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Love is a drive: Incorporating human behaviour into the scientific study of love

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Summary

From studies with monkeys, Harlow concluded that love is a primary drive, essential for motivating connection with the object of one's comfort (1958). In human research, still to this day, virtually no evidence exists to test hypothesized associations between validated measures of love and real-time motivation for connection. This study tests predictions that merge theory from affective and relationship science. It involved 197 romantic couples who participated in seven videorecorded conversations that systematically varied in topic and discloser. Each participant completed a face-valid measure of love in the moment after each conversation. We behaviourally measured each participant's (N = 394) motivation to connect in each conversation (n = 2750) by coding spontaneous (a) proximity to the partner and (b) instances of affectionate touch toward the partner. Statistical models that control for several alternative explanations, including a within-subjects experimental approach, demonstrate the strongest evidence to date for Harlow's conclusion, in humans: moments of love drive people to connect with the object of their affection. Discussion highlights the importance of measuring or manipulating the construct of love itself and the central role of behaviour in scientific investigations of human love.

Introduction

As President of the American Psychological Association, Harry Harlow chided psychologists about their apparent lack of interest in research on love in 1958. Not only did it seem apparent to him that love drives many of the decisions and behaviours, hopes, dreams, and despairs of humans, but he offered experimental evidence to motivate future work on this topic. Though he worked with monkeys, he saw parallels with contemporaneous evidence in human infants (Ainsworth & Boston, 1952; Ainsworth & Bowlby, 1954). Based on evidence that infant monkeys seek contact comfort, independent of their need for food, he concluded that love is a primary drive (1958). By this, he meant that love is on par with hunger and thirst: Love motivates connection with the object of comfort, and this drive is essential for survival. Within Harlow's assertion lies an untested presupposition of contemporary theorizing about love: that love is a causal driver of interpersonal behaviour. That is, one person's love actively coordinates (drives) day-to-day interactions with a

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loved one, and it does so in predictable ways. Yet, despite decades of research on human social relationships, there is still no direct test of associations between human love and motivation to connect with a loved one. In part, this is because researchers rarely measure love, and in part because researchers rarely measure behaviour (Baumeister et al., 2007). Here, we test the hypothesis that love motivates connection with the love object – a broad version of Harlow's hypothesis. We contextualize this hypothesis within contemporary theory and evidence to demonstrate the relevance of this test for advancing modern theory on human love.

Operationalizing Love

Thousands of scientists study people who are in prototypically love-based relationships – like parents and children, siblings, or people in romantic relationships. Yet the vast majority do not actually measure love itself. That is, they do not use a scale or experimental manipulation that validly corresponds to the construct of love, as demonstrated through tests of construct or discriminant validity. A recent measure closes this gap by carefully validating an assessment of momentary (state) love that temporally corresponds to participant-endorsed, spontaneously generated descriptions of feeling a surge of love for their romantic partner (Murphy et al., 2026). The scale items are the product of participants essentially arbitrating among scholarly descriptions of love using their own experiences: Starting with 94 items representing scholarly claims about the subjective experience of love, the scale was iteratively derived through 2,608 participants reporting on 7,129 real social experiences across five studies. The method used a novel criterion-keying approach to ensure the items corresponded to participants' own spontaneous use of the word "love" to describe their feelings in the situation, and it incorporated tests for discrimination from related concepts (e.g., empathy, "having fun with", trust, and "passionate desire for" the other). The evidence is consistent with prototype analyses of the concept or emotion of love (Fehr, 1988; Shaver, et al., 1987): when people say they are feeling love for their romantic partner, they mean they are experiencing a surge of affection, adoration, caring, and commitment (Murphy et al., 2026).

Here, our theorizing about love is grounded in contemporary affective science, which posits that momentary surges of emotion are motivated states that help to coordinate social behaviour (Algoe, 2026; Keltner & Haidt, 1998; Tooby & Cosmides, 2008). The emotion of love is always about *another person*.[1] In the context of interacting with that person frequently, moments of love may build on one another toward a more enduring *sentiment* of love toward them (Algoe, 2026; Frijda, 1994; Berscheid, 2010). However, it is the moments themselves that provide the proximal mechanisms for social coordination. Said differently, regardless of one's overall, or general, sentiment of love toward another person, theory suggests that an *emotional state* of love is the first and most obvious place to test whether love drives connection with the object of one's love.

Notably, the commitment content of lay feelings of love corresponds with early theorizing about the *social function* of the emotion of love (e.g., Campos et al., 2013; Frank, 1988; Gonzaga et al., 2001; 2006; Lazarus, 1991). Broadly, emotions are evolutionarily conserved, momentary responses to the problems and opportunities of social relationships. The "response" consists of coordination among body, mind, and behaviour to meet one's needs in the situation (e.g., Tooby & Cosmides, 2008). The subjective content of the experience – the mind – is only one part of the emotional response and can be reflected in self-report. Yet key for theorizing is the underlying motivational state and how it shapes social behaviour in real time. Scholars

[1] All affective science treatments of the emotion of love make this assumption (Algoe, 2026).

have posited that moments of love -- unique from other positive emotions -- help us commit to potential long-term, intimate relationship partners (Campos et al., 2013; Frank, 1988; Gonzaga et al., 2001; 2006; Fletcher et al., 2015). There are myriad empirical and theoretical arguments in the extant literature on the survival value of intimate relationship partners, whether those are close relationships with friends, family, or romantic partners (e.g., Holt-Lunstad, 2025). Yet how do those partnerships form and then endure? How does a moment of love coordinate *behaviour* toward the other, in real time?

Operationalizing Behaviour

Despite groundbreaking studies designed to test purported love-driven behaviour toward the object of one's love in 1970 (Rubin) and 2001 (Gonzaga et al), surprisingly little behavioural data has emerged in the intervening period (though see Jolink et al., 2026). Here, we go back to basics. We and others have argued that models of (lifesaving) human bonds should build on what we know works best across the animal kingdom and build up in complexity from there (Algoe & Jolink, 2021; Silk 2025). Here, to operationalize motivation to connect, similar to Harlow, we focus on affectionate touch and physical proximity.

Both allogrooming (or "social grooming") and time spent in physical proximity have been used as indicators that a variety of animals have a close bond and that they are invested in (committed to) the relationship partner (e.g., Bales et al., 2021; Silk, 2025). In humans, affectionate touch, or touch which is understood to demonstrate affection (e.g., a pat on the arm, a hug; Hansen et al., 2026) is extremely common across a variety of human relationships, and even more when they are close relationships (Jakubiak et al., 2021; Suvilehto et al., 2015); this may be because affectionate touch conveys intimacy (Cekaite & Bergnehr, 2018; Debrot et al., 2013). Spontaneous affectionate touch is the most direct operationalization of our hypothesis because people literally connect with the object of their love. Additionally, in humans, time spent physically proximate to the partner has been theorized to be an investment into the relationship (e.g., Totenhagen et al., 2023), and – analogous to monogamous prairie voles (Williams et al., 1992) -- recent work documents that people more committed to their romantic relationships self-report physically spending more time with (proximate to) their partners across a 24-hr period (Chandler et al., 2023). Here, as a secondary measure, we will behaviourally observe whether loving couples draw closer in real time.

These two behaviours are particularly useful targets of investigation because they may later prove to be fundamental to why love may contribute to survival. For example, allogrooming and proximity in nonhuman animals is associated with longevity and reproductive fitness (Cameron et al., 2008; Cameron et al., 2009; Silk; 2007). Affectionate touch in humans is associated with psychological (e.g., positive mood, stress reduction) and physical health (Jakubiak et al., 2017). And a recent study showed that couples who simply spent more time physically proximate to one another in a 24h period had lower markers of inflammation the next day, independent of commonly assumed social contributors to physical health, such as lower conflict or greater social support (Jolink et al., 2023). Does human love drive these behaviours?

Love and Behaviour in Contemporary Human Research

Gonzaga and colleagues conducted the first careful empirical treatments of the social functions of love (2001; 2006), in part by differentiating love from other positive emotional states. Their work on nonverbal demonstrations of love versus sexual desire in facial cues and physical gestures was foundational to current understanding of whether and how different types of positive emotions are communicated through various nonverbal channels, including the voice and touch (see Sauter, 2017). Relevant to the present investigation, *touch* is the (self-reported) preferred method of communicating love (App et al, 2011), and several studies document that recipients of touch can identify communicated feelings of love, even when compared to closely related positive emotions such as gratitude (e.g., Hertenstein et al., 2009).

Gonzaga et al.'s methodology, unlike previous and subsequent studies, measured real behaviour within a live dyadic interaction with the loved one (2001; Study 1). Despite its crucial methodological match to

the question of how love directs behaviour *toward a loved one*, limitations persist. First, the behaviour was measured in a social interaction that happened *prior* to the interaction from which they measured state love; ideally, state love and the behaviour toward the loved one would be measured from the same dyadic interaction. Second, they focused on complex behaviours to address how people behave when love is tested, such as using more constructive ways of discussing a conflict. It is important to understand whether love has a softening influence on negative interpersonal processes like conflict (Sasaki et al., 2023). However, all empirical evidence on the experience of love shows it is *pleasant* to experience -- it is a positive emotion (e.g., Fehr, 1988; Gonzaga, et al., 2001; Shaver et al., 1987). This means that love is not only relevant to challenges, but is primarily, fundamentally, relevant to *opportunities* in the social environment (Fredrickson, 1998; 2001). In the moments love is experienced, we should see evidence that love facilitates connection with the object of our comfort.

There are at least four interrelated reasons to measure behaviour itself. First, it is behaviour that is widely presumed to be the bridge between the loving individuals, with that dyadic interaction serving as a building block for the growth of the relationship (e.g., Algoe, 2019; Jolink & Algoe, 2024; Sternberg, 1988). Second, people are not very good at estimating (self-reporting) their own behaviour (e.g., Murphy & Lilienfeld, 2019; Sheeran, 2002). Third, recent evidence demonstrates that self-reports of a wide variety of close relationship variables are largely explained by a single general factor of global relationship sentiment (sometimes called "sentiment override"), suggesting that researchers should aim to avoid using self-reports of relationship variables as predictors of other self-reported relationship variables (e.g., Kim et al., 2026; also see Joel et al., 2025). Fourth, it is easier to make the case that behaviour indicates underlying *in-the-moment* motivation, and this is especially true when it is spontaneous behaviour in a naturalistic setting.

The Current Research

In the current research, romantic couples participated in a series of seven videorecorded conversations in the laboratory. The conversations were about a systematic variety of researcher-instructed topics while participants sat together on a couch (i.e., how they first met; a personal goal; something normal each person did that day; what each admires about the partner); and after each conversation they moved to individual laptop computers to respond to questionnaires about the conversation. Using observational coding, we quantified spontaneous affectionate touch and physical proximity for each person in each conversation. These behaviours represent theoretically plausible indicators of a motivation to connect.

After each conversation, participants self-reported the love they experienced for their partner during that particular conversation. The conversational prompts systematically varied in ways that we assumed from theory would produce various levels of love (e.g., from neutral to high love). This design allowed for two rigorous analysis approaches. First, we could capitalize on the full variance across all seven conversations to test whether fluctuations in state love were associated with fluctuations in connection with the partner, and we can do this using a conservative analysis that separates the within-person variance from the between-person variance. That is, we can simultaneously test whether individuals who feel more love for their partner within a given conversation *than they typically do* connect more with their partner *in that conversation* (within-person effect), as well as whether individuals who tend to experience more love for their partner *on average* across conversations also tend to connect more with their partner across those conversations (between-person effect). We ran additional analyses controlling for baseline assessments of enduring relationship satisfaction and love for the partner. These analyses address the fundamental question of how the emotion of love may coordinate dyadic interaction across a range of everyday life experiences. The second approach is a classic within-subjects experiment, for stronger causal inference from increases in love to increases in connection: one of the conversation topics – what one admires about the partner (Gottman & Silver, 2023) – has been documented to produce greater spontaneous use of "love" to describe the feelings in the situation (Murphy et

al., 2026), which is consistent with theory about situations that should generate increases in love (Gonzaga et al., 2001; Jolink et al., 2026). We test whether participants connect more in the love-eliciting (i.e., admiration) versus a control conversation, and whether this is statistically mediated by greater feelings of love. These are the strongest tests to date, in humans, for Harlow's assertion that love is a motivated state that drives us to connect with the object of our love.

Method

Participants

One hundred and ninety-seven romantic couples from the southeastern U.S. participated in the study. They were recruited from research recruitment websites, Facebook groups, and farmers markets to participate in a 1.5-hour in-lab study involving conversations with their romantic partner. Sensitivity analyses at 80% power revealed that the smallest detectable effect sizes ranged from $f^2 = .005$ to .011 (see supplement). Couples were together for 8.42 years, on average, and 59.5% identified their relationship as married, engaged to be married, or committed to a lifelong partnership. See supplement for participant demographics.

Protocol

Before coming to the lab, participants completed a survey as part of the larger study. For the present investigation, this survey included several scales assessing constructs that have been considered in the literature as proxies for a general sentiment of love toward, feeling loved by, or feeling love *with* the romantic partner.

Participants consented to being video recorded during the laboratory session. In the lab room, there were two desks with laptops on either side of a wide couch, and an inner control room. After explaining the study to the participants, the experimenter moved to the inner control room for participant privacy and guided the participants through the remainder of the session via a microphone. Participants then independently completed an initial questionnaire, in which they responded to prompts about (a) how they first met their partner and their first impressions of them, (b) two aspects of their partner's character that they most admire, (c) a difficult personal goal that they want to achieve in the next six months, and (d) some ordinary, everyday things they did in the past 24 hours.

Participants then completed seven conversations with their partner (together on the couch) and seven post-conversation questionnaires (at their individual desks). They were each assigned to one side of the couch for the entire duration of the study, but the couch was long enough that, for each conversation, participants could choose how close they sat to their partner. For the first conversation, couples discussed together how they first met. For the remaining six conversations, participants took turns sharing their answer to the remaining three prompts described above (randomly ordered). The same person always disclosed first. The experimenter instructed the participants when it was their turn to answer the prompt and encouraged their partner to listen and respond. If conversations had not naturally ended before five minutes had passed, experimenters encouraged participants to wrap up the conversation within the next minute.

Love in the Moment

Participants reported their feelings after each conversation with the Love in the Moment scale, which was developed to validly assess *state* love and has shown evidence of construct validity (Murphy et al., 2026). This scale has five items with the stem, "During the conversation you just had with [partner], how much did you feel…", which participants evaluated on a scale from 1 (*Not at all*) to 5 (*Extremely strongly*). Items were "Love for __", "Caring for __", "Adoration for __", "A great deal of affection for __", "A sense of deep commitment to __". Responses to the five items were averaged to create an overall love in the moment score, with excellent reliability (ω within-level = .84, ω between-level = .96).

Alternative Explanation Variables

To address an alternative explanation to theorized state love, at baseline, participants self-reported various operationalizations of an enduring sentiment of love: general relationship satisfaction (α = .91; Funk & Rogge, 2007), empathy for partner (α = .93; Murphy, 2019), compassionate love for partner (α = .89; Chiesi et al., 2020), perceived partner responsiveness (α = .94; Crasta et al., 2021), and positivity resonance with partner (α = .94; Major et al., 2018). In addition, to assess how much variance in effects of state love can be attributed to its general positive valence (Fredrickson, 2001), rather than love being a specific positive emotion, in exploratory analyses, we controlled for a post-conversation assessment of valence (Bradley & Lang, 1994). More detailed information about these scales can be found in the supplement.

Behavioural Coding Measures

The seven video recordings from each of 197 couple produced 1,379 videos. Four videos were excluded due to technical difficulties with the recordings. Coders watched the entire video without audio, coding one member of the couple at a time and rewinding the video as needed.

Affectionate Touch Count

The primary measure was a coded count of the number of times each participant initiated affectionate touch of their partner. We took a conservative approach to this behavioural code: raters were instructed only to count touches that were unambiguously intentional and affectionate, and to classify repetitive touch movements that were in an isolated series (e.g., three quick pats on the knee) as one touch. For the explicit coding instructions, see supplement and OSF page.

Proximity

Raters coded the position of each participant on their side of the couch at the start and end of the conversation. We averaged the two ratings to produce an overall estimate of participant location during a given conversation. (Participants did not tend to move within a conversation.) Each half of the couch was fitted with a wide cushion, which was used as a marker to code the location of each participant on the couch. Raters reported whether each participant was sitting against the far side of the couch [1, farthest away from partner], on the middle of the couch cushion on their respective side [2], or on the middle of the couch [3, closest to the partner].

Coding Process and Reliability

Eleven research assistants (RAs) completed 2-3 training sessions over four weeks (see supplement for details). Given the scope and length of this project, the number of coders for each video varied. Each behavioural variable was independently coded by between two to 11 raters (~65% by two raters, ~28% by three raters, and the rest by 4–11 raters). Because the number of coders and identity of coders varied across segments, conventional fully crossed ICCs are inappropriate. Thus, interrater agreement was assessed using Krippendorff's α (Krippendorff, 1970), which accommodates incomplete and unbalanced coding designs (for explanation of Krippendorff's α as a standardized metric for inter-rater reliability, see Hayes & Krippendorff, 2007). To calculate Krippendorff's α, we used the irr package (Gamer et al., 2019) in R, treating data as interval rather than nominal or ordinal. Across the full sample, we achieved high inter-rater agreement for all variables. Krippendorff's αs were as follows: affectionate touch count, α = .87; proximity at conversation start, α = .84; proximity at conversation end, α = .83.

A large percentage of coded videos (1,571; ~57% of videos) had unanimous agreement that there were zero affectionate touches, which could theoretically inflate reliability estimates. As a sensitivity analysis, we excluded cases characterized by unanimous zero codes and then re-ran Krippendorff's α for affectionate touch count on the remaining 1180 videos. Inter-rater agreement was still high (α = .81).

Final Codes Used for Analyses

A small number of codes for each variable (~1% to ~3% of the 2750 observations, depending on variable) contained substantial discrepancies between coders (i.e., coder discrepancies greater than three or

one for affectionate touch and proximity, respectively). For these cases, the first author provided an independent code and removed the discrepant RA code. See supplement for more information. Averages for affectionate touch codes were then rounded to the nearest whole number for appropriate statistical analysis.

Data Analytical Plan

Effects of Love on Affectionate Touch and Proximity Across All Conversations

We used multilevel models to account for the nonindependence between couple members across multiple conversations. To disaggregate within-person and between-person effects of love (Bolger & Laurenceau, 2013), love was separated into two variables respectively: a person-mean centred term capturing within-person fluctuations in feelings of love across conversations, and a person-mean term capturing each person's average feelings of love across conversations (grand-mean centred). All analyses treated dyads as indistinguishable because we did not have theoretical reason to expect that any factor distinguishing dyad members would moderate effects.

Given that affectionate touch was a count variable with a large number of zero-count observations, we followed recommendations to use a two-part mixed model (Farewell et al., 2017). The two-part model separated affectionate touch into two components: the first modelled whether affectionate touch was zero (i.e., whether affectionate touch occurred), and the second modelled the actual value when affectionate touch was nonzero (i.e., the amount of affectionate touch when it did occur). First, to examine the occurrence of affectionate touch, we recoded affectionate touch into a binary variable (0 = no affectionate touch; 1 = affectionate touch occurred). We employed a multilevel binary logistic regression model with random intercepts and allowed the errors of couple members within each conversation to be correlated. We modelled the probability of engaging in affectionate touch as a function of both the person-mean centred (within-person) and person-mean (between-person) feelings of love, both of which were standardized (*z*-scored) to facilitate interpretation. We fitted the multilevel logistic regression model using the *glmmPQL* function in the R package *MASS* using the binomial family with a logit link (Finch et al., 2014; see OSF for syntax). Regression coefficients were raised to the exponent to obtain odd ratios (OR), and the effect was significant if the 95% confidence interval did not contain one.

Second, to examine the amount of affectionate touch when it did occur, we removed cases of zero instances of affectionate touch and log-transformed affectionate touch. We used multilevel modelling to test two-level crossed models with random intercepts and fixed slopes, in which partners are nested within couples and partners and conversations are crossed to account for the fact that both partners completed each conversation at the same time (Kenny et al., 2006). We regressed log-transformed affectionate touch on both person-mean centred (within-person) and person-mean (between-person) feelings of love. We fitted the multilevel regression model using the mixed models function in SPSS (see OSF for syntax).

We applied the same multilevel modelling procedure to model the degree to which both person-mean centred (within-person) and person-mean (between-person) feelings of love predicted proximity to a partner (see OSF for syntax). Finally, we re-ran all analyses controlling for baseline relationship satisfaction, baseline measures of love (compassionate love, empathy, positivity resonance, perceived partner responsiveness), and both within- and between-person effects of state affective valence.

Love-Eliciting Versus Mundane Conversations: Effects of Affectionate Touch and Proximity via Feelings of Love

We examined whether participants in love-eliciting conversations, compared to mundane conversations, engaged in greater affectionate touch and sat closer to their partner, and whether these effects were mediated via greater feelings of love. To compare extent of affectionate touch between love-eliciting and mundate conversations, we first used the same analytical approach as before to test whether conversation type (0 = mundane; 1 = love-eliciting) predicted the occurrence of affectionate touch (multilevel logistic regression), the amount of affectionate touch when it occurred (multilevel model on log-transformed affectionate touch,

restricted to non-zero cases), and proximity to a partner (multilevel model; path *c*). Next, we used multilevel modelling to test whether conversation type predicted feelings of love (path *a*). Then, using the same analytical approach as before, we tested whether feelings of love (grand-mean centred) predicted the occurrence of affectionate touch, the amount of affectionate touch when it occurred, and proximity to a partner, accounting for conversation type (path *b*).[2] We used the RMediation package (Tofighi & MacKinnon, 2011) to estimate 95% confidence intervals (CI) around the indirect effects. Indirect effects are significant if the confidence interval does not include zero. Data and syntax for all analyses can be found at: https://osf.io/xyst2/overview?view_only=6e126ca26cf945ddaa991ee9f4497911

Results

Descriptives of the conversation measures – love, affectionate touch, and proximity - are shown in Table 1. On average across conversations, participants reported high feelings of love, at least one instance of affectionate touch, and sat in the middle of their respective side of the couch. Participants showed within-person fluctuations in their feelings of love, affectionate touch, and proximity to a partner from one conversation to another (within-person *SD* = 0.42, 1.03, and 0.26 respectively), with proximity showing the smallest fluctuations. These within-person fluctuations were smaller than the variation between participants (between-person *SD* = 0.61, 1.96, and 0.68 respectively). Affectionate touch counts between each member of the partner dyads were moderately correlated, *r* = .61. Proximity codes between each member of the partner dyads were correlated at the start, *r* = .37, and end of the conversation, *r* = .35.

Effects of Love on Affectionate Touch and Proximity Across All Conversations

As shown in Table 2, significant within-person main effects of love emerged on both the occurrence and amount of affectionate touch. Within a given conversation, individuals who felt more love than they typically did (i.e., one standard deviation increase relative to their own average) had 43% higher odds of engaging in affectionate touch. Individuals who did engage in affectionate touch exhibited a greater number of affectionate touch behaviours in conversations in which they felt more love than they typically did. Significant between-person main effects of love also emerged. Individuals who tended to feel more love across conversations (i.e., one standard deviation higher average feelings of love relative to other individuals) had 42% higher odds of engaging in affectionate touch, and when they did engage in affectionate touch, exhibited a greater number of affectionate touch behaviours.

As shown in Table 2, the between-person, but not the within-person, main effect of love on proximity was significant. Individuals with higher average feelings of love across conversations tended to sit closer to their partner.[3]

Controlling for Loving Sentiment or State Affective Valence

Rerunning analyses controlling for baseline relationship satisfaction and four baseline measures of love revealed that the effects of state love within couples' conversations remained significant. See Table S3. These findings suggest that the effects of love on affectionate touch and physical proximity were specific to

[2] Feelings of love were grand-mean centered, consistent with our goal of testing whether love elicited by the type of conversation was associated with increased connection. Because our focus was not on distinguishing within-person fluctuations from between-person differences, disaggregating within-person and between-person components of love was not relevant in these analyses.

[3] Because couples' conversations varied in length, we reran all primary analyses controlling for conversation length. The conclusions were the same (see Table S5).

state feelings of love rather than relationship quality or enduring love for, with, or from a partner. Rerunning analyses controlling for both within- and between-person effects of state affective valence revealed that the within-person effects of love on affectionate touch – both likelihood and amount – remained, whereas the between-person effects of love on the amount of affectionate touch and proximity became non-significant. See Table S4. Note: none of the sentiment or valence control variables predicted outcomes in these models that included state love.

Love-Eliciting Versus Mundane Conversations: Effects on Affectionate Touch and Proximity via Feelings of Love

The results are shown in the bottom half of Table 2. Compared to mundane conversations, participants had more than three times higher odds of engaging in affectionate touch in love-eliciting conversations (see Figure 1). In instances when participants did engage in affectionate touch, they also exhibited a greater number of affectionate touch behaviours in love-eliciting conversations than in mundane conversations. The indirect effects of love-eliciting versus mundane conversations on both the occurrence of affectionate touch (*ab* = .27, 95% CI [.158, .388]) and the amount of affectionate touch when it occurred (*ab* = .06, 95% CI [.001, .123]), through greater feelings of love, were significant. However, consistent with the findings in analyses across all conversations, participants did not differ in proximity to their partner between love-eliciting versus mundane conversations; the indirect effect via feelings of love was not significant (*ab* = -.001, 95% CI [-.018,.017]).

Discussion

This is the strongest evidence to date for Harlow's assertion that human love motivates connection with the loved one. Drawing from theory in affective science, we focused on the emotion of love as a coordinating device, motivating social behaviour in real time. We directly measured momentary love and assessed live spontaneous behaviour in a variety of naturalistic conversations that varied in the extent to which they would theoretically elicit love. Indeed, as hypothesized, participants experiencing greater love for their partner in the moment as well as across moments literally connected with their partners. We observed this through increased likelihood of affectionate touch, greater *amount* of affectionate touch, and closer proximity to the partner. These effects are unique to state love and cannot be explained by a general love sentiment, regardless of operationalization. Additionally, greater affectionate touch in a theoretically love-eliciting versus mundane conversation was partially accounted for by greater feelings of love. These data lay the groundwork for richer theorizing about the nature of love.

On Love

The scientific literature on love consists of several theoretical perspectives and several different definitions of "love", but limited contemporary evidence that assesses the construct of love itself using validated measures and well-powered designs (Algoe, 2026). We believe the current data are useful for (re-)building theory on love. First, these data provide evidence for the untested assertion that (human) love drives connection with a loved one, which has been posited across scientific disciplines and theoretical perspectives (e.g., Carter & Porges, 2013; Harlow, 1958).

Next, we believe these data call attention to the value of theory about the social functions of positive emotions (Algoe, 2019). Most scientists agree that love evolved for relationships. Relationships are built from moments of connection (Algoe & Jolink, 2021; Jolink & Algoe, 2024; Reis & Shaver, 1988). Taking the next logical step in the mechanistic chain, when love motivates one person to reach out and touch the other, what happens next? These should be moments of relationship *promotion* or opportunities for *growth* (Algoe, 2019; Fredrickson, 2001; Jolink & Algoe, 2024). Are they? To test theory, we need to start studying love across a wide variety of emotionally neutral and positively-valenced social contexts, and observing natural social behaviour (Jolink et al., 2026).

Further, we acknowledge that we examined love in the context of romantic relationships, and many scientists who do not study emotion believe that love is different depending on the relationship type. That is, they might be quick to conclude that our evidence is only relevant to "romantic" love. However, for no other emotion (e.g., anger, gratitude) does the consensus definition suggest that the experience is different based on the type of relationship. Why would the model of "emotion" deviate only for love? Close connections are essential for survival "from the cradle to the grave" (Bowlby, 1982), and love may drive these connections in consistent ways across relationship type. In fact, we note that the items on the scale (e.g., adoration, care, commitment) and behaviours (touch, proximity) are readily apparent across a range of relationship types. Testing the association between state love and connection across relationship types – toward children, friends, and strangers – would advance theory on love by helping us determine whether we should focus on a general model of love or specific models for each type of relationship.

On Behaviour

Spontaneous nonverbal behaviours are especially useful for advancing theory on love as they are most proximate to the experience of love, making it easier to infer the motivational component. A more complex behaviour, such as how one discusses a conflict, will be useful (Sasaki et al., 2023), but has additional causal layers, such as personality (Tehrani & Yamini, 2020), positive and negative childhood experiences (Demir, 2023; Sevim & Simsek, 2025), and emotional intelligence (Moeller & Kwantes, 2015), to name a few. In fact, because touch and proximity are found in social bonds across the animal kingdom and across relationship type, we may find that they play a more important role in human love and the development of loving relationships than previously acknowledged (Algoe & Jolink, 2021; Jolink & Algoe, 2024). Similarly, these are likely two underappreciated behavioural mechanisms through which love may get "under the skin" to influence health (Jolink et al., 2023). Testing such longitudinal questions would require study designs that include a validated measure of love.

While the observations of affectionate touch demonstrated robust support for the hypothesis about state love, the findings for proximity were promising but call for further work. In particular, the literature on love and social bonds refers to both proximity *seeking* (Ainsworth, 1964; Bowlby, 1982; Harlow, 1958) and proximity *maintenance* (e.g., indicator of a bond; Williams et al., 1992; Silk, 2025). The method we used, with participants confined to a seated position on a couch, cannot disentangle the two concepts, and we cannot know if we would have found the within-person effect of state love on proximity if couples would have been in a "free-range" context. We believe such designs will be important for theory building regarding behaviours motivated by love versus other considerations such as fear (proximity-seeking from attachment theory), dominance (mate-guarding), or social deprivation, or for testing questions about the signal value of such behaviours (e.g., perceived commitment), among other open questions.

Broadly, our findings illuminate the value of studying behaviour during moments of love. Even if humans hold a general sentiment of love toward another person (e.g., Chiesi et al., 2020), the moments are interpersonally mechanistic, as our data amply demonstrate. Within the context of prototypically love-based relationships, not every behaviour is driven by love (e.g., eating dinner together), so identifying those that are will provide the biggest return on investment into understanding the nature of love.

Limitations and Future Work

Researchers are beginning to document social contexts that may naturally elicit the emotion of love (Gauvin et al., 2025; Gonzaga et al., 2001; Jolink et al., 2026). We are hopeful that this evidence on variation in state love across contexts will encourage researchers to move beyond correlations toward experimental tests of hypotheses about the emergence and consequences of love. For example, though we include a comparison between a love-eliciting and neutral condition, our measures of love and behaviour within the conversation were effectively concurrent assessments of a theoretically temporal process in which the momentary

experience of love (i.e.., subjective feelings and motivation) may result in behaviour. For this first test, it was impractical to try to interrupt the naturalistic experience to test more fine-grained temporal ordering. Further, we readily acknowledge the role of affectionate touch in building intimacy (Jakubiak & Feeney, 2016), and the possibility of an indirect path from one's behaviour to one's own feelings of love. Future research could improve clarity regarding causality by first inducing love, then providing an opportunity for behaviour toward the loved one.

This discussion further draws attention to the point that the momentary experience of love is a latent construct that we assessed through self-report of subjective feelings, but might have other indicators like physiology or cognitive processing (e.g., attention). We believe the current evidence justifies such research, as well as related questions fundamental to understanding of love. For example, Harlow's use of "primary drive" evokes the idea that – like hunger - a surge of love resolves a *deficit* by getting that need fulfilled (1958). Yet contemporary theory and evidence on positive emotion (Fredrickson, 2001) – including the present data – reminds us that animals regularly collect and store food for winter when it is abundant. Can the drive be relevant in both contexts?

Although none of the general love sentiment measures predicted behavioural measures of connection independent of state love, this does not undermine the value of studying the general sentiment of love. However, it does provide a call for researchers who study the sentiment of love to start collecting evidence that would further test widespread claims that the sentiment of love drives human behaviour.

It is critical to emphasize that context matters when testing hypotheses about interpersonal behaviour. Context may mean anything from type of lab task to relationship type to cultural background or prior experiences in relationships. It is well known that social norms and relationship type dictate touch use and perceived appropriateness. People in many East Asian countries, for example, engage in comparatively less touch than those in Western countries (Knapp et al., 2013; Sorokowska et al., 2021). Cross-culturally, people are also generally less comfortable hugging a stranger vs. a friend (Suvilehto et al., 2015). However, a wide variety of types of touch are used to convey affection (Hansen et al., 2026), and people will use what is appropriate to the context. For example, people may engage in affectionate touch forms with their same-gender friends that are not commonly documented within romantic relationships (e.g., dap, elbow nudge; Hansen et al., 2026). Recent work has also documented affectionate touch between strangers and its role in relationship development (Jolink & Algoe, 2023), and while it may not be normative to engage in affectionate touch within a relatively sterile laboratory setting, our participants physically connected with their partners when they experienced bursts of care and affection for them. Ultimately, in service of building theory on love, at this stage we believe it will likely be less interesting to test how its expression varies, and most generative to focus on the motivational roots of behaviour to determine commonalities (e.g., Chang & Algoe, 2020).

Conclusion

Given its centrality in human life, it is well worth scientific investment to rigorously assess foundational premises about the nature of love. We believe this initial behavioural evidence that love coordinates connection with a loved one provides a meaningful step in that direction. Specifically, participants experiencing greater love for their partner in the moment as well as across moments were more *likely* to engage in affectionate touch and engaged in *more* affectionate touch. Those who experience greater love for their partner across moments also sat closer to their partner. Importantly, these patterns only emerged for state love – not enduring love sentiments – suggesting the unique relevance of *momentary* experiences of love in supporting relational bonding processes, and calling attention to the critical role of behaviour as a bridge toward the object of one's love. We look forward to future work that uses contemporary theory and methods to advance understanding of this fundamental human motive.

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Figure and table captions

Table 1

Descriptive Statistics of Measures Across Conversations

Table 2

Effects of Love and Conversation Type on Affectionate Touch and Proximity

Figure 1

Predicted Probability of Affectionate Touch Occurring in Mundane and Love-Eliciting Conversations

Table 1

Descriptive Statistics of Measures Across Conversations

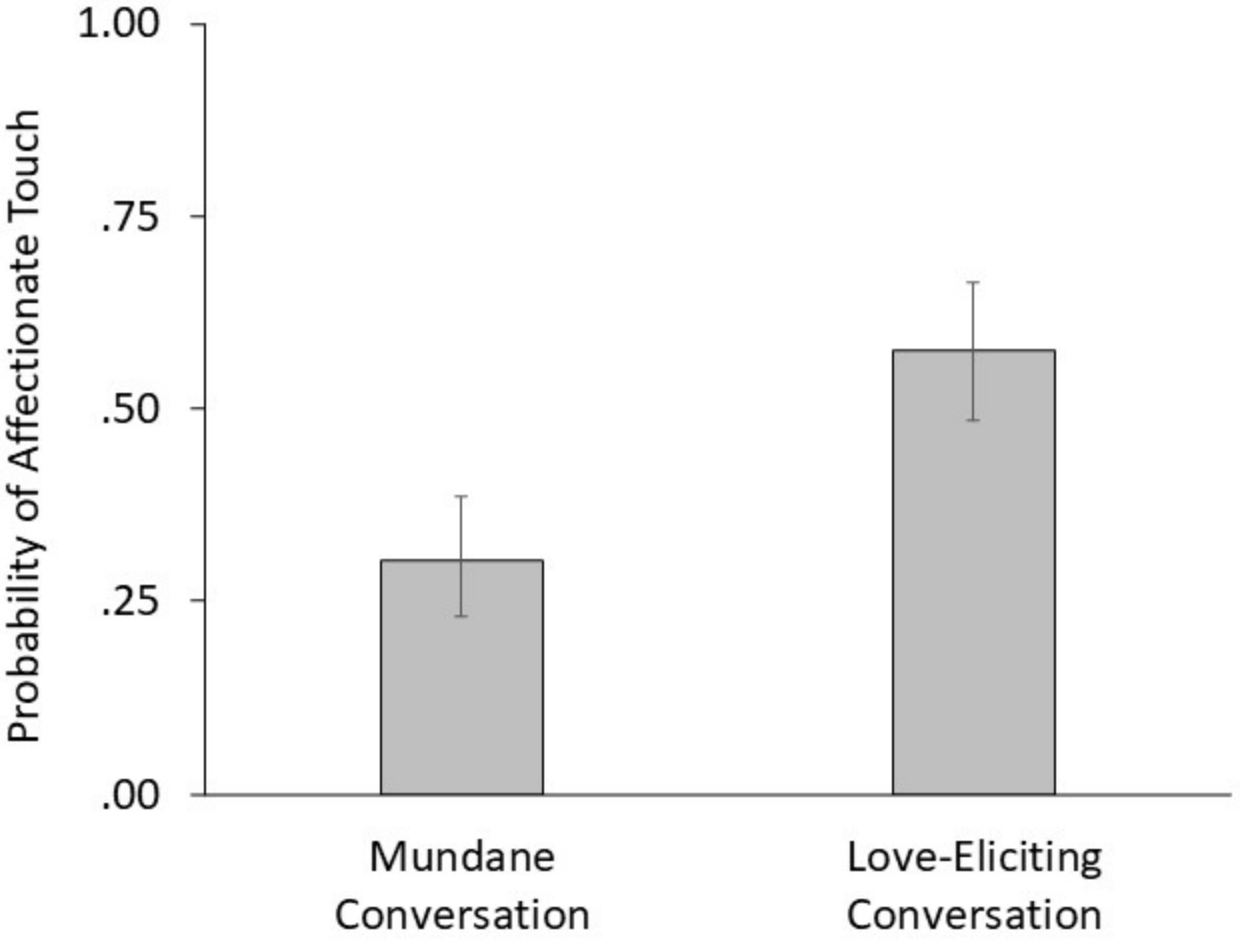
Measures	Mean	(*SD*)	Range
Love	4.36	(0.79)	1.00 - 5.00
Affectionate Touch	1.27	(2.45)	0 - 24.50
Proximity	2.04	(0.74)	1.00 - 3.00

Table 2

Effects of Love and Conversation Type on Affectionate Touch and Proximity

	Occurrence of Affectionate Touch						Amount of Affectionate Touch					Proximity				
	b	*SE*	*t*	OR	95% CI	*p*	*b*	*t*	95% CI	*p*	*r*	*b*	*t*	95% CI	*p*	*r*
Effects of Love Across All Conversations																
Intercept	-.45	.17	-2.73	.64	[.46, .88]	.006	.40	7.81	[.30. .51]	< .001	.52	2.05	51.20	[1.97, 2.13]	< .001	.96
Within-Person Effect of Love	**.36**	**.04**	**8.10**	**1.43**	**[1.31, 1. 56]**	**< .001**	**.17**	**3.55**	**[.07, .26]**	**< .001**	**.11**	-.02	-1.27	[-.04, .01]	.205	.03
Between-Person Effect of Love	**.35**	**.10**	**3.70**	**1.42**	**[1.18, 1.71]**	**< .001**	**.23**	**3.05**	**[.08, .38]**	**< .001**	**.17**	**.16**	**2.80**	**[.05, .26]**	**.005**	**.14**
Love-Eliciting vs. Mundane Conversations																
Intercept	-.84	.19	-4.37	.43	[.30, .63]	< .001	.26	3.89	[.13, .40]	< .001	.24	2.06	48.54	[1.97, 2.14]	< .001	.96
Conversation Type	**1.15**	**.12**	**9.18**	**3.14**	**[2.46, 4.02]**	**< .001**	**.31**	**5.46**	**[.20, .42]**	**< .001**	**.31**	-.001	-.09	[-.03, .03]	.931	.00

Note. OR = odds ratios. CI = confidence interval. Conversation Type was coded as 0 = mundane; 1 = love-eliciting. Significant effects of love are presented in bold.


1.00
.75
.50
.25
.00
Probability of Affectionate Touch
Mundane Conversation
Love-Eliciting Conversation

Supplemental Material

This supplemental material includes additional information on the sample, methods, and analyses reported in:

Hansen, Sasaki, Murphy, Jolink, Le, Cameron, & Algoe (2027). Love is a drive: Incorporating human behaviour into the scientific study of love. *Philosophical Transactions of the Royal Society B*.

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Sample Characteristics

Couples had to be together for at least six months to participate in the study and reported that they had been together, on average, for 8.42 years (*SD* = 9.38, *Rang*e = .42 – 46.48). Participants reported an average age of 33.16 years (*SD* = 13.03) and identified as women (49.5%), men (42.4%), or non-binary/agender/other description (7.9%). Participants identified as heterosexual (*N* = 262, 66.5%), gay/lesbian (*N* = 35, 8.9%), bisexual (*N* = 52, 13.2%), pansexual (*N* = 26, 6.6%), asexual (*N* = 1, < 1%), or something else (*N* = 16, 4.1%). Participants could identify as more than one race and/or ethnicity and identified as American Indian or Alaskan Native (*N* = 5, 1.3%), Black or African American (*N* = 36, 9.1%), Caucasian/White (*N* = 294, 74.6%), East Asian (*N* = 33, 8.4%), Hispanic (*N* = 30, 7.6%), Latino (*N* = 15, 3.8%), Pacific Islander or Native Hawaiian (*N* = 5, 1.3%), South Asian (N = 12, 3%), and/or something else (*N* = 11, 2.8%).

Alternative Explanation Variables: General Love Sentiment and State Affective Valence

Relationship Satisfaction

To assess general relationship satisfaction, participants responded to the 4-item Couples Satisfaction Index (CSI; Funk & Rogge, 2007), α = .91, and the 7-item Relationship Assessment Scale (RAS; Hendrick, 1988), α = .90. Example items from the CSI included, "I have a warm and comfortable relationship with my partner" and "In general, how satisfied are you with your relationship?", which participants responded to on a scale from 0 (*Not at all*) to 5 (*Completely*). Example items from the RAS included, "How well does [partner] meet your needs?" and "How much do you love [partner]?", which participants responded to on a scale from 0 (*Not much*) to 5 (*Very much*). For this scale and all other control variables, overall scores for each variable were created by averaging the responses within each scale.

Compassionate Love

The nine-item Compassionate Love for Humanity Scale (CLS-H-SF; Chiesi et al., 2020) was used to measure compassionate love towards the romantic partner (α in this sample = .89). Participants reported their agreement for items on a scale from 1 (*Strongly disagree*) to 6 (*Strongly agree*). Example items include, "I tend to feel compassion for [partner]" and "It is easy for me to feel the pain (and joy) experienced by [partner]."

Empathy

Twelve scale items from the General Factor of Empathic Caring Scale (GFEC; Murphy, 2019) were used to measure empathy for the romantic partner (α in this sample = .93). Example items include, "I get a strong urge to help when I see [partner] is upset" and "I love boosting [partner]'s self-esteem", which participants responded to on a scale from 1 (*Strongly disagree*) to 6 (*Strongly agree*).

Positivity Resonance

Seven items from the Positivity Resonance scale (Major et al., 2018) were used to measure the extent of mutually reciprocal love with the romantic partner (α in this sample = .94). Participants reported on a scale from 0 to 100% the percentage of time from the past two weeks that they felt or experienced each item. Example items included, "did you experience a mutual sense of warmth and concern toward one another?" and "were you and [partner] mutually responsive to one another's needs?"

Perceived Partner Responsiveness

The 8-item responsiveness subscale from the Perceived Responsiveness-Insensitivity (PRI) scale (Crasta et al., 2021) was used to measure perceived partner responsiveness (α in this sample = .94). Participants broadly considered for their relationship the extent of their agreement to items on a scale from 1 (*Strongly disagree*) to 6 (*Strongly agree*). Example items include, "[partner] really listens to me" and "[partner] really gets my point of view".

State Affective Valence

After each conversation, one item intended to measure pleasure from the Self-Assessment Manikin (SAM; Bradley & Lang, 1994) was used to measure state affective valence. Participants reported the general valence of their experience by selecting one of nine unlabelled images depicting a manikin that ranges from exhibiting negative (frowning face), to neutral, to positive (smiling face) valence. Higher values represent greater positive valence.

Conversation Length

Because participants were asked to allow their conversations to come to a natural end (or if they were still talking at five minutes, we asked them to wrap up their conversations, naturally), conversations naturally varied in length, which may be relevant to how many times

participants touched their partner. To include this as a control variable, we calculated conversation length from the end of the experimenter's instructions to the end of the conversation (M = 4.61, SD = 1.67, mode = 6.18, min = 0.42, max = 9.80).

Table S1

Descriptives and Correlations Among General Love Sentiment Measures

Variable	*M*	(*SD*)	1	2	3	4
1. Relationship Satisfaction	0.00	(.98)				
2. Compassionate Love	5.30	(.62)	.60** [.58, .62]			
3. Empathy	5.31	(.62)	.63** [.61, .65]	.79** [.78, .81]		
4. Positivity Resonance	82.65	(15.05)	.76** [.75, .78]	.53** [.51, .56]	.61** [.59, .64]	
5. Perceived Partner Responsiveness	5.09	(0.81)	.70** [.68, .72]	.49** [.46, .52]	.56** [.54, .59]	.71** [.69, .73]

Note. M and *SD* represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). *$p < .05$. **$p < .01$.

Behavioral Coding Measures

Eleven research assistants completed training for behavioural coding of the videos. These training sessions included: large-group coding instructions (led by Hansen, Jolink, and Murphy), followed by small-group meetings (led by Hansen and Murphy) that included discussion to achieve convergence on practice videos, targeted discussion of videos where coders diverged, and calibration based on inter-rater reliability calculations. Once two consecutive practice video sets (20 videos each) demonstrated inter-rater reliability above (or at least near, for some variables) an ICC of .80 for all coded variables, the research assistants began coding the full dataset of videos.

Videos were randomly assigned to raters across all conversation types. During the first portion of coding (611 videos; 44% of dataset), each video was coded by a coding team of two or three coders. Each research assistant coded their assigned videos independently and then met each week with their coding team to review videos with the most discrepant codes. During this coding portion, to confirm inter-rater reliability across all coders, 47 videos were coded by all 11 research assistants. This gave us confidence that the entire coding team was applying the coding scheme in a reliable and consistent way. For the final 764 videos, research assistants were assigned videos individually, rather than in teams of three. Each of these videos was assigned to two or three research assistants, except for 40 videos which were assigned to all raters, to provide a final evaluation of inter-rater reliability across all coders.

To code affectionate touch count, research assistant implemented the following coding instructions, adapted from Jolink et al (2022): “Code for anytime each couple member [you’ll have a unique count for each one] displays <u>any kind</u> of affectionate touch toward the partner. Touch could be with the hand, the whole body, or any other part such as head, foot, and lips.

Count every instance of affectionate touch from one couple member to the other. Note: we will code both couple members at the same time, but you will create separate counts for each person in the dyad. DO NOT HAVE AUDIO ON. For example, if the partner puts his/her arm around the participant that would count as an instance for the partner. But if the participant then leans into the partner's open arm, that would could as one instance for the participant. This interaction would result in 1 touch apiece."

For important considerations in the affectionate touch count coding process such as variations in touch length, touch segmentation, partner grooming, camera angle, aggressive touch, and incidental touch, see the full touch coding scheme on our OSF page: https://osf.io/xyst2/overview?view_only=6e126ca26cf945ddaa991ee9f4497911

Affectionate Touch and Proximity Coding Discrepancies

Though coders were extremely reliable in their agreement across observations for each code, as reported in the manuscript, we noticed a small fraction of the 2750 observations (3%) in which one coder showed a large discrepancy from the other(s). Specifically, observations were flagged when there was a discrepancy of at least four between research assistants for affectionate touch and at least two for proximity. The first author reviewed those videos, providing an independent code in each instance. She then compared her code to those provided by research assistants for that behavior of that participant in that video and replaced the code least similar to the others with her own for use in the final estimate of that behavior to be used in analyses.

Sensitivity Analyses

Effects of Love Across All Conversations. To adjust for non-independence in our data, we calculated the number of independent observations as *N effective* from the formula: $N_{effective} = N * k \ / \ (1 + (k - 1) * ICC)$, where N is the number of units that are indeed independent in the data (i.e., 197 couples), k is the number of datapoints belonging to each independent unit (i.e., 7 conversations multiplied by two partners in a couple, resulting in $k = 14$), and ICC is the intraclass correlation (Wiley & Wiley, 2019). With the resulting *N effective* as the sample size, we conducted the sensitivity analyses in G*Power. Table S2 shows the results according to the specific outcome.

Love-Eliciting Versus Mundane Conversations. To adjust for non-independence in our data, we calculated the number of independent observations as *N effective* from the formula: $N_{effective} = N * k \ / \ (1 + (k - 1) * ICC)$, where N is the number of units that are indeed independent in the data (i.e., 197 couples), k is the number of datapoints belonging to each independent unit (i.e., 4 conversations [two love-eliciting and two mundane] multiplied by two partners in a couple, resulting in $k = 8$), and ICC is the intraclass correlation (Wiley & Wiley, 2019). With the resulting *N effective* as the sample size, we conducted the sensitivity analyses in G*Power. Table S3 shows the results according to the specific outcome.

Table S2

Sensitivity Analyses

Outcome	Smallest detectable effect size	
	OR	f^2
Effects of Love Across All Conversations		
Occurrence of Affectionate Touch	1.27	-
Amount of Affectionate Touch	-	.009
Proximity	-	.005
Love-Eliciting vs. Mundane Conversations		
Occurrence of Affectionate Touch	1.64	-
Amount of Affectionate Touch	-	.011
Proximity	-	.007

Note. Sensitivity analyses were conducted given power = .80 and α (two-tailed) = .05.

Table S3

Effects of Love on Affectionate Touch and Proximity Across Conversations Controlling for General Love Sentiment Measures

	Occurrence of Affectionate Touch						Amount of Affectionate Touch					Proximity				
	b	*SE*	*t*	OR	95% CI	*p*	*b*	*t*	95% CI	*p*	*r*	*b*	*t*	95% CI	*p*	*r*
Controlling for Baseline Relationship Satisfaction																
Intercept	-.45	.16	-2.75	.64	[.46, .88]	.006	.40	7.73	[.30, .50]	< .001	.52	2.05	51.22	[1.97, 2.13]	< .001	.96
Within-Person Effect of Love	**.36**	**.04**	**8.09**	**1.43**	**[1.31, 1.56]**	**< .001**	**.17**	**3.54**	**[.07, .26]**	**< .001**	**.11**	-.02	-1.27	[-.04, .01]	.205	.03
Between-Person Effect of Love	**.31**	**.10**	**3.03**	**1.37**	**[1.12, 1.67]**	**.003**	**.21**	**2.59**	**[.05, .38]**	**.010**	**.15**	**.13**	**2.17**	**[.01, .25]**	**.031**	**.11**
Relationship Satisfaction	.12	.12	1.02	1.13	[.90, 1.42]	.306	.03	.52	[-.08, .14]	.604	.03	.04	.90	[-.04, .12]	.368	.05
Controlling for Baseline Love Sentiment																
Intercept	-.45	.17	-2.74	.64	[.46, .88]	.006	.40	7.66	[.30, .50]	< .001	.52	2.05	51.33	[1.97, 2.13]	< .001	.97
Within-Person Effect of Love	**.36**	**.04**	**8.06**	**1.43**	**[1.31, 1.56]**	**< .001**	**.17**	**3.55**	**[.07, .26]**	**< .001**	**.11**	-.01	-1.20	[-.04, .01]	.230	.03
Between-Person Effect of Love	**.29**	**.11**	**2.64**	**1.33**	**[1.08, 1.64]**	**.008**	**.21**	**2.30**	**[.03, .39]**	**.022**	**.13**	**.15**	**2.33**	**[.02, .29]**	**.020**	**.12**
Compassionate Love	.12	.13	.91	1.13	[.87, 1.46]	.365	.02	.20	[-.18, .22]	.844	.01	.01	.14	[-.16, .18]	.887	.01
Empathy	.09	.14	.65	1.10	[.83, 1.45]	.518	.10	.87	[-.12, .32]	.383	.06	-.04	-.41	[-.22, .15]	.686	.02
Positivity Resonance	-.15	.13	-1.12	.86	[.67, .1.12]	.263	.00	-1.15	[-.01, .00]	.250	.07	.00	-.50	[-.01, .00]	.617	.03
Perceived Partner Responsiveness	.10	.12	.87	1.11	[.88, 1.40]	.386	.04	.54	[-.10, .18]	.589	.04	.08	1.43	[-.03, .19]	.155	.08

Note. Baseline measures were grand-mean centered. OR = odds ratios. CI = confidence interval. A two-part mixed model was used to examine affectionate touch. First, we modeled the occurrence of affectionate touch (0 = no affectionate touch; 1 = affectionate touch occurred) using multilevel logistic regression. In this model, the predictors were standardized (*z*-scored). Then, we modeled the amount of affectionate touch when it did occur using multilevel modelling on log-transformed affectionate touch. Multilevel modeling was also used to examine proximity. In the multilevel models, the Satterthwaite approximation is applied to provide degrees of freedom for each effect, which were used to calculate the effect sizes (*r*) using Rosenthal and Rosnow's (2007) formula: $r = \sqrt{(t^2/t^2 + df)}$. Significant effects of love are presented in bold. Though each measured love sentiment is theoretically conceptually distinct as an alternative explanation to state love (e.g., love for versus feeling loved by or with), we tested and reported them in the same model for efficiency.

Table S4

Effects of Love on Affectionate Touch and Proximity Across Conversations Controlling for State Affective Valence

	Occurrence of Affectionate Touch						Amount of Affectionate Touch					Proximity				
	b	*SE*	*t*	OR	95% CI	*p*	*b*	*t*	95% CI	*p*	*R*	*b*	*t*	95% CI	*p*	*r*
Intercept	-.45	.17	-2.74	.64	[.46, .88]	.006	.40	7.67	[.30, .50]	< .001	.52	2.05	51.17	[1.97, 2.13]	.000	.96
Within-Person Effect of Love	**.34**	**.05**	**7.04**	**1.41**	**[1.28, 1.55]**	**< .001**	**.13**	**2.45**	**[.03, .23]**	**.014**	**.08**	-.02	-1.79	[-.05, .00]	.074	.04
Between-Person Effect of Love	**.30**	**.11**	**2.68**	**1.35**	**[1.08, 1.67]**	**.007**	.14	1.60	[-.03, .32]	.111	.10	.12	1.79	[-.01, .25]	.074	.09
Within-Person Effect of Valence	.03	.05	.71	1.03	[.94, 1.13]	.478	.04	1.92	[.00, .08]	.056	.06	.01	1.43	[.00, .02]	.153	.03
Between-Person Effect of Valence	.10	.11	.96	1.11	[.90, 1.36]	.337	.10	1.80	[-.01, .20]	.074	.11	.04	.95	[-.04, .13]	.340	.05

Note. OR = odds ratios. CI = confidence interval. A two-part mixed model was used to examine affectionate touch. First, we modeled the occurrence of affectionate touch (0 = no affectionate touch; 1 = affectionate touch occurred) using multilevel logistic regression. In this model, the predictors were standardized (*z*-scored). Then, we modeled the amount of affectionate touch when it did occur using multilevel modelling on log-transformed affectionate touch. Multilevel modeling was also used to examine proximity. In the multilevel models, the Satterthwaite approximation is applied to provide degrees of freedom for each effect, which were used to calculate the effect sizes (*r*) using Rosenthal and Rosnow's (2007) formula: $r = \sqrt{(t^2/t^2 + df)}$. Significant effects of love are presented in bold.

Table S5

Effects of Love on Affectionate Touch and Proximity Controlling for Conversation Length

	Occurrence of Affectionate Touch						Amount of Affectionate Touch					Proximity				
	b	*SE*	*t*	OR	95% CI	*p*	*b*	*t*	95% CI	*p*	*r*	*b*	*t*	95% CI	*p*	*r*
Intercept	-. 46	.16	-2.79	.63	[.46, .87]	.005	.40	7.79	[.30, .50]	.000	.52	2.05	51.16	[1.97, 2.13]	.000	.96
Within-Person Effect of Love	**.36**	**.04**	**8.01**	**1.43**	**[1.31, 1.56]**	**< .001**	**.17**	**3.53**	**[.07, .26]**	**< .001**	**.11**	-.01	-1.18	[-.04, .01]	.239	.03
Between-Person Effect of Love	**.35**	**.10**	**3.70**	**1.42**	**[1.18, 1.71]**	**< .001**	**.24**	**3.12**	**[.09, .38]**	**.002**	**.18**	**.16**	**2.81**	**[.05, .26]**	**.005**	**.14**
Conversation Length	.08	.04	1.78	1.08	[.99, 1.17]	.075	.05	2.62	[.01, .09]	.009	.10	-.01	-1.02	[-.02, .01]	.306	.03

Note. OR = odds ratios. CI = confidence interval. Conversation length is the duration of each conversation in minutes (grand-mean centered). A two-part mixed model was used to examine affectionate touch. First, we modeled the occurrence of affectionate touch (0 = no affectionate touch; 1 = affectionate touch occurred) using multilevel logistic regression. In this model, the within-person and between-person love predictors were standardized (*z*-scored). Then, we modeled the amount of affectionate touch when it did occur using multilevel modelling on log-transformed affectionate touch. Multilevel modeling was also used to examine proximity. In the multilevel models, the Satterthwaite approximation is applied to provide degrees of freedom for each effect, which were used to calculate the effect sizes (*r*) using Rosenthal and Rosnow's (2007) formula: $r = \sqrt{(t^2/t^2 + df)}$. Significant effects of love are presented in bold.