

## Short Report

## A Picture's Worth

## Partner Photographs Reduce Experimentally Induced Pain

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Social support is associated with reduced pain experience across several domains (Cogan & Spinnato, 1988; Kulik & Mahler, 1989; Zaza & Baine, 2002); intriguingly, a handful of experimental studies suggest that this connection may reflect a causal relationship. Participants who received interactive support during a cold pressor task reported less pain than participants who completed the task alone or engaged in nonsupportive interactions (Brown, Sheffield, Leary, & Robinson, 2003; Jackson, Iezzi, Chen, Ebnet, & Eglitis, 2005). Moreover, the mere presence of another supportive individual (vs. being alone) reduced pain ratings in a cold pressor task (Brown et al., 2003; but see McClelland & McCubbin, 2008) and reduced pain ratings among fibromyalgia patients following stimulation to a painful body site (Montoya, Larbig, Braun, Preissl, & Birbauer, 2004).

Could the same pain-attenuating effects of social support be observed by merely activating the mental representation of a supportive other? Previous work has shown that activating mental representations of important others can produce effects similar to those created by the actual presence of these individuals (Fitzsimons & Bargh, 2003; Mikulincer & Shaver, 2001). Building on this research, the current study examined whether simply viewing a photograph of one's romantic partner could reduce physical-pain experience. We examined how this condition compared with one that is more consistent with previous conceptualizations of social support—one in which the participant held her partner's hand.

## METHOD

Participants were 28 right-handed women in long-term relationships (> 6 months). Three were excluded because of technical failures (final sample:  $n = 25$ ). Upon arrival, each participant was taken into the testing room; her partner was taken to a separate room to have his photograph taken for later use.

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After the participant provided consent, her pain threshold for thermal stimulation (a rating of 10, corresponding to moderate discomfort, on a scale from 0 to 20) was determined. She then placed her left arm behind an opaque curtain that was suspended from the ceiling. Throughout the study, a male experimenter behind the curtain delivered 6-s thermal stimulations to three alternating locations on the participant's left volar forearm, using a 9-cm<sup>2</sup> computer-controlled Peltier-type thermode (TSA-II, Medoc Inc., Ramat Yishai, Israel).

Each participant received a total of 84 thermal stimulations: Six stimulations (separated by 20-s intervals) were given during each of seven task conditions, and each condition was presented twice. Unbeknownst to the participant, half of the stimulations were at her threshold temperature and half were at her threshold plus 1°C. The seven study conditions (each lasting 3 min 14 s) were as follows: (a) holding the hand of the partner (as he sat behind the curtain), (b) holding the hand of a male stranger (the experimenter behind the curtain),<sup>1</sup> (c) holding an object (a squeeze ball), (d) viewing the partner's photographs (taken upon his arrival) on a computer screen, (e) viewing photographs of a male stranger (ethnicity-matched to the participant's partner), (f) viewing photographs of an object (a chair), and (g) viewing a fixation crosshair (no manipulation). Half of the participants completed the hand- and object-holding conditions first, and half completed the photograph conditions first.<sup>2</sup>

The participant rated each stimulation's "unpleasantness" by pointing to a number on the Gracely Box Scale (Gracely, McGrath, & Dubner, 1978), which is a 21-box numerical descriptor scale anchored with previously quantified verbal descriptors of pain unpleasantness. A female experimenter (who was on the participant's side of the curtain) recorded the ratings. To address a competing hypothesis that social support reduces pain because it distracts one from pain (Hodes, Howland,

<sup>1</sup>Although participants could not see behind the curtain, the experimenter told them whose hand they were holding—their partner's hand or a stranger's hand—in the respective conditions. All participants reported that they believed the experimenter.

<sup>2</sup>The fixation condition was randomly included with either the hand-holding/object-holding conditions or the photograph conditions, to form a set. The order of presentation was randomized within each set of three or four conditions.

Lightfoot, & Cleeland, 1990), we recorded participants' reaction times (i.e., the time it took them to press the space bar on the computer keyboard in front of them) to computer-generated beeps that were infrequently and randomly emitted throughout the study. This allowed us to assess whether participants were more distracted (as demonstrated by longer reaction times to the beeps) in the support conditions (partner hand-holding, partner photographs) than in the other conditions.

## RESULTS AND DISCUSSION

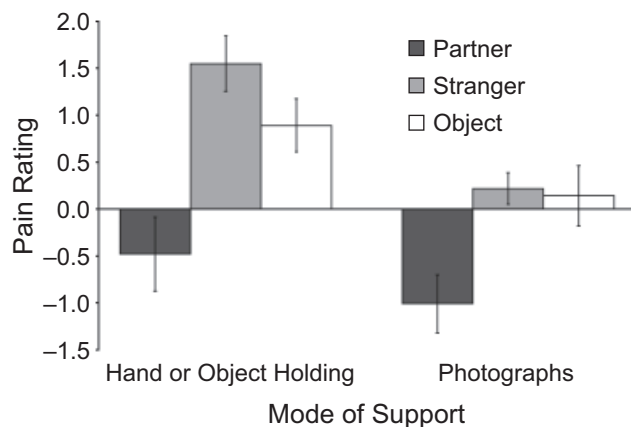
Average reaction times to the computer-generated beeps during the seven conditions were submitted to a one-way repeated measures analysis of variance (ANOVA). The manipulations were not found to be differentially distracting,  $F(6, 144) = 0.42$ ,  $p = .87$ ,  $p_{rep} = .21$ ; thus, it appears that social support was not confounded with distraction. For ease of interpretation, we next calculated difference scores, subtracting mean pain ratings in the fixation condition from mean pain ratings in each of the other conditions. A one-way ANOVA showed a significant main effect of condition on pain scores,  $F(5, 120) = 19.63$ ,  $p_{rep} > .99$ . Planned pair-wise comparisons revealed that, as expected, holding the partner's hand led to significantly lower pain ratings ( $M = -0.48$ ,  $SD = 1.97$ ) than holding an object ( $M = 0.89$ ,  $SD = 1.41$ ),  $t(24) = -4.73$ ,  $p_{rep} = .99$ ,  $d = 0.80$ , or holding a stranger's hand ( $M = 1.55$ ,  $SD = 1.47$ ),  $t(24) = -5.33$ ,  $p_{rep} = .99$ ,  $d = 1.17$ . Interestingly, the photograph conditions showed similar effects (Fig. 1)—viewing a partner's photographs led to significantly lower pain ratings ( $M = -1.01$ ,  $SD = 1.56$ ) than viewing photographs of an object ( $M = 0.14$ ,  $SD = 1.62$ ),  $t(24) = -4.37$ ,  $p_{rep} = .99$ ,  $d = 0.72$ , or viewing a stranger's photographs ( $M = 0.22$ ,  $SD = 0.84$ ),  $t(24) = -5.09$ ,  $p_{rep} = .99$ ,  $d = 0.98$ . In addition, pain ratings in the partner-photographs

condition were marginally lower than those in the partner-hand-holding condition,  $t(24) = -1.83$ ,  $p = .08$ ,  $p_{rep} = .84$ .<sup>3</sup>

These findings confirm the notion that simply viewing a loved one's picture can have pain-attenuating effects, and they fit with social psychological research showing that being primed with a social construct is enough to activate associated mental representations and to bias behavior (Ferguson & Bargh, 2004). Thus, seeing photographs of loved ones may prime associated mental representations of being loved and supported, which may be sufficient to attenuate pain experience. The findings suggest that bringing loved ones' photographs to painful procedures may be beneficial, particularly if those individuals cannot be there. In fact, because loved ones vary in their ability to provide support, photographs may, in some cases, be more effective than in-person support. In sum, these findings challenge the notion that the beneficial effects of social support come solely from supportive social interactions and suggest that simple reminders of loved ones may be sufficient to engender feelings of support.

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**Fig. 1.** Mean pain rating as a function of mode and source of support. Pain ratings on the ordinate are difference scores, which were calculated by subtracting mean pain ratings in the fixation condition from mean pain ratings in each of the other conditions. Thus, negative numbers indicate lower pain ratings during the condition of interest compared with fixation. Error bars represent standard errors of the mean.

<sup>3</sup>These effects of partner photographs were not likely due to expectancy effects; a separate sample of women who were in relationships (> 6 months;  $n = 11$ ) and were asked to imagine that they had completed the study predicted that they would have felt significantly less pain (relative to fixation) when holding their partner's hand than when viewing his photograph,  $t(10) = -3.24$ ,  $p_{rep} = .95$ ,  $d = 0.77$ .

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