

Warm Thoughts: Attachment Anxiety and Sensitivity to Temperature Cues

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Recent work on embodied cognition has shown that perceptions of interpersonal intimacy are conceptually grounded in physical temperature. For example, holding warm (vs. cold) beverages increases perceptions of social proximity (IJzerman & Semin, 2009), and social isolation promotes perception of temperature as colder (Zhong & Leonardelli, 2008). Such results suggest that temperature and intimacy are psychologically interchangeable (cf. Williams & Bargh, 2008). Activating one, through either physical experience or semantic priming (e.g., IJzerman & Semin, 2010), produces changes in the other. Such results are also reminiscent of classic work on the importance of temperature for attachment bonds (Harlow, 1958), which means that they may be useful for understanding attachment processes. Might individuals with high levels of attachment anxiety, given their enhanced sensitivity to intimacy cues (Mikulincer, Birnbaum, Woddis, & Nachmias, 2000), also show an enhanced sensitivity to temperature cues? In the present research, I tested the hypothesis that attachment anxiety positively predicts sensitivity to temperature cues, with the aim of integrating research on associations between temperature and intimacy with perspectives on adult attachment.

Study 1

Because attachment anxiety positively predicts proximity seeking and intimacy seeking following distress (Mikulincer, Orbach, & Iavnieli, 1998), in this study I assessed whether attachment anxiety would positively predict preference for warmth following threat.

Method

I recruited 56 individuals (32 females and 24 males) residing in the United States (mean age = 33.50 years, $SD = 11.09$ years) through Amazon's Mechanical Turk (see Buhrmester, Kwang, & Gosling, 2011). Each participant received \$0.35 as compensation for taking part in Study 1.

Participants first completed a brief measure of adult attachment avoidance and attachment anxiety (Wei, Russell, Mallinckrodt, & Vogel, 2007). They were then randomly assigned to two conditions: In one condition, participants were asked to reflect

on a past romantic breakup, whereas in the other condition, they were asked to reflect on an ordinary event. All participants then rated the desirability of warm-temperature refreshments ("hot tea/coffee," "warm pie," and "soup") and neutral-temperature refreshments ("crackers," "candy bar," "potato chips," and "pretzels") on 11-point scales ranging from *not at all desirable* to *extremely desirable*. This measure was modeled after the one developed by Zhong and Leonardelli (2008). For each participant, ratings were averaged to create composite scores for warm-temperature desirability ($\alpha = .65$) and neutral-temperature desirability ($\alpha = .66$).

Results and discussion

Following the guidelines of Yzerbyt, Muller, and Judd (2004), I conducted separate regression analyses that controlled for the effects of attachment avoidance, regressing warm-temperature desirability ratings and neutral-temperature desirability ratings onto reflection condition (dummy-coded), attachment anxiety (mean-centered), and their interaction term. No effects involving reflection condition or attachment anxiety emerged for neutral-temperature desirability ratings ($ps > .234$). For warm-temperature desirability ratings, however, the Reflection Condition \times Attachment Anxiety interaction was significant, $\beta = -0.42$, $t(49) = 2.26$, $p = .028$ (other $ps > .316$). Simple-slopes analysis revealed that attachment anxiety and desirability ratings of warm-temperature refreshments were positively related in the romantic-breakup condition, $\beta = 0.44$, $t(49) = 2.30$, $p = .025$, but unrelated in the ordinary-event condition, $\beta = -0.19$, $p = .350$. Predicted-values tests revealed that thinking about a romantic breakup (compared with thinking about an ordinary event) marginally increased warm-temperature desirability ratings among people high (1 SD above the mean) in attachment anxiety, $\beta = 0.37$, $t(49) = 1.89$, $p = .065$,¹ but had no effect among people low (1 SD below the mean) in attachment anxiety, $\beta = -0.27$, $p = .177$.

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Participants with high attachment anxiety evidenced a pronounced desire for warm refreshments after recalling a romantic breakup. Individuals with low attachment anxiety did not respond in this way. This finding suggests that attraction to physical warmth may reflect secondary (hyperactive) regulation strategies similar to the distorted judgments of self-other similarity that are characteristic of anxiously—but not securely—attached people (Mikulincer et al., 1998). That is, although associations between temperature and intimacy are thought to be normative, people who possess secure schemas of interpersonal relationships may not automatically substitute physical warmth for intimacy. Future researchers should further assess this possibility and consider whether more potent threats (e.g., distress concerning a current relationship) might lead individuals with low levels of attachment anxiety to seek physical warmth.

Study 2

Study 2 extended the focus of this research to relationship outcomes. In Study 2, I hypothesized that, compared with semantically activating the concept of coldness, semantically activating the concept of warmth would increase anxiously attached people's relationship satisfaction, as a result of associations between temperature and intimacy.

Method

One hundred twelve individuals (58 females and 54 males) residing in the United States (mean age = 35.39 years, $SD = 12.55$ years) were recruited from Amazon's Mechanical Turk. Each was in a romantic relationship (mean duration = 8.30 years, $SD = 9.53$ years) and received \$0.30 as compensation for participation in Study 2.

First, participants completed an abbreviated (20-item) version of the Experiences in Close Relationships-Revised questionnaire (Fraley, Waller, & Brennan, 2000), which provided measures of both attachment anxiety and attachment avoidance. Second, after a filler measure, participants completed a sentence-unscrambling task designed to semantically activate temperature-related concepts (DeWall & Bushman, 2009). In the task, participants were given 13 strings of five words each and were asked to rearrange each string to form a sentence. Participants had been randomly assigned to two conditions. In the cold-prime condition, 6 of the 13 unscrambled sentences primed concepts related to coldness (e.g., "Judy felt very cold"). In the warm-prime condition, 6 of the 13 unscrambled sentences primed concepts related to warmth (e.g., "Judy felt very hot"). Immediately after the sentence-unscrambling task, participants indicated the extent to which they were currently feeling each of five positive (e.g., "happy," "excited") and five negative (e.g., "sad," "nervous") emotions on a scale ranging from 0 (*not at all*) to 100 (*extremely*). Then participants reported their current relationship satisfaction (Hendrick, 1988), which served as the critical dependent measure.

Responses to each relationship-satisfaction item (e.g., "How satisfied are you with your relationship?") were made on a scale ranging from 1 (*not at all*) to 7 (*very much*; $\alpha = .91$).

Results and discussion

The relationship-satisfaction scores were regressed onto temperature-priming condition (dummy-coded), attachment anxiety (mean-centered), and their interaction term, with attachment avoidance entered as a covariate (Yzerbyt et al., 2004). The results revealed that attachment avoidance, $\beta = -0.41$, $t(105) = 4.83$, $p < .001$, and attachment anxiety, $\beta = -0.37$, $t(105) = 4.37$, $p < .001$, negatively predicted relationship satisfaction. In addition, the Priming Condition \times Attachment Anxiety interaction was significant, $\beta = 0.25$, $t(103) = 2.17$, $p = .033$ (other $ps > .388$).² Simple-slopes analysis revealed that attachment anxiety negatively predicted relationship satisfaction in the cold-prime condition, $\beta = -0.57$, $t(103) = 3.17$, $p < .001$, but was unrelated to relationship satisfaction in the warm-prime condition, $\beta = -0.21$, $p = .069$. Predicted-values tests (Fig. 1) revealed that, compared with semantic activation of the concept of coldness, semantic activation of the concept of warmth increased relationship satisfaction at high levels of attachment anxiety (1 SD above the mean), $\beta = 0.25$, $t(103) = 2.24$, $p = .027$, but not at low levels of attachment anxiety (1 SD below the mean), $\beta = -0.12$, $p = .281$. Controlling for mood did not attenuate these effects. Thus, just as physical-intimacy cues increase positive perceptions of relationships (e.g., Butzer & Campbell, 2008), exposure to concepts indicating warmth amplifies relationship satisfaction in individuals with high levels of attachment anxiety.

Conclusion

This research was a preliminary examination of the relationship between attachment anxiety and sensitivity to temperature cues.

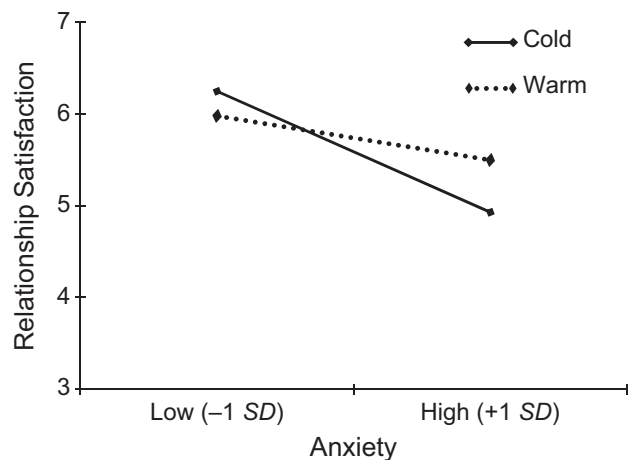


Fig. 1. Results of Study 2: relationship satisfaction as a function of attachment anxiety (high = 1 SD above the mean; low = 1 SD below the mean) and priming condition (cold, warm).

Study 1 indicated that individuals with high levels of attachment anxiety desire physical warmth after reflecting on a distressing event, whereas Study 2 indicated that in individuals with high levels of attachment anxiety, exposure to warm-temperature cues increases satisfaction with their current romantic relationships. These results suggest that individuals with high levels of attachment anxiety may engage associations between temperature and intimacy as a secondary regulatory strategy and may be especially influenced by such associations when evaluating their current romantic relationships. Thus, this research offers future researchers solid ground from which to explore the links between temperature experiences and attachment-relevant outcomes.

Declaration of Conflicting Interests

The author declared that he had no conflicts of interest with respect to his authorship or the publication of this article.

Notes

1. This effect was significant ($p = .034$) when I controlled for neutral-temperature ratings.
2. Two outliers were excluded from analyses.

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