment bond (Hill, 1988), produce positive emotions (Algoe, 2019), enhance perceptions of a partner's responsiveness (Peters et al., 2018), and facilitate resilience to relationship threats (e.g., Driver & Gottman, 2004; Feeney & Lemay, 2012).

Although couples' shared time has increased since the 1960s, exclusive couple-time still tends to be limited, especially for couples with children in the home (Genadek et al., 2016, 2020) or with structural constraints (e.g., nonstandard

work hours). Increasing interruptions from technology may also lead people to neglect shared activities or to engage in shared activities distractedly, in a way that does not confer benefits (e.g., Mullan & Chatzitheochari, 2019). Shared time is most predictive of relationship benefits when people desire and are committed to engaging in the shared activity (Girme et al., 2014). Thus, couples can protect their relationships by prioritizing shared activities, by being engaged and attentive during their shared activities, and by viewing their (even limited) shared time positively. It is, therefore, critical to identify modifiable precursors of shared positive activities to target interventions that increase these activities. The aim of the current research was to test whether affectionate touch—a common relational behavior with a host of positive consequences—facilitates shared positive activities. Specifically, we examined whether affectionate touch predicts increases in shared positive activities in daily life and whether a brief

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affectionate touch intervention increases shared positive activities immediately and over time.

## Affectionate Touch in Romantic Relationships

Affectionate touch itself is a shared positive activity and one that may initiate a cascade of other, more effortful, positive activities due to its immediate consequences. In their theory of affectionate touch in close relationships, Jakubiak and Feeney (2017) argued that affectionate touch may encourage people to prioritize interdependent (shared) activities because receiving affectionate touch immediately makes people feel secure (i.e., cared for, protected, valued, accepted) and close to their partners. When people perceive security and closeness, they should be motivated to invest time and energy in their relationships both because their relationships are a source of fulfillment and because they should be less concerned that interdependence is risky (i.e., could result in rejection; Murray et al., 2006). Supporting these ideas, touch does enhance state security and closeness, perhaps because people who receive touch infer genuine affection from their partners and because the physical overlap inherent in touch fosters psychological overlap (closeness) as well (e.g., Carmichael et al., 2021; Jakubiak & Feeney, 2016a, 2019b). Further, affectionate touch indirectly increased constructive conflict behavior by enhancing state security and closeness (Jakubiak & Feeney, 2019b); touch may similarly motivate people to prioritize shared activities (another pro-relational behavior) through these mechanisms. In addition, affectionate touch may facilitate shared positive activities because it may focus attention on the relationship (i.e., make the relationship salient) and enhance relationship quality (RQ), so that people are motivated to prioritize shared activities.

Affectionate touch may also encourage people to view their shared activities more positively, perhaps transforming mundane activities into fun or intimate experiences. For example, people may perceive their partners to be more motivated to spend time together after engaging in touch that communicates love and care, and shared activities are especially rewarding when people perceive their partners to be invested in them (Girme et al., 2014). Affectionate touch may also impact perceptions of one's partner during shared activities because people perceive their partner to be more responsive (understanding, validating) and report more positive partner perceptions in general following touch (e.g., Carmichael et al., 2021; Jakubiak & Feeney, 2019a).

In addition to the theoretical rationale and empirical evidence suggesting that affectionate touch is a precursor to shared positive activities, we also opted to focus on affectionate touch because it has the potential to be an effective intervention target (i.e., it has been shown to be manipulable). Affectionate touch has been manipulated with multi-week interventions as well as brief laboratory interventions (e.g., Holt-Lunstad et al., 2008; Jakubiak & Feeney, 2016a,

2019b). Recently, affectionate touch was manipulated using an ecological momentary intervention with prompts from a smart-phone application, further highlighting its intervention potential (Durbin et al., 2021). In addition to being *feasible*, affectionate touch interventions are likely to be *acceptable* (i.e., viewed positively by participants) because people typically desire affectionate touch in their romantic relationships (Carmichael et al., 2021; Jakubiak et al., 2021).

Although touch is typically acceptable, its acceptability does vary based on personal and relational factors. In particular, people with greater attachment avoidance (those who eschew closeness and prioritize independence) and/or people with poorer quality relationships desire less touch than others, whereas people with greater attachment anxiety (those who crave closeness and have concerns about abandonment) desire more touch than others (e.g., Carmichael et al., 2021; Jakubiak et al., 2021). These preferences may impact the effectiveness of an affectionate touch intervention to enhance shared positive activities because people who do not desire touch may not experience immediate benefits (e.g., state security, closeness) and therefore may not prioritize shared activities or view shared activities positively. Indeed, in past work, people with high attachment avoidance did not benefit from an affectionate touch manipulation to enhance state security (Jakubiak & Feeney, 2016a). Although touch manipulations may be ineffective (or less effective) for some people, affectionate touch in daily life has broad positive consequences, even for people who do not necessarily desire touch (Carmichael et al., 2021; Debrot et al., 2020). Touch in daily life (unlike a touch manipulation) can be provided and received at times and in ways that are tailored to a person's preferences (e.g., using specific forms of touch; touching in particular contexts) to confer benefits broadly.

## Overview of the Current Research

The current research tested whether engaging in affectionate touch with one's partner is a precursor to other shared positive activities. In Study 1, we assessed whether affectionate touch in daily life (i.e., touch in the way it occurs naturally and is likely desired by participants) predicts same-day and next-day increases in shared positive activities. In Study 2, we tested whether a minimal touch intervention encourages couples to prioritize shared positive activities in the laboratory and over the following week. In Study 2, we also tested whether affectionate touch encouraged people to view their partners more positively during their time together and over the following week, and we tested immediate consequences of the touch manipulation that could explain these predicted benefits. We also explored whether the consequences of manipulated affectionate touch differed based on attachment orientation and RQ, as these factors influence desirability of affectionate touch and may influence the effectiveness of touch manipulations. We report all manipulations, measures, and exclusions in these studies.

## Study 1

We hypothesized that affectionate touch in daily life predicts greater shared positive activities concurrently and prospectively. Prospective associations provide more rigorous evidence for within-person processes because they establish the temporal ordering of an association. Because affectionate touch behaviors may co-occur with other positive, responsive partner behaviors (e.g., conveying understanding, providing support) which may similarly foster shared positive activities, we controlled for other positive partner behaviors to isolate the unique contribution of affectionate touch above and beyond other responsive behaviors. We assessed whether the consequences of daily affectionate touch were moderated by attachment orientation or RQ, but we did not expect moderation based on past research in daily life (Carmichael et al., 2021; Debrot et al., 2020).

## Method

Our preregistration included study design and planned analyses (<https://osf.io/zxumy>). The measures, data set, codebook, and analysis syntax are available at <https://osf.io/qgsa4/>.

**Participants.** Our sample consisted of married individuals who were recruited approximately 12 years earlier for a study of support processes in newlyweds (see Jakubiak & Feeney, 2016b for recruitment information). The current sample included all 197 participants (99 female; 98 male) who completed the diary portion of the follow-up (i.e., sample size was determined by the original sample). Most participants reported that they were White (88.3%), Black (5.0%), or Asian (2.5%), and 3.6% of participants reported that they were Hispanic/Latino. Participants reported various annual incomes with 16% reporting less than \$60,000, 41% reporting \$60,000 to \$119,000, and 42% reporting over \$120,000 (all USD). Participants' mean age was 39.66 ( $SD = 4.22$ ), and participants had been married for approximately 13 years ( $M = 157$  months,  $SD = 11$  months). All couples were opposite-sex.

**Procedure and measures.** After an initial survey session, participants completed seven daily surveys each night before bed. The current study focuses on daily measures pertaining to affectionate touch, shared positive activities, and responsive partner behaviors (see Supplementary Tables 1–4 for frequencies of specific responses, descriptive statistics, reliability estimates, and correlations). For all measures, composites were computed separately for each couple-member.

**Baseline measures.** Attachment orientation was assessed with an abbreviated version of the Experiences in Close Relationships Scale (Brennan et al., 1998). Twelve items assessed *attachment anxiety*, and 11 items assessed *attachment avoidance*. Participants' RQ was assessed with a 26-item measure

assessing satisfaction, commitment, and conflict on a 9-point scale (Collins & Read, 1990; Van Lange et al., 1997). Higher scores represent higher RQ.

**Affectionate touch.** We assessed daily affectionate touch in two ways.

**Scale measure.** Participants indicated whether they received any affectionate touch from their spouse that day and reported the degree of touch receipt (1 = *not at all*, 9 = *very much*) if they responded affirmatively.<sup>1</sup> Participants also reported the degree to which they provided affectionate touch to their spouse on the same response scale. Responses were highly correlated ( $r = .88$ ) and were therefore averaged into a composite *affectionate touch scale*.

**Checklist measure.** Participants also indicated which touch-related behaviors occurred that day using a checklist of spouse-enacted behaviors (touch receipt) and one's own behaviors (touch provision). Each checklist included 11 affectionate touch items (e.g., "hugged me") interspersed among items assessing non-affectionate touch and touch avoidance. Because touch receipt and provision were highly correlated ( $r = .75$ ), we created an *affectionate touch checklist proportion* by calculating the proportion of affectionate touch items selected each day out of the 22 total items (Carmichael et al., 2021).

**Shared positive activities.** We assessed daily shared positive activities using eight checklist items based on the Recent Emotional Capital Scale (Feeney & Lemay, 2012). Items reflected various activities that couples might engage in together (e.g., "we had an intimate discussion," "we did something fun together") interspersed among other activities. We summed the relevant items to measure *shared positive activities*.

**Responsive partner behaviors.** Participants also completed a checklist of other daily spousal behaviors. For the current study, we selected all 10 items reflecting responsive spousal behaviors that were context-independent (i.e., not contingent on a stressor or opportunity occurring). We calculated the sum of these behaviors (e.g., "showed interest in my day"; "expressed confidence in me") to measure daily *responsive partner behaviors*.<sup>2</sup>

**Data analytic strategy.** We constructed multilevel models in R to account for the nonindependence of these data (see Kenny et al., 2006). Specifically, we modeled a couple-level random intercept and specified the crossed data structure by correlating errors between couple-members at each time-point. We treated couple-members as indistinguishable, a decision that was supported by a test of distinguishability. We separated within-subject variations from between-subject variations by including both an individual's average

affectionate touch throughout the week (grand-mean centered) and an individual's report of affectionate touch on a particular day (person-centered; see Bolger & Laurenceau, 2012). In this way, we assessed whether people with greater average affectionate touch report greater shared positive activities than people with less average touch, and we also assessed whether affectionate touch on a particular day predicts positive shared activities (controlling for one's typical level of affectionate touch). We controlled for other responsive partner behaviors in the model to assess the unique links between affectionate touch and shared positive activities.<sup>3</sup>

We estimated shared positive activities on a given day as a function of affectionate touch on the same day for concurrent models and as a function of affectionate touch on the previous day for prospective models. We also included the previous day's shared positive activities in both types of models to predict residualized change day-to-day. Finally, for the prospective models, we included change in affectionate touch from the previous to the current day. When person-centering across a limited number of observations, a day with particularly high touch will likely be followed by a day with low touch, which can create artificial interpretation problems. Modeling the change in touch allows us to isolate how touch on one day is related to shared positive activities on the following day (see Lemay & Neal, 2013 and Jakubiak & Feeney, 2016b for a similar approach). Finally, we standardized all predictors and outcome variables, so coefficients can be interpreted like Cohen's *d* effect sizes (see Supplementary Table 6 for unstandardized models).

We used the following R packages: *apaTables* (Version 2.0.5; Stanley, 2018), *tidyverse* (Version 1.3.0; Wickham et al., 2019), *psych* (Version 2.0.9; Revelle, 2020), and *nlme* (Version 3.1-149; Pinheiro et al., 2020).

## Results and Discussion

We hypothesized that, when participants report greater affectionate touch on one day, they will report greater shared positive activities on the same day and the following day. As expected, we observed a positive within-person association between affectionate touch and shared positive activities on the same day (see Table 1). Critically, we observed this association while controlling for participants' average affectionate touch and their average and daily reports of their partner's other responsive behaviors, each of which also independently predicted daily shared positive activities. Similarly, we found that people reported greater increases in shared positive activities on the day *after* they engaged in greater affectionate touch than usual (see Table 1). Again, we observed this within-person association between daily affectionate touch and shared positive activities controlling for average affectionate touch, average responsive partner behavior, and the previous day's reports of the responsive partner behavior, each of which also predicted shared positive activities (see Table 1). These results were consistent across both measures of affectionate touch, and we observed no moderation by

attachment orientation or RQ in any model (see Supplementary Tables 7–9).

In other words, people who typically engage in greater affectionate touch and typically report greater responsive partner behavior engage in greater shared positive activities in daily life (between-person links). In addition, people report increases in shared positive activities on days (and immediately following days) when they perceive their partners as especially responsive (within-person link). Over and above these factors, people also reported increases in shared positive activities on days (and immediately following days) when they engaged in greater affectionate touch than usual (within-person link).<sup>4</sup>

To rule out the possibility that these findings are explained by touch begetting further touch (which is then reported as an intimate or fun shared positive activity), we reanalyzed these data with only “we worked together on something,” “we spent time together,” and “we planned something together” as the shared positive activities. We found evidence that daily affectionate touch predicted day-to-day increases in these shared positive activities concurrently ( $B_{\text{scale}} = .10, p = .0002$ ;  $B_{\text{checklist}} = .15, p < .0001$ ) and prospectively ( $B_{\text{scale}} = .12, p = .0012$ ;  $B_{\text{checklist}} = .18, p < .0001$ ), consistent with the idea that affectionate touch may actually enhance (at least perceptions of) time spent together.

## Study 2

Study 1 provided evidence that affectionate touch precedes increases in other shared positive activities in daily life. Study 2 was designed to build on this in several ways. First, we aimed to test whether a brief affectionate touch manipulation promotes engagement in shared positive activities experimentally. We predicted that people assigned to touch affectionately will engage in shared positive activities during post-manipulation free time to a greater extent than people assigned not to touch (based on self-reports [H1a] and observer ratings [H1b]). Second, we aimed to test whether affectionate touch leads people to view their partner more positively during shared time. We predicted that people assigned to touch affectionately will report more positive perceptions of their partners during shared time than people who did not touch [H2], and we explored whether people also report greater responsive partner behaviors (the enactment of concrete behaviors that are typically considered to be responsive) following affectionate touch.

Third, we aimed to assess whether affectionate touch produces sustained benefits. We predicted that people assigned to touch affectionately will report greater shared positive activities [H3] and greater perceived partner responsiveness (PPR, [H4]) over the following week compared with people who did not touch, and we explored whether people who were assigned to touch perceived more responsive partner behaviors over the following week. In addition, as a test of how broad the benefits of touch (and consequent shared positive activities might be), we tested the hypothesis that people

**Table 1.** Study 1: Daily Shared Positive Activities Predicted By Affectionate Touch.

| Concurrent models                            |                                               |        |                                |        |
|----------------------------------------------|-----------------------------------------------|--------|--------------------------------|--------|
| Predictor                                    | Using affectionate touch checklist proportion |        | Using affectionate touch scale |        |
|                                              | B [95% CI]                                    | p      | B [95% CI]                     | p      |
| Fixed Effects                                |                                               |        |                                |        |
| Shared positive activities (lagged)          | .22 [.17, .27]                                | <.0001 | .27 [.22, .33]                 | <.0001 |
| Average affectionate touch (GMC)             | .23 [.16, .30]                                | <.0001 | .08 [.02, .14]                 | .013   |
| Daily affectionate touch (PC)                | .25 [.20, .29]                                | <.0001 | .16 [.11, .20]                 | <.0001 |
| Average partner positive behaviors (GMC)     | .18 [.12, .25]                                | <.0001 | .24 [.18, .30]                 | <.0001 |
| Daily partner positive behaviors (PC)        | .20 [.16, .25]                                | <.0001 | .24 [.19, .29]                 | <.0001 |
| Variance components                          |                                               |        |                                |        |
| Rho (partial ICC between spouses)            | .27 [.19, .35]                                | —      | .31 [.23, .40]                 | —      |
| Residual standard error                      | .72 [.68, .75]                                | —      | .76 [.72, .79]                 | —      |
| Prospective models                           |                                               |        |                                |        |
| Predictor                                    | Using affectionate touch checklist proportion |        | Using affectionate touch scale |        |
|                                              | B [95% CI]                                    | p      | B [95% CI]                     | P      |
| Fixed Effects                                |                                               |        |                                |        |
| Shared positive activities (lagged)          | .28 [.22, .33]                                | <.0001 | .33 [.28, .39]                 | <.0001 |
| Average affectionate touch (GMC)             | .21 [.14, .27]                                | <.0001 | .07 [.01, .13]                 | .023   |
| Daily affectionate touch lagged (PC)         | .23 [.16, .30]                                | <.0001 | .15 [.09, .22]                 | <.0001 |
| Change in affectionate touch                 | .25 [.20, .30]                                | <.0001 | .16 [.11, .21]                 | <.0001 |
| Average partner positive behaviors (GMC)     | .17 [.11, .23]                                | <.0001 | .22 [.16, .29]                 | <.0001 |
| Daily partner positive behaviors lagged (PC) | .11 [.05, .18]                                | .001   | .13 [.06, .19]                 | .0002  |
| Change in partner positive Behaviors         | .20 [.15, .25]                                | <.0001 | .23 [.19, .28]                 | <.0001 |
| Variance components                          |                                               |        |                                |        |
| Rho (partial ICC between spouses)            | .27 [.19, .36]                                | —      | .32 [.23, .40]                 | —      |
| Residual standard error                      | .72 [.68, .75]                                | —      | .76 [.72, .79]                 | —      |

Note. GMC = grand-mean centered; PC = person-centered; ICC = intraclass correlation coefficient.

assigned to touch will report greater state RQ 1 week after the manipulation [H5].

Finally, we aimed to identify immediate consequences of affectionate touch that contribute to engagement in shared positive activities and positive partner perceptions. We predicted that people assigned to touch affectionately would report greater state security, relationship salience, closeness, and state RQ immediately after the touch intervention than people assigned not to touch [H6].

We also assessed whether the consequences of the affectionate touch intervention were moderated by attachment orientation or RQ. Although we did not pre-register moderation hypotheses, theory and past research would suggest that a touch manipulation may be particularly advantageous (a) for people with low (versus high) attachment avoidance because these people are comfortable with closeness and intimacy in diverse contexts, and (b) for those with better (versus poorer) RQ, because affectionate touch is more desired and may be interpreted more favorably in satisfying (versus distressed) relationships (Jakubiak & Feeney, 2016a, 2019b; Jakubiak et al., 2021). Theory and past research

might also suggest that people with high (versus low) attachment anxiety would especially benefit from a touch manipulation; touch in daily life is especially advantageous for people with higher attachment anxiety, and people with high attachment anxiety were especially benefited by an affectionate touch manipulation to reduce their jealousy during a jealousy-inducing task (Kim et al., 2018).

## Method

Our preregistration included study design, sample size, inclusion/exclusion criteria, and analyses (<https://osf.io/qx29j>). The measures, data set, codebook, and analysis syntax are available at <https://osf.io/q3x8e/>.

**Participants.** Participants were 132 couples (264 individuals) who had been in a romantic relationship for at least 3 months. Sample size was determined by an a priori power analysis. We determined that we needed 140 couples to have 91% power to detect a minimally interesting effect (.25-point increase on a 5-point scale). We stopped data collection prior

to this target due to COVID-19 restrictions. Most participants were undergraduate students (and their partners) recruited from a psychology research pool ( $n = 121$  couples); the rest were recruited from the local community via flyers ( $n = 11$  couples). Nine couples were excluded (three from the touch condition; six from the control condition) because they had not been together for at least 3 months ( $n = 2$ ), they reported markedly different relationship lengths ( $n = 3$ ), or they asked to have their data deleted ( $n = 4$ ), resulting in a final sample of 123 couples ( $n = 246$  individuals, 125 female, 121 male).

Participants were, on average, 19.9 years old ( $SD = 3.64$ ), and most identified as White (50.4%), Asian (37.8%), or Black (7.3%). Approximately, 7% of the sample was Hispanic/Latino. The average relationship length was 17.1 months ( $SD = 27.1$ ). Most participants were dating seriously (74.7%); others were dating casually (19.5%) or were engaged or married (4.8%). The majority of couples (95.1%) were opposite-sex.

**Procedure and measures.** Couples participated (one-at-a-time) in an hour-long session in a living room-like laboratory. The study consisted of (a) baseline measures, (b) a structured interaction in which we manipulated affectionate touch, (c) a post-intervention assessment, (d) a video-recorded unstructured interaction between participants (i.e., free time), (e) a post-interaction assessment phase, and (7) a follow-up survey completed 1 week later. Descriptive statistics, reliability estimates, and zero-order correlations for relevant measures are provided in Supplementary Tables 10 and 11.

**Baseline measures.** Participants completed the 6-item Recent Emotional Capital measure (Feeney & Lemay, 2012) to assess the past week's *shared positive activities*. Participants responded to each item (e.g., "My partner and I enjoyed a leisure activity together") from 1 (*not at all*) to 7 (*a great deal*).<sup>5</sup> Participants also reported their perceptions of their *partner's responsive behaviors* over the past week using 15 items that assess responsive behaviors enacted by the partner (Feeney & Lemay, 2012; e.g., "My partner complimented me") from 1 (*not at all*) to 8 (*a great deal*).

We also assessed participants' attachment orientation (Wei et al., 2007). Six items each assessed *attachment anxiety* and *attachment avoidance* from 1 (*disagree strongly*) to 7 (*agree strongly*). Participants also completed an abbreviated measure of *RQ* using the same measure described in Study 1 (Collins & Read, 1990; Van Lange et al., 1997). Participants completed additional measures of physical health and mood that are beyond the scope of the current research (see OSF).

**Touch manipulation and post-manipulation assessments.** Next, participants completed a structured interaction described as "activities that people don't always make time for." The experimenter instructed participants to choose a

number from one to five, stating that the number they chose would determine which activity they would engage in for the next 8 minutes. In reality, participants were randomly assigned to the touch ( $n = 62$  couples) or control ( $n = 61$  couples) condition before the study began, so the activity they were assigned was preselected. We used this approach to disguise the purpose of the study and to provide a context for the touch manipulation.

In both conditions, couple-members were instructed to take turns describing their day for 4 minutes each, providing as much detail as possible but focusing only on the facts. Participants in the touch intervention were instructed to sit close to and touch the speaker in an affectionate way, whereas participants in the control condition were instructed to take notes on what the speaker was saying (preventing touch but encouraging attentiveness). Participants assigned to touch commonly held their partner's hand, put their arm around or kissed their partner, and/or touched their partner's arm or thigh. The experimenter also instructed participants in both conditions not to interrupt or respond to the speaker, to minimize other variables.

Following this activity, participants completed a series of questionnaires, described in the order they were presented. Composites were calculated by taking the mean, unless otherwise specified.

**Perceptions of manipulation activity.** Participants indicated how much they enjoyed the activity and how difficult, pleasant, uncomfortable, engaging, and stressful the activity was on a scale from 1 (*not at all*) to 7 (*a great deal*). No composite was created because the purpose of this measure was descriptive.

**State security.** Participants completed the 9-item State Security Scale (Luke et al., 2012), which assessed how much participants felt secure (e.g., safe, cared for) from 1 (*not at all*) to 6 (*very much*). The state security items were interspersed with items assessing other mood states.

**Relationship salience.** Participants responded to an original 4-item scale assessing the current salience of the respondent's romantic relationship (e.g., "Right now, my relationship is one of my top priorities"). Participants indicated their agreement with each item from 1 (*disagree strongly*) to 7 (*agree strongly*).

**State closeness.** Participants completed the Inclusion of Other in Self scale (Aron et al., 2000) by selecting a pair of overlapping circles that represented their relationship with their partner at that moment. They also completed three items assessing state closeness (e.g., "Right now, I feel connected with my partner"; Jakubiak & Feeney, 2019b). All four items were measured on a 7-point scale where higher scores indicate greater closeness.

**State RQ.** Participants responded to four items (e.g., “Right now, how satisfied do you feel with your relationship”) from 0 (*not at all*) to 8 (*completely*). For purposes outside the scope of the current study, participants also responded to each item again but were asked to indicate how much they thought their partner agreed with each item.

**Free time observation period.** Next, the experimenter informed participants that the final stage of the in-person session involved heart rate and blood pressure assessments before stating that the research assistant trained to take these measurements was running approximately 10 minutes late. The experimenter reassured participants that extra time was built into the study for such interruptions and that the study would end on time. The experimenter then provided participants with colored markers, blank paper, and magazines left over “from a different study,” and informed participants they could occupy themselves however they liked while waiting. The experimenter instructed participants to stay seated on the sofa because standing may alter their physiology. In reality, there was no late research assistant; this was a cover story to create an opportunity to observe relatively naturalistic free time between participants. We unobtrusively filmed participants for the next 10 minutes using hidden cameras that were pointed at the sofa (the real reason participants needed to remain seated).

**Free time self-report measures.** Afterward, the experimenter informed participants that the late research assistant would not arrive in time and instructed participants to complete a questionnaire that must be completed whenever a study is interrupted. Measures are described in the order they were presented. We computed means for each measure.

**Self-reported shared positive activities.** Participants completed 11 items (adapted from the Recent Emotional Capital Scale; Feeney & Lemay, 2012) that assessed how much they engaged in shared positive activities with their partner during the free period (“My partner and I did something fun together”) interspersed among other items. Participants responded from 1 (*not at all*) to 5 (*a great deal*).<sup>6</sup>

**Responsive partner behaviors.** Participants reported the extent to which their partner enacted several concrete behaviors that are typically considered responsive (12 items) during the free time (e.g., “My partner said something that made me feel loved”), interspersed among other items, from 1 (*not at all*) to 5 (*a great deal*).

**Positive partner perceptions.** Participants responded to 8 items representing positive perceptions of their partner (e.g., “understanding,” “considerate”) and 7 items representing negative perceptions of their partner (e.g., “rejecting,” “critical”; reverse coded) during free time from 1 (*not at all*) to 5 (*extremely*). Participants completed additional

items assessing mood and partner perceptions that are beyond the scope of this study (see OSF).

**Observational coding of shared positive activities.** At the end of the laboratory session, participants were debriefed and signed a release form if they consented to their videos being coded. Fourteen couples did not consent ( $n_{\text{touch}} = 6$ ,  $n_{\text{control}} = 8$ ), and six videos could not be coded because of technical difficulties ( $n_{\text{touch}} = 2$ ,  $n_{\text{control}} = 4$ ). A team of trained observational coders watched couples’ free time interaction videos. Each coder rated only one couple-member’s behaviors, so each video was rated by at least four coders (two per couple-member plus a possible third coder if there were discrepancies; see OSM). Coders watched each 10-minute video in 2.5-minute intervals and rated whether their assigned couple-member exhibited “positive engagement with their partner” and “disengagement from their partner” (defined below) during the segment. Ratings took into account the frequency and quality of the observed behavior using a 5-point scale (1 = *behavior did not occur*, 3 = *occasional or moderate quality*, 5 = *behavior was consistent and high quality*).

“Positive engagement with partner” represented all positively valenced interactions with one’s partner and included behaviors like playing games, talking together, and making eye contact with one’s partner ( $\text{ICC} = .92$ ). “Disengagement” represented solitary, non-interactive behaviors and unresponsive behaviors ( $\text{ICC} = .91$ ). Due to the strong correlations between a participant’s ratings during each 2.5-minute video segment (all  $r_s > .52$ ) and a strong correlation between “positive engagement” and “disengagement” ( $r = -.74$ ), we created an *observer-rated shared positive activities* composite by reverse scoring the “disengagement” ratings and averaging all ratings for each participant.

**Follow-up survey.** One week after the laboratory session, experimenters emailed participants a follow-up survey. The majority (84.6%) of participants completed the follow-up assessment; we found no differences between those who persisted and those who dropped out (see OSM). This survey assessed variables of interest (described next) as well as additional measures that were beyond the scope of the current research (see OSF). Composites were computed as the mean across items.

Participants completed 9 items (based on Feeney & Lemay, 2012) to assess how much they and their partner engaged in *shared positive activities* over the past week (1 = *not at all*; 8 = *a great deal*). Seventeen items assessed the extent to which their partner enacted specific *responsive partner behaviors* over the past week (1 = *not at all*; 8 = *a great deal*). To assess *state RQ*, participants reported how satisfied, committed, and happy they felt in their relationship at the time of assessment (1 = *not at all*; 9 = *a great deal*). Finally, participants responded to a 12-item measure of *PPR* (Reis et al., 2017) over the previous week (e.g., “my partner saw the real me”) from 1 (*not at all true*) to 9 (*completely true*).

**Data analytic strategy.** To account for nonindependence, we used multilevel models that included a couple-level random intercept and correlated errors between couple-members' reports. Couple-members were indistinguishable, and we standardized continuous predictors and outcome variables, so that coefficients can be interpreted like Cohen's  $d$  effect sizes (see Supplementary Tables 12–14 for unstandardized results). We report the results of models that included fixed effects for manipulation condition (contrast coded; touch = .5, control = −.5), baseline control variables, and two-way interactions between condition and each potential moderator: attachment anxiety, attachment avoidance, and RQ. For shared positive activities, we also assessed moderation by baseline shared positive activities because people who engaged in less positive activities at baseline may have more room to benefit from an intervention. Of note, we first tested models with only main effects and control variables, which produced effects equivalent to those in the reported models because all predictors were standardized (see Supplementary Tables 15–17). We used the lme4 package in R (Version 1.1-25, Bates et al., 2015), in addition to the packages referenced previously.

## Results and Discussion

We found no condition differences at baseline, confirming the effectiveness of random assignment (see OSM). We also assessed initial perceptions of the manipulation activity and found no differences in how difficult, uncomfortable, or stressful participants found the touch and control manipulations. Participants perceived the touch condition to be slightly more enjoyable, pleasant, and engaging than the control (see Supplementary Table 18).

**Does affectionate touch promote shared positive activities and positive partner perceptions during free time [H1, H2]?** Consistent with Hypothesis 1a, participants assigned to the touch condition self-reported greater shared positive activities during free time than participants assigned to the control condition (see Table 2). This effect was not moderated by any of the baseline variables suggesting a consistent benefit of affectionate touch to promote shared positive activities across participants. Hypothesis 1b, however, was not supported; observational coders rated no differences in the degree of shared positive activity between participants in the touch and control conditions, and no moderation effects were observed (see Table 2). This discrepancy between participants' self-reports and observers' ratings may be due to participants *perceiving* their interactions to be more engaging and positive after affectionate touch, even if the extent of interaction did not differ between conditions. The self-report measure assessed perceived positivity of the interaction (e.g., "My partner and I did something *fun* together"; "My partner and I had a *good* conversation"), whereas the observer-rated measure focused on the extent of engagement in shared

activities that are *typically* positive (e.g., playing a game together). As shown in the OSM (Supplementary Table 11), participants' reports of positive shared activities correlated only weakly with the observational code ( $r = .22$ , 95% CI [.08, .35],  $p = .002$ ). Critically, couple-members' self-reports of shared positive activities correlated strongly with one another ( $r = .63$ ).

Supporting Hypothesis 2, we found that participants assigned to touch reported more positive perceptions of their partners during free time, though we observed no differences in participants' reports of specific responsive partner behaviors (see Table 2). For both partner perception outcomes, we observed a significant condition-by-attachment anxiety interaction (see Figure 1). Participants with low attachment anxiety (−1  $SD$ ) reported more positive partner perceptions ( $B = .60$ , 95% CI [.27, .93],  $p = .0004$ ) and greater responsive partner behaviors ( $B = .35$ , 95% CI [.02, .69],  $p = .038$ ) in the touch condition than the control condition. However, for participants with high attachment anxiety (+1  $SD$ ), we observed no condition differences in positive partner perceptions ( $B = -.06$ , 95% CI [−.38, .27],  $p = .732$ ) or responsive partner behaviors ( $B = -.17$ , 95% CI [−.50, .16],  $p = .311$ ). People with high attachment anxiety are vigilant for rejection and may need more than a brief affectionate touch intervention to positively bias their partner perceptions.

### Does affectionate touch produce sustained benefits [H3-H5]?

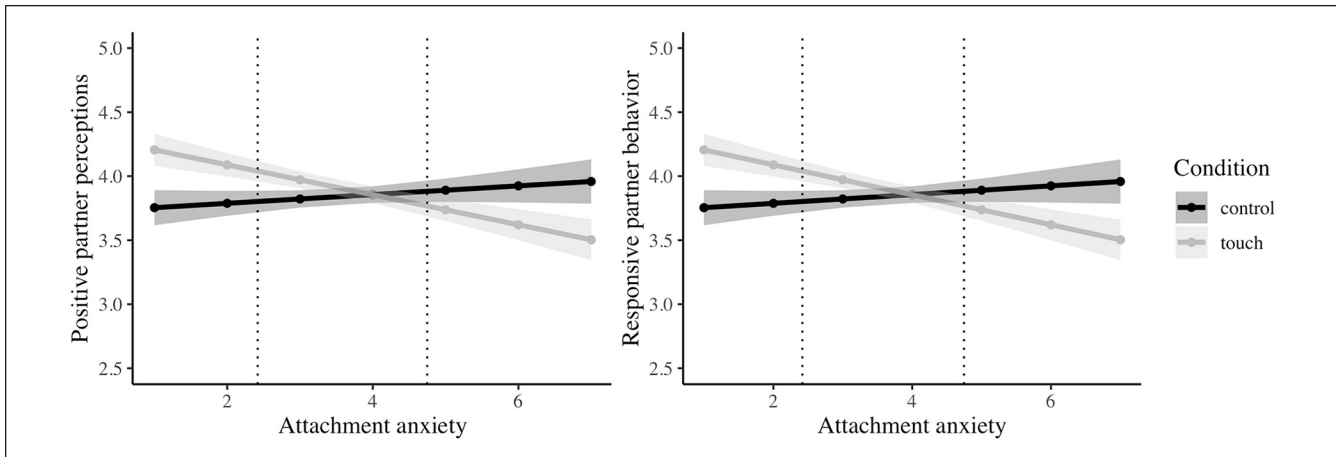
As shown in Table 3, we did not observe condition differences in shared positive activities, perceptions of responsive partner behaviors, or PPR in the week between the intervention and the follow-up. Similarly, there was no condition difference in state RQ at the follow-up.

Although we did not observe generalized benefits of affectionate touch, we did observe an interaction between condition and baseline shared positive activities to predict shared positive activities at follow-up, and we observed an interaction between condition and attachment anxiety to predict PPR at follow-up (see Table 3). Each of these interactions revealed a selective benefit of affectionate touch (see Figure 2). Specifically, the touch manipulation promoted shared positive activities for participants who reported low (−1  $SD$ ) shared positive activities at baseline ( $B = .69$ , 95% CI [.22, 1.15],  $p = .004$ ), but not for people who reported high (+1  $SD$ ) shared positive activities at baseline ( $B = .03$ , 95% CI [.40, .47],  $p = .883$ ), perhaps due to a ceiling effect. Further, touch promoted greater PPR over the week following the manipulation for participants who reported low (−1  $SD$ ) attachment anxiety ( $B = .33$ , 95% CI [.004, .66],  $p = .048$ ), but touch led to lower PPR over the following week for participants who reported high (+1  $SD$ ) attachment anxiety ( $B = -.48$ , 95% CI [−.80, −.15],  $p = .005$ ).<sup>7</sup> Perhaps anxiously attached participants compared their partners' normal behavior in the week after the laboratory session to their affectionate behavior during the touch manipulation and saw them as relatively less responsive. People high in attachment

**Table 2.** Study 2: Condition Differences During Free Time.

| Predictor                                       | Self-reported shared positive activities |        | Observationally coded shared positive activities |      | Responsive partner behaviors |        | Positive partner perceptions |       |
|-------------------------------------------------|------------------------------------------|--------|--------------------------------------------------|------|------------------------------|--------|------------------------------|-------|
|                                                 | B [95% CI]                               | p      | B [95% CI]                                       | p    | B [95% CI]                   | p      | B [95% CI]                   | p     |
| <b>Fixed Effects</b>                            |                                          |        |                                                  |      |                              |        |                              |       |
| Condition (touch = .5, control = -.5)           | .28 [.01, .54]                           | .043   | -.24 [-.61, .13]                                 | .203 | .09 [-.16, .34]              | .481   | .28 [.04, .51]               | .023  |
| Baseline shared positive activities             | .29 [.16, .54]                           | <.0005 | .00 [-.10, .11]                                  | .971 | —                            | —      | —                            | —     |
| Baseline responsive partner behavior            | —                                        | —      | —                                                | —    | .37 [.24, .50]               | <.0001 | —                            | —     |
| Attachment anxiety                              | .00 [-.11, .12]                          | .945   | .01 [-.08, .10]                                  | .775 | -.07 [-.18, .04]             | .192   | -.09 [-.20, .03]             | .135  |
| Attachment avoidance                            | -.18 [-.33, -.03]                        | .017   | -.07 [-.20, .05]                                 | .237 | -.14 [-.28, -.00]            | .049   | -.19 [-.33, -.05]            | .009  |
| Baseline RQ                                     | -.01 [-.17, .14]                         | .877   | -.07 [-.20, .07]                                 | .337 | .05 [-.09, .20]              | .502   | .29 [.14, .43]               | .0001 |
| Condition × baseline shared positive activities | -.04 [-.29, .21]                         | .765   | .10 [-.11, .30]                                  | .366 | —                            | —      | —                            | —     |
| Condition × baseline partner resp. behavior     | —                                        | —      | —                                                | —    | -.06 [-.32, .20]             | .646   | —                            | —     |
| Condition × att. anxiety                        | -.16 [-.40, .07]                         | .180   | -.02 [-.20, .16]                                 | .826 | -.26 [-.48, -.04]            | .019   | -.33 [-.56, -.10]            | .006  |
| Condition × att. avoidance                      | -.28 [-.57, .02]                         | .067   | .10 [-.14, .35]                                  | .396 | -.07 [-.35, .20]             | .595   | -.26 [-.55, .02]             | .069  |
| Condition × baseline RQ                         | -.27 [-.57, .04]                         | .087   | .05 [-.23, .33]                                  | .728 | -.19 [-.49, .10]             | .202   | -.28 [-.57, .01]             | .062  |
| Variance components                             | Est. [95% CI]                            | —      | Est. [95% CI]                                    | —    | Est. [95% CI]                | —      | Est. [95% CI]                | —     |
| Rho (partial ICC between partners)              | .33 [.15, .48]                           | —      | .78 [.69, .85]                                   | —    | .35 [.16, .51]               | —      | .10 [-.08, .28]              | —     |
| Residual standard error                         | .92 [.84, 1.02]                          | —      | 1.03 [.90, 1.17]                                 | —    | .87 [.79, .96]               | —      | .87 [.80, .96]               | —     |

Note. Analyses controlled for relevant baseline variables (i.e., baseline shared positive activities for self-reported and observationally coded shared positive activities; baseline responsive partner behaviors for responsive partner behaviors). att. = attachment; resp. = responsive; RQ = relationship quality; ICC = intraclass correlation coefficient.



**Figure 1.** Effect of affectionate touch on partner perceptions during free time depends on attachment anxiety.

Note. Error bars represent standard errors. Dotted lines represent 1 SD above and below the mean.

anxiety have strong desire for affectionate touch (Carmichael et al., 2021; Jakubiak et al., 2021), so they may feel that their partners are most responsive when they are behaving affectionately.

*Are the consequences of affectionate touch explained by immediate relationship perceptions [H6]?* Inconsistent with theorized mechanisms, we did not observe overall condition differences in state security, relationship salience, closeness, or state RQ (see Table 4). However, we did observe four interaction effects consistent with the idea that specific people benefited from the affectionate touch manipulation while others did not (see Table 4 and Figure 3). First, people with low attachment anxiety ( $-1$  SD) reported greater state security after the touch manipulation (versus the control;  $B = .44$ , 95% CI [.12, .76],  $p = .007$ ), whereas people with high attachment anxiety ( $+1$  SD) showed no condition difference ( $B = -.07$ , 95% CI [-.39, .25],  $p = .659$ ). This pattern of results is consistent with the findings for partner perceptions during free time in that people low in attachment anxiety benefited from the touch manipulation, whereas people high in attachment anxiety did not. Perhaps anxiously attached people did not benefit from affectionate touch because the affectionate interaction precipitated an even greater desire for affection or because they were more likely to discount the meaning of experimenter-prescribed touch.

Second, people with low attachment avoidance ( $-1$  SD) reported greater relationship salience ( $B = .36$ , 95% CI [.005, .72],  $p = .047$ ) and state RQ ( $B = .36$ , 95% CI [.10, .62],  $p = .007$ ) after the touch manipulation, whereas people with high attachment avoidance ( $+1$  SD) showed the reverse pattern ( $B_{\text{salience}} = -.39$ , 95% CI [-.75, -.04],  $p = .031$ ;  $B_{\text{RQ}} = -.27$ , 95% CI [-.53, -.01],  $p = .039$ ). These results are consistent with past research showing that avoidantly attached people fail to benefit from affectionate touch manipulations, though they do benefit from touch in daily life.

Prescribed affectionate touch (unlike more naturally occurring touch in daily life, which may be tailored to unique preferences) may have produced a desire for reactionary distance for people high in attachment avoidance, who tend to avoid intimacy.

Finally, people with low baseline RQ ( $-1$  SD) reported greater state RQ after the touch condition than the control condition ( $B = .35$ , 95% CI [.08, .60],  $p = .011$ ), whereas there was no condition difference for people with high ( $+1$  SD) baseline RQ ( $B = -.26$ , 95% CI [-.52, .01],  $p = .057$ ). This result may simply indicate that people with lower baseline RQ had more room to benefit from an affectionate touch intervention. Thus, this finding and the general lack of moderation by baseline RQ are inconsistent with the idea that people with higher baseline RQ especially benefit from affectionate touch.

Because we did not find any evidence for main effect of the affectionate touch manipulation to improve immediate relationship perceptions, we did not test these perceptions as mediators of affectionate touch's benefits during the free time period or the following week.<sup>8</sup>

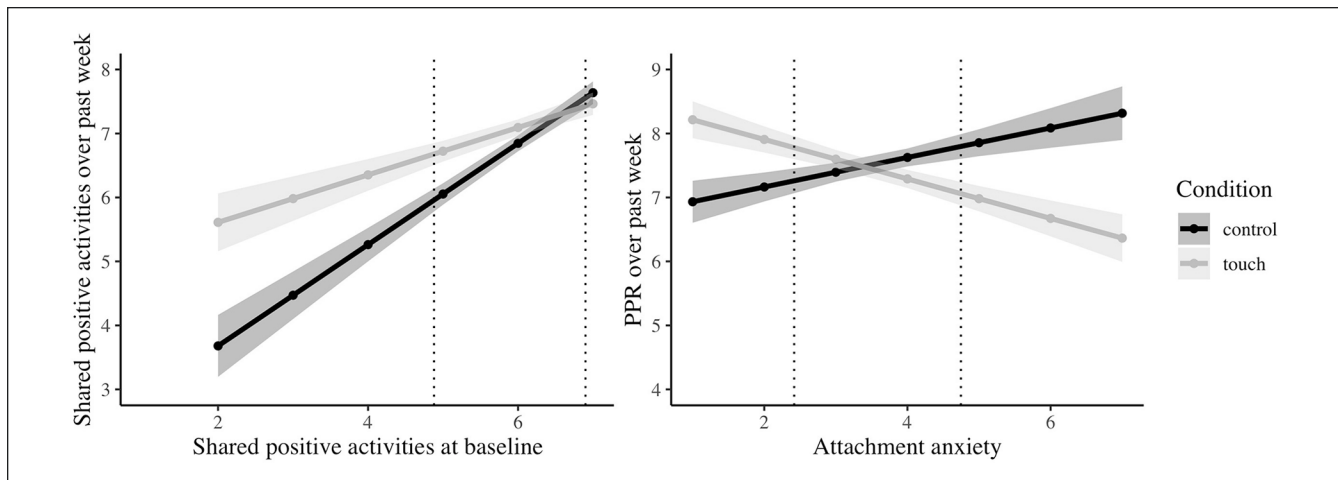
## General Discussion

In two studies (one dyadic diary study and one longitudinal experiment), we tested whether affectionate touch encourages people to use their time together to engage in shared positive activities, the types of activities that promote relationship success and buffer relationship threats (e.g., Feeney & Lemay, 2012; Girme et al., 2014; Johnson et al., 2006). Consistent with our hypotheses, we found that affectionate touch in daily life and an affectionate touch laboratory intervention each predicted greater subsequent self-reported engagement in shared positive activities. Specifically, people reported increases in shared positive activities on days (and following days) when they engaged in greater

**Table 3.** Study 2: Condition Differences at 1-Week Follow-Up.

| Predictor                                       | Shared positive activities over the past week |        |  | Responsive partner behavior over the past week |        |  | PPR over the past week |        |  | State RQ          |      |  |
|-------------------------------------------------|-----------------------------------------------|--------|--|------------------------------------------------|--------|--|------------------------|--------|--|-------------------|------|--|
|                                                 | B [95% CI]                                    | p      |  | B [95% CI]                                     | p      |  | B [95% CI]             | p      |  | B [95% CI]        | p    |  |
| <b>Fixed Effects</b>                            |                                               |        |  |                                                |        |  |                        |        |  |                   |      |  |
| Condition (touch = .5, control = -.5)           | .23 [-.04, .49]                               | .099   |  | .04 [-.17, .25]                                | .694   |  | -.07 [-.31, .16]       | .548   |  | .01 [-.24, .25]   | .099 |  |
| Baseline shared positive activities             | .45 [.32, .47]                                | <.0005 |  | —                                              | —      |  | —                      | —      |  | —                 | —    |  |
| Baseline resp. partner behavior                 | —                                             | —      |  | .60 [.49, .71]                                 | <.0001 |  | —                      | —      |  | —                 | —    |  |
| Attachment anxiety                              | -.03 [-.16, .09]                              | .608   |  | -.03 [-.13, .07]                               | .550   |  | -.03 [-.14, .08]       | .612   |  | -.02 [-.14, .10]  | .608 |  |
| Attachment avoidance                            | -.04 [-.19, .11]                              | .605   |  | -.09 [-.22, .03]                               | .149   |  | -.28 [-.42, -.15]      | <.0001 |  | -.20 [-.34, -.07] | .605 |  |
| Baseline RQ                                     | .01 [-.15, .17]                               | .894   |  | .06 [-.08, .19]                                | .421   |  | .36 [.22, .50]         | <.0001 |  | .44 [.29, .60]    | .894 |  |
| Condition × baseline shared positive Activities | -.32 [-.58, -.07]                             | .013   |  | —                                              | —      |  | —                      | —      |  | —                 | —    |  |
| Condition × baseline resp. partner behavior     | —                                             | —      |  | -.05 [-.27, .18]                               | .670   |  | —                      | —      |  | —                 | —    |  |
| Condition × att. Anxiety                        | -.13 [-.38, .12]                              | .311   |  | -.07 [-.27, .14]                               | .525   |  | -.40 [-.63, -.18]      | .001   |  | -.03 [-.27, .21]  | .311 |  |
| Condition × att. Avoidance                      | -.08 [-.37, .22]                              | .605   |  | .12 [-.13, .36]                                | .354   |  | -.02 [-.28, .24]       | .878   |  | .07 [-.21, .35]   | .605 |  |
| Condition × baseline RQ                         | -.00 [-.23, .31]                              | .976   |  | .10 [-.17, .36]                                | .481   |  | .05 [-.23, .33]        | .712   |  | .08 [-.22, .37]   | .976 |  |
| Variance components                             | Est. [95% CI]                                 |        |  | Est. [95% CI]                                  |        |  | Est. [95% CI]          |        |  | Est. [95% CI]     |      |  |
| Rho (partial ICC between partners)              | .36 [.14, .55]                                | —      |  | .29 [.06, .49]                                 | —      |  | .31 [.11, .49]         | —      |  | .27 [.06, .46]    | —    |  |
| Residual standard error                         | .86 [.77, .96]                                | —      |  | .69 [.63, .77]                                 | —      |  | .77 [.70, .86]         | —      |  | .81 [.73, .89]    | —    |  |

Note. Analyses controlled for relevant baseline variables (i.e., baseline shared positive activities for shared positive activities over the past week; baseline responsive partner behaviors for responsive partner behaviors over the past week). PPR = perceived partner responsiveness; RQ = relationship quality; att. = attachment; resp = responsive; ICC = intraclass correlation coefficient.



**Figure 2.** Effect of affectionate touch on relationship outcomes at 1-week follow-up.  
Note. Error bars represent standard errors. Dotted lines represent 1 SD above and below the mean.

affectionate touch than usual, and people assigned to touch affectionately reported greater shared positive activities during post-manipulation free time in the laboratory. The brief affectionate touch intervention even predicted greater shared positive activities in the week following the intervention for people who reported low shared positive activities at baseline. Despite these benefits, couples who touch may *perceive* their time together more positively but may not *behave* differently, as objective raters observed no condition difference in shared positive activities during post-manipulation free time. Even if affectionate touch impacts the perceived quality of interactions rather than the amount of interaction, this finding is meaningful because shared activities that people themselves view positively are most likely to offer relationship benefits (Girme et al., 2014).

In addition to these general findings, we observed additional relational benefits of the affectionate touch intervention that were constrained to people with greater attachment security (i.e., low attachment anxiety and/or avoidance). For instance, affectionate touch encouraged people low in attachment anxiety (though not those high in attachment anxiety) to perceive their *partners* more positively during shared time in the lab and in the week following the manipulation. Shared activities are most beneficial when people perceive their partners positively while interacting, so affectionate touch may amplify the benefits of engaging in shared activities for people low in attachment anxiety. Further, we observed immediate benefits of the affectionate touch manipulation only for people who are relatively securely attached (i.e., greater state security for people low in attachment anxiety; greater relationship salience and perceived closeness for people low in attachment avoidance). We failed to find compelling evidence that the benefits of the affectionate touch intervention differed based on baseline RQ, though these null findings may be due to limited variability and should be further investigated.

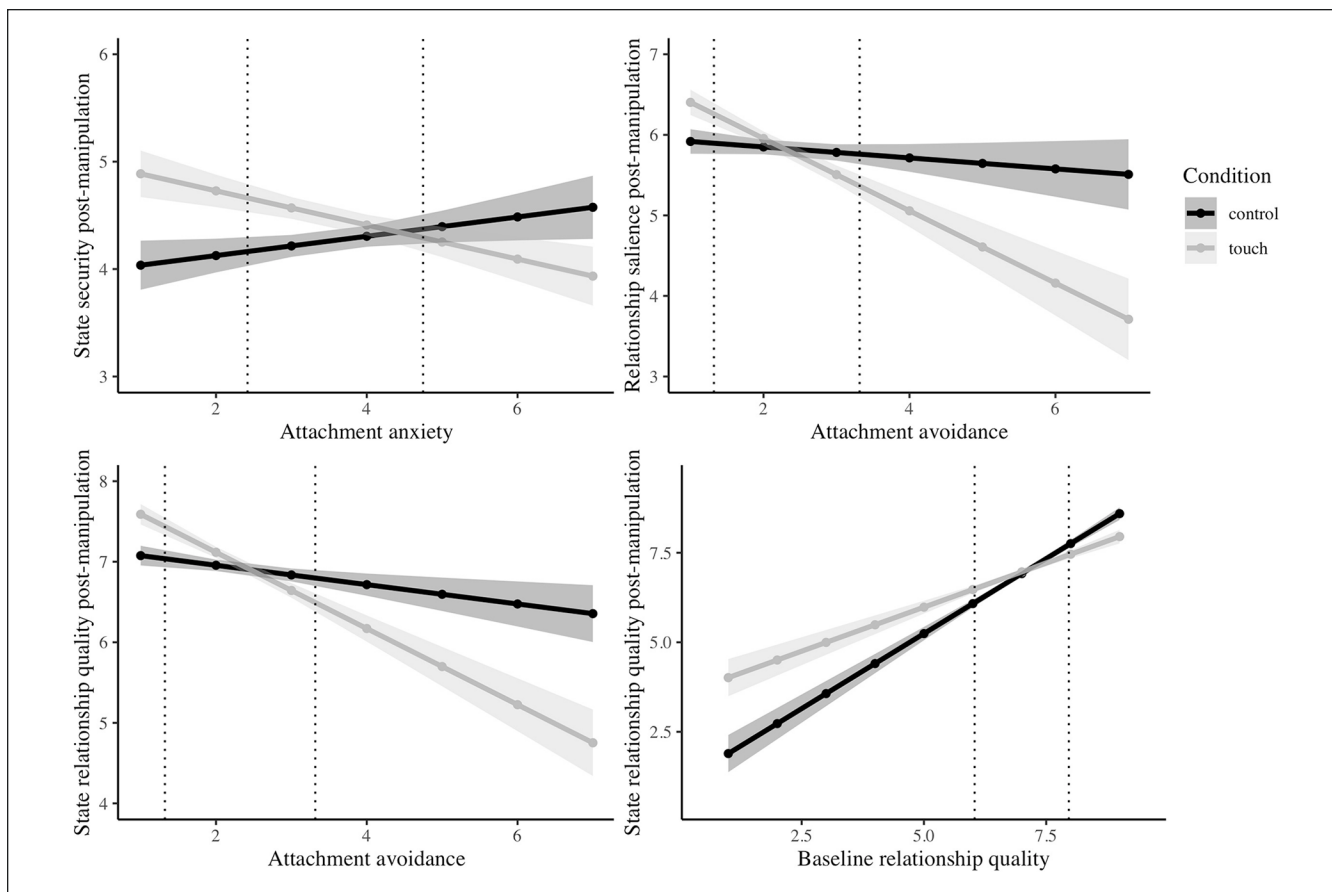
These restricted benefits of the touch manipulation differ from the broad benefits associated with naturally occurring touch in Study 1, where the significant main effects of touch were not moderated by attachment orientation or RQ. Past research on affectionate touch in daily life has also shown broad benefits of naturally occurring touch (even for people with high attachment avoidance) with added benefits for people with high attachment anxiety (Carmichael et al., 2021; Debrot et al., 2020). Affectionate touch manipulations may differ from naturally occurring touch with regard to the attribution for touch (i.e., to comply with an instruction versus to communicate affection) and the extent to which the touch is tailored to preferences (i.e., touch in daily life may be provided in ways and in contexts that are more appropriate to the recipient), which can explain the discrepant findings.

A primary strength of this research is the use of two dyadic research designs with complementary strengths. Study 1 demonstrates ecologically valid links between affectionate touch and shared positive activities in long-term couples, whereas Study 2 provided evidence for a causal link. Despite these strengths, there are also limitations to consider. Regarding Study 1, although we observed that affectionate touch precedes shared time, these variables are certainly bidirectionally linked (Jolink et al., 2022). Future research should continue to explore how positive processes give rise to one another and identify the best targets for intervention. In Study 2, one could argue that the affectionate touch intervention may have enabled greater eye contact or nonverbal responsiveness than the note-taking control. Though note-taking was intended to unobtrusively prevent touch and encourage attentiveness, there is always a possibility when designing interventions that a subtle confound is introduced. Further research should continue to assess benefits of touch interventions with varying controls. Finally, although we found that affectionate touch promotes shared positive activities, we

**Table 4.** Study 2: Condition Differences in Proposed Mechanisms Immediately Following the Manipulation.

| Predictor                             | State security    |        | Relationship salience |        | Closeness         |        | State RQ           |        |
|---------------------------------------|-------------------|--------|-----------------------|--------|-------------------|--------|--------------------|--------|
|                                       | B [95% CI]        | p      | B [95% CI]            | p      | B [95% CI]        | p      | B [95% CI]         | p      |
| <b>Fixed Effects</b>                  |                   |        |                       |        |                   |        |                    |        |
| Condition (touch = .5, control = -.5) | .18 [-.04, .41]   | .106   | -.02 [-.25, .21]      | .889   | .08 [-.12, .28]   | .421   | .04 [-.12, .20]    | .600   |
| Attachment anxiety                    | -.04 [-.15, .08]  | .536   | .11 [-.00, .22]       | .051   | -.02 [-.13, .08]  | .669   | -.08* [-.16, -.00] | .044   |
| Attachment avoidance                  | -.42 [-.56, -.29] | <.0001 | -.26 [-.39, -.12]     | .0003  | -.47 [-.60, -.35] | <.0001 | -.27 [-.37, -.16]  | <.0001 |
| Baseline RQ                           | .14 [-.00, .28]   | .058   | .36 [.22, .50]        | <.0001 | .21 [.08, .34]    | .002   | .57 [.47, .68]     | <.0001 |
| Condition × att. anxiety              | -.26 [-.48, -.03] | .027   | -.10 [-.32, .12]      | .376   | -.12 [-.33, .08]  | .245   | -.04 [-.21, .12]   | .606   |
| Condition × att. avoidance            | -.14 [-.42, .13]  | .308   | -.37 [-.65, -.11]     | .007   | -.20 [-.45, .05]  | .120   | -.32 [-.52, -.12]  | .002   |
| Condition × baseline RQ               | -.11 [-.39, .18]  | .467   | -.24 [-.52, .04]      | .090   | -.17 [-.43, .10]  | .213   | -.30 [-.50, -.09]  | .005   |
| Variance components                   | Est. [95% CI]     |        | Est. [95% CI]         |        | Est. [95% CI]     |        | Est. [95% CI]      |        |
| Rho (partial ICC between partners)    | .08 [-.10, .25]   | —      | .16 [-.02, .34]       | —      | .06 [-.12, .24]   | —      | .08 [-.10, .25]    | —      |
| Residual standard error               | .85 [.78, .94]    | —      | .85 [.78, .93]        | —      | .79 [.72, .86]    | —      | .62 [.57, .68]     | —      |

Note. Coefficients are standardized and can therefore be interpreted like Cohen's *d* effect sizes. RQ = relationship quality; att. = attachment; ICC = intraclass correlation coefficient.



**Figure 3.** Effect of affectionate touch on immediate relational perceptions (proposed mechanisms) varies based on individual differences.

Note. Error bars represent standard errors. Dotted lines represent 1 SD above and below the mean.

have not yet identified the mechanism, perhaps because the mechanism differs across people. For some, affectionate touch may provide a salient reminder of a close relationship that one has been neglecting, whereas for others, affectionate touch may provide a sense of security that allows them to risk interdependence with less fear of rejection.

This work also has clear practical implications. First, this research suggests that affectionate touch is a modifiable precursor to shared positive activities, and given the benefits of shared positive activities, affectionate touch may be an effective intervention to enhance relationships. This work, however, also highlights the challenges of designing a touch manipulation that confers broad benefits and avoids potential costs for people with insecure attachment orientations. Future research should continue to explore how interventions can be tailored to maximize benefits. Future research might also assess whether single affectionate touch interventions (like the one tested here) enhance affectionate touch in the future or whether additional touch interventions may be needed to maintain benefits over time.

This current research also has important theoretical implications in that it demonstrates that positive processes

(e.g., affectionate touch) beget other positive processes (e.g., shared positive activities) in relationships. Thus, evidence that affectionate touch enhances and protects relational and personal well-being over time (see Jakubiak & Feeney, 2017 for review) may not indicate that affectionate touch is *the* factor that enhances well-being but rather *a* factor that enhances well-being, perhaps in part by facilitating other positive processes. Though positive relationship processes, such as shared time and affectionate behavior, are typically studied independently, the current research highlights the interplay between positive processes and suggests the utility of more integrative theoretical models and empirical research.

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## Supplemental Material

Supplemental material is available online with this article.

## Notes

1. If participants responded “no,” they were not asked how much touch they received, and their degree of touch receipt was assigned 1.
2. Responsive behaviors are distinct from shared positive activities because responsive behaviors are things the *partner* did toward the participant, whereas the shared positive activities are *dyadic* interactions which are jointly experienced.
3. Results were consistent when not controlling for other responsive partner behaviors and when controlling for daily RQ (see Supplementary Table 5).
4. Because lower income or having children could interfere with shared positive activities, we tested whether links between touch and increases in shared positive activities were moderated by income or children. Neither factor was a significant moderator. We also tested for, but did not observe, sex difference in any model.
5. The measure contained an additional item (i.e., “My partner and I shared a pleasant meal together”) but we excluded this item from our analyses because the sample included long-distance couples.
6. Although shared phone use could also be considered a shared positive activity, participants were instructed at the beginning of the study to put away their phones. Experimenters were supposed to tell couples that they could use their phones during free time, but not all experimenters remembered to do so.
7. In addition, exploratory analyses revealed a significant three-way interaction between sex, attachment avoidance, and condition to predict PPR at follow-up,  $B = .57$ ,  $p = .030$ . The avoidance  $\times$  condition interaction differed for men and women, though neither interaction reached significance. No other results in Study 2 were moderated by sex.
8. We did test moderated mediation (moderated by attachment anxiety because attachment anxiety moderated effects of the touch manipulation on the proposed mechanisms and other variables) but did not find evidence for it. See Supplementary Table 19.

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