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IN PRESS, *PSYCHOLOGICAL SCIENCE*

A Picture's Worth: Partner Photographs Reduce Experimentally Induced Pain

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Word count: 1,000

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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 may be a causal relationship. Participants receiving interactive support during a cold pressor task reported less pain than participants completing the task alone or engaging in non-supportive 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 following stimulation to a painful body site among fibromyalgia patients (Montoya, Larbig, Braun, Preissl, & Birbaumer, 2004).

Could the same pain-attenuating effects of social support be observed by merely activating the mental representation of a supportive other? Building upon previous work showing that activating mental representations of important others can have effects similar to their actual presence (Fitzsimons & Bargh, 2003; Mikulincer & Shaver, 2001), 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 twenty-eight, right-handed women in long-term relationships (>6 months). Three were excluded for technical failures (final sample: n=25). Upon arrival, the participant was taken into the testing room; her partner was taken to a separate room to have his photograph taken for later use.

After providing consent, the participant's pain threshold to thermal stimulation (a '10' on the 0-20 pain-rating scale described below, corresponding to 'moderate discomfort') was determined. She then placed her left arm behind an opaque curtain that hung from the ceiling. Throughout the study, a male experimenter delivered 6-s thermal stimulations to three alternating locations on her left volar forearm from behind the curtain with a 9cm² computer-controlled Peltier-type thermode (TSA-II, Medoc Inc.).

Participants 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+1°C. The seven study conditions (each lasting 3:14) were: 1) holding partner's hand (who was behind the curtain); 2) holding a male stranger's hand (the experimenter behind the curtain)¹; 3) holding an object (squeezeball); 4) viewing partner's photographs (taken upon his arrival) on a computer screen; 5) viewing a male stranger's photographs (ethnicity-matched to the participant's partner); 6) viewing photographs of an object (chair); and 7) viewing a fixation crosshair (no manipulation). Half of the participants completed the handholding conditions first and half completed the photograph conditions first (the order of presentation was randomized in each half). The participant rated each stimulation's 'unpleasantness' by pointing to a number on the Gracely Box Scale (Gracely, McGrath, & Dubner, 1978), which consists of 21 sequentially-numbered boxes arranged vertically with accompanying descriptors that convey degrees of pain unpleasantness (starting with 0="neutral"). 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, Lightfoot, & Cleeland, 1990), we recorded

participants' reaction times to computer-generated beeps that were infrequently and randomly disbursed throughout the study to assess whether the support conditions were more distracting (i.e., longer reaction times to the beeps) than 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 ANOVA. The manipulations were not found to be differentially distracting, $F(6,144)=.42, p=.87, p_{rep}=.21$, suggesting that social support was not confounded with distraction. For ease of interpretation, difference scores were next calculated; mean pain ratings from the fixation condition were subtracted from the mean pain ratings from 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 pairwise comparisons revealed that, as expected, partner handholding led to significantly lower pain ratings ($M=-.48, SD=1.97$) than object holding ($M=.89, SD=1.41$), $t(24)=-4.73, p_{rep}=.99, d=.80$, or stranger handholding ($M=1.55, SD=1.47$), $t(24)=-5.33, p_{rep}=.99, d=1.17$. Interestingly, the photograph conditions showed similar effects (Figure 1)—viewing partner photographs led to significantly lower pain ratings ($M=-1.01, SD=1.56$) than viewing objects ($M=.14, SD=1.62$), $t(24)=-4.37, p_{rep}=.99, d=.72$, or viewing strangers ($M=.22, SD=.84$), $t(24)=-5.09, p_{rep}=.99, d=.98$. Additionally, pain ratings in the partner photograph condition were marginally lower than those in the partner handholding condition, $t(24)=-1.83, p=.08, p_{rep}=.84$.²

These findings reveal that simply viewing a loved one's picture can have pain-attenuating effects. This fits with social psychological research showing that being primed with a social construct is enough to activate associated mental representations and to bias behavior accordingly (Ferguson & Bargh, 2004). Thus, seeing photographs of loved ones may prime

associated mental representations of being loved or supported, which may be sufficient to attenuate pain experience. Practically speaking, 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 support providing abilities, 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 feel supported.

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Footnotes

¹Although participants could not see whose hand they were holding, all participants reported that they believed they were holding their partner's or a stranger's hand in the respective conditions.

²These effects of partner photographs are not likely due to expectancy effects; a separate sample of women in relationships (>6 months; $n=11$), who 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 compared to when viewing his photograph, $t(10)=-3.24$, $p_{rep}=.95$, $d=.77$.

Figures

Figure 1: Mean Pain Ratings as a Function of Mode and Source of Support. Pain ratings on the ordinate represent difference scores, calculated such that the mean pain ratings from the fixation condition were subtracted from the mean pain ratings from each of the other conditions. Thus, negative numbers indicate lower pain ratings during the condition of interest compared to fixation.

Figure 1.

