
Women Support Providers Are More Susceptible Than Men to Emotional Contagion Following Brief Supportive Interactions

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Abstract

People in distress often turn to friends for emotional support. Ironically, although receiving emotional support contributes to emotional and physical health, providing emotional support may be distressing as a result of emotional contagion. Women have been found to be more susceptible than men to emotional contagion in certain contexts, but no studies examined the context of providing support to a troubled friend in a naturalistic setting. Our exploratory study aimed to test for gender differences in emotional contagion as a result of offering emotional support to a troubled friend. We studied naturalistic informal supportive interactions among 48 pairs of friends. Following an 8-min interaction with a troubled friend, (a) women were more likely than men to experience a deterioration in their positive emotional state and (b) changes in women's emotional state were positively correlated with changes in their troubled friends' emotional state, whereas changes in male support providers' emotional state were unrelated to changes in their troubled friends' emotional state. These results suggest that women are more susceptible than men to emotional contagion following brief interactions with a troubled friend, thereby highlighting the importance of conducting additional research into the costs and benefits of exchanging emotional support among friends.

Keywords

human sex differences, emotional contagion, social support, emotional support, social interaction, interpersonal communication, friendship

People in distress often turn to friends, spouses, or other family members for emotional support (Day & Livingstone, 2003; Decker, 2007). Receiving emotional support improves support recipients' emotional and physical health (Cohen & Janicki-Deverts, 2009; Thoits, 2011). Ironically, offering emotional support can be distressing for those who provide it as a result of *emotional contagion* (Hsee, Hatfield, Carlson, & Chemtob, 1990), which is defined as the tendency to take on emotions that others are experiencing. In the context of providing emotional support among friends, support providers may take on the negative emotions experienced by their support recipients and consequently experience distress. Because women may be more susceptible than men to emotional contagion, women may experience more emotional changes than men as a result of providing emotional support in everyday life. Our exploratory study sought to test whether such a difference can be detected following a brief supportive interaction between two friends.

Gender Differences in Susceptibility to Emotional Contagion

Emotional contagion between two persons is thought to be the result of a three-step process (Hatfield, Cacioppo,

& Rapson, 1993). First, Person A expresses emotion physically through facial expressions, body posture, quality of movement, and/or tone of voice. Second, Person B unconsciously mimics Person A's physical expression of emotion (Tamietto et al., 2009). Third, as a result of affective feedback (Strack, Martin, & Stepper, 1988), Person B experiences the emotion reflected in her body following the unconscious mimicry.

Beginning in infancy, girls and women perceive emotional facial expressions more sensitively and accurately than men (McClure, 2000; Montagne, Kessels, Frigerio, Haan, & Perrett, 2005). In addition, women exhibit greater facial mimicry than men when exposed to emotional faces (Sonnby-Borgström, Jönsson, & Svensson, 2008), possibly as a result of recruiting different neural networks when

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processing emotional faces (Schulte-Rüther, Markowitsch, Shah, Fink, & Piefke, 2008). Thus, women's greater propensity toward accurately mimicking emotional expressions may make them more susceptible to emotional contagion. However, researchers exploring gender differences in susceptibility to emotional contagion have reported mixed conclusions. Studies examining trait emotional contagion have found that women self-report a greater tendency than men to experience emotional contagion in their daily lives (Favre, Joly, Reynaud, & Salvador, 2009; Kevrekidis, Skapinakis, Damigos, & Mavreas, 2008). In contrast, studies examining state or situational emotional contagion, using prerecorded pictures and video clips of people displaying emotions, have been less conclusive. Although some researchers found that women experience greater emotional contagion than men (Doherty, Orimoto, Singelis, Hatfield, & Hebb, 1995), others reported no gender differences in situational emotional contagion (Kring & Gordon, 1998; Wild, Erb, & Bartels, 2001). These findings suggest that women may be more susceptible than men to emotional contagion in some contexts, although not necessarily in all.

Previous studies of gender differences in emotional contagion suffered from an important limitation to their ecological validity in that they employed either generalized self-report questionnaires or artificial emotional stimuli (i.e., photographs or video clips of strangers displaying specific emotions). Generalized questionnaires require participants to speculate about their tendency for emotional contagion, and such speculations are subject to memory biases (Robinson & Clore, 2002). Photographs and videos of emotional strangers, although capable of eliciting emotional responses, are likely to be less emotionally evocative than face-to-face interactions with distressed friends. Naturalistic dyadic interactions between friends offer a setting for emotional contagion that is qualitatively different than generalized questionnaires or photos/videos of emotional strangers. However, no known studies to date have examined gender differences in emotional contagion under naturalistic dyadic conditions—exactly the context in which supportive interactions are most likely to take place.

Studies of professional or paraprofessional support providers come a step closer to examining real-life, face-to-face interactions in which one party provides emotional support to another. Studies of domestic violence counselors (Slattery & Goodman, 2009), sexual assault advocates (Baird & Jenkins, 2003), and social workers (Bride, 2007) have all documented the emotional costs that are often associated with offering support to others in such settings. However, these studies did not test for gender differences; indeed, all or most participants in these studies were women.

The Present Study

In the present study, we tested for gender differences in the emotional contagion experienced by male and female friends

who provided support to a troubled friend in a naturalistic setting. Specifically, we tested for emotional contagion during a supportive interaction between pairs of friends regarding an issue that was distressing and current for one of the two friends. There were no confederates in our study. We aimed to simulate a situation in which an upset individual (the support recipient) contacts a friend (the support provider) who is engaged in enjoyable leisure activity in order to discuss a distressing issue. To this end, we engaged support recipients and support providers in different tasks prior to the supportive interaction: While support recipients wrote about a current distressing issue in their lives, support providers watched an amusing video clip.

Given that support recipients were expected to enter the interaction in a worse emotional state than support providers, we expected that support providers who are susceptible to emotional contagion would exhibit a deterioration in their emotional state. If female support providers are more susceptible to emotional contagion than male support providers, the average deterioration is likely to be greater for female support providers. Thus, we hypothesized that following a supportive interaction, female support providers will exhibit a greater deterioration in their emotional state than male support providers.

Support recipients' emotional state may change throughout the course of a supportive interaction, and emotional contagion may likewise operate throughout the interaction. In this manner, negative change in support recipients' emotional state could be associated with a greater deterioration in support providers' mood, whereas positive change in support recipients' emotional state could be associated with less deterioration (or improvement) in support providers' emotional state. If female support providers are more susceptible to emotional contagion than male support providers, this association is likely to be stronger for female support providers than for male support providers. Thus, we further hypothesized that changes in support providers' emotional state would be positively associated with changes in support recipients' emotional state and that this association would be stronger for female support providers than for male support providers.

Method

Participants

We recruited pairs of friends from the Philadelphia area to participate in a study about "how people talk with one another," using an electronic mailing list set up specifically for community members who are interested in behavioral studies. Participants were instructed to sign up for an on-campus, in-person session together with a friend, with no restriction as to the gender composition of the dyad. A total of 51 dyads enrolled in the study, but 3 dyads were dropped from analyses due to incomplete data. Thus, the final sample included 48 dyads (ages 18–33, $M = 20.30$, $SD = 2.79$). Of

the support providers, 28 were women and 20 were men. Of the 48 dyads, 31 were same gender and 17 were mixed gender. Ethnically, 47% of participants self-identified as Asian American, 30% as White, 8% as Black, 4% as Hispanic/Latino, and 10% declined to state their ethnic background. Nearly half the dyads (23, 48%) were made up of same-ethnicity participants.

Materials and Procedure

Upon arrival at the session, members of each dyad were randomly assigned to the role of either support recipient or support provider. Both friends first completed a baseline emotion probe in which they reported their emotional state using a core affect grid (Posner, Russell, & Peterson, 2005). The grid consisted of a 10-cm long vertical axis with the text anchor “numb” at the bottom and “worked-up” at the top (an “arousal” axis), and a horizontal 10 cm long axis with the text anchor “negative” on the left and “positive” on the right (a “valence” axis). No numbers were visible on the grid. Participants were initially provided with an explanation of how to use the grid and were instructed to ask the experimenter any questions they had prior to using it. Participants marked the spot that reflected their current emotional experience each time they were presented with the probe. Responses were converted to a 21-point scale on each axis, ranging from -10 to $+10$, with a neutral zero point. For the present study, we report ratings from the valence scale.

Support recipients were then instructed to write about “... a current challenge in your life that has been on your mind recently, an issue that has been strongly affecting your emotional state (for example, causing you to feel sad, angry, or anxious) ... This issue should have strong personal relevance for you.” After writing about an issue of their choice, support recipients completed a second (pre-conversation) emotion probe.

In order to test the emotional contagion between support providers and support recipients, it was important to ensure that support providers entered the supportive interaction in a different emotional state than support recipients. To this end, while support recipients were writing about an upsetting issue, support providers viewed selected clips from the improvisation comedy show “Whose Line Is It, Anyway?” (2006) similar to the ones we have used in previous studies (Magen & Gross, 2007). Following this task, support providers completed a second (pre-conversation) emotion probe.

Participants were then brought together and instructed to talk about the issue that was troubling the support recipient. Support recipients were instructed to begin the conversation by saying “there’s something that’s been on my mind ...” while the experimenter drew back to an adjacent room in order to preserve participants’ confidentiality and comfort. Although all conversations began with the support recipients’ statement of his or her problem, support providers were allowed to respond naturally, without being instructed to

respond in any specific manner, and therefore the specific topic or manner of conversations likely differed between different dyads. Participants talked for 8 min, at which point they were interrupted by the experimenter and asked to complete a final (post-conversation) emotion probe. All study procedures were approved by the Institutional Review Board at the University of Pennsylvania. All sessions were conducted by a female experimenter.

Results

Preliminary Analyses and Manipulation Checks

Upon arrival, the emotional state of support providers ($M = 2.28$, $SD = 4.33$) was similar to the emotional state of support recipients ($M = 3.15$, $SD = 3.88$), $t(94) = 1.04$, $p = .30$. Among support providers, the initial emotional state of men ($M = 2.46$, $SD = 4.60$) was similar to the initial emotional state of women ($M = 2.14$, $SD = 4.20$), $t(46) = 0.24$, $p = .81$.

In order to test the effect of the amusing video clips on support providers’ emotional state and to ensure that the effect was similar for men and women, we conducted a repeated-measures analysis of variance (ANOVA) with support providers’ gender as a fixed factor and support providers’ emotional state (baseline/pre-conversation) as the repeated-measures factor. We found a significant main effect of time on emotional state, $F(1, 46) = 54.62$, $p < .001$, $\eta p^2 = .54$, with no significant main effect for support provider’s gender, $F(1, 46) = 0.01$, $p = .91$, or for the interaction, $F(1, 46) = 0.23$, $p = .63$. A follow-up paired t test revealed that support providers’ emotional state improved as a result of viewing the amusing video clip ($M = 3.07$, $SD = 2.78$), $t(47) = 7.64$, $p < .001$. In contrast with support providers’ improvement in emotional state, support recipients’ emotional state deteriorated after writing about an upsetting topic ($M = -2.92$, $SD = 3.51$), $t(47) = -5.78$, $p < .001$. Consequently, as a result of the two manipulations, and immediately prior to the conversation, support recipients’ emotional state ($M = 0.22$, $SD = 4.64$) was significantly worse than support providers’ emotional state ($M = 5.35$, $SD = 3.25$), $t(94) = -6.26$, $p < .001$.

Gender Differences in Emotional Contagion

According to our first hypothesis, we expected female support providers’ emotional state to deteriorate more than male support providers’ emotional state following the supportive interaction. In order to test the effect of the supportive interaction on support providers’ emotional state, we conducted a repeated-measures ANOVA, with support providers’ gender as a fixed factor and support providers’ emotional state (pre-conversation/post-conversation) as the repeated-measures factor. We found no main effect of gender on emotional state, $F(1, 46) = 1.53$, $p = .22$; however, the main effect of time, $F(1, 46) = 6.95$, $p = .01$, $\eta p^2 = .13$, and the interaction, $F(1, 46) = 5.11$, $p < .03$, $\eta p^2 = .10$, were both

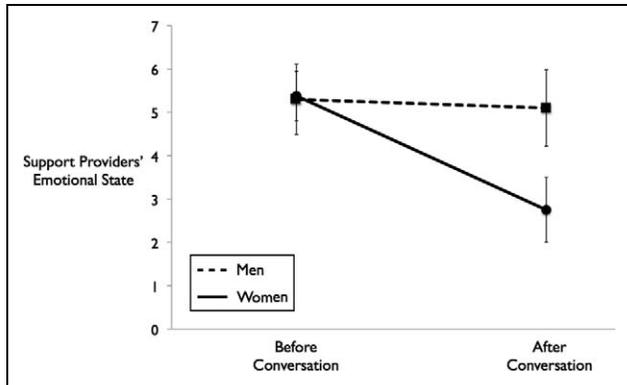


Figure 1. Support providers' emotional state, by gender, before and after the supportive interaction. Error bars represent ± 1 standard error (SE).

significant. Follow-up paired t tests revealed that female support providers' emotional state after the supportive interaction ($M = 2.75$, $SD = 5.38$) was worse than before the supportive interaction ($M = 5.38$, $SD = 3.02$), $t(27) = -3.42$, $p < .01$, whereas male support providers' emotional state after the supportive interaction ($M = 5.10$, $SD = 3.93$) was not different than their emotional state prior to the interaction ($M = 5.30$, $SD = 3.63$), $t(19) = -0.30$, $p = .77$ (Figure 1). Thus, as we had predicted, following the supportive interaction, female support providers exhibited a greater deterioration in their emotional state (reporting a significantly less positive emotional state) than male support providers (whose emotional state did not change).

We then explored two potential alternative explanations for our findings by testing whether changes to support providers' emotional states were related either (a) to the support recipients' gender or (b) to the dyadic gender composition. To test the first possibility, we conducted a repeated-measures ANOVA with support recipients' gender as a fixed factor and support providers' emotional state (pre-conversation/post-conversation) as the repeated-measures factor. We found no significant effects for support recipients' gender, $F(1, 46) = 0.16$, $p = .69$, or for the interaction of recipients' gender and time, $F(1, 46) = 0.47$, $p = .50$. To test the second alternative, we conducted a repeated-measures ANOVA with dyadic gender composition (same-gender/mixed-gender) as a fixed factor and support providers' emotional state (pre-conversation/post-conversation) as the repeated-measures factor. We found no significant effects for dyadic gender composition, $F(1, 46) = 0.44$, $p = .51$, or for the interaction between dyadic gender composition and time, $F(1, 46) = 0.14$, $p = .71$.

Dyadic Emotional Change

According to our second hypothesis, we expected changes in support providers' emotional state to be associated with changes in support recipients' emotional state and for this

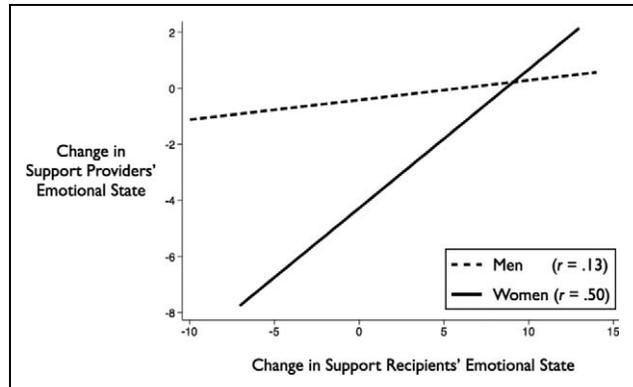


Figure 2. Gender-specific emotional contagion in supportive interactions. Regression lines represent the association between changes in support providers' emotional state and changes in support recipients' emotional state, by support providers' gender.

association to be stronger when support providers were women than when support providers were men. Although multilevel modeling is typically the technique of choice for this type of longitudinal analysis, time-series analysis requires a minimum of three time points (Singer & Willett, 2003, p. 10), because performing it with just two time points (as in our case) is essentially equivalent to using change scores. Thus, for ease of interpretation and presentation, we chose to test our hypothesis by calculating the correlation between support recipients' and support providers' change in emotional state (i.e., subtracting pre-conversation scores from post-conversation scores, with positive scores reflecting an improvement in emotional state and negative scores reflecting a deterioration in emotional state).

As we predicted, the change in female support providers' emotional state was positively associated with the change in their support recipients' emotional state, $r(26) = .50$, $p < .01$. The change in male support providers' emotional state was not associated with the change in their support recipients' emotional state, $r(18) = .13$, $p = .59$ (Figure 2). To ensure that this difference was not an artifact of the greater number of female support providers, we repeated the test using 10 random subsamples of 20 dyads. The results with female support providers remained largely unchanged, with a mean correlation coefficient of $r(18) = .50$, $p < .001$.

Discussion

Our study is the first known to document gender-based differences in susceptibility to emotional contagion among support providers. Specifically, female support providers in our study exhibited a significant deterioration in their emotional state after offering emotional support to a friend, whereas male support providers did not. Furthermore, the degree of change in female support providers' emotional state was associated with the degree of change in their support recipients' emotional state: When support recipients' emotional

state improved during the interaction, female support providers' emotional state was less likely to deteriorate. On the other hand, when support recipients' emotional state did not improve (or if it deteriorated) during the interaction, female support providers' emotional state was likely to deteriorate as well (Figure 2). This pattern is in sharp contrast to the one exhibited by male support providers, whose emotional state did not change in relation to changes in their support recipients' emotional state. Taken together, these results suggest that female support providers are more vulnerable to emotional contagion than male support providers, although the generalizability of this finding remains to be tested.

Why would such negative emotional contagion be more likely to occur among female support providers? We propose three possible causes as a starting point for future research. First, female support providers may have reported a deterioration in their emotional state due to social desirability, if they believed that the gender-normative response for women is to experience a deterioration in mood when conversing with a distressed friend. Second, and in a similar vein, it is possible that being effective supporters was more important to the women in our study than to the men. If this were the case, women may have tacitly measured their success based on the support recipient's improvement in mood. If the support recipient's mood did not improve, the support provider may have surmised that she was not an effective supporter, resulting in negative self-evaluation and worse mood. Finally, it is possible that women are truly more susceptible than men to emotional contagion in the context of supportive interactions with friends as a result of their greater sensitivity to emotional facial expressions (McClure, 2000; Montagne et al., 2005) and their greater tendency to mimic such expressions (Sonnby-Borgström et al., 2008). Such heightened susceptibility would be in line with the results of studies reporting greater susceptibility of women to emotional contagion in their daily lives (Favre et al., 2009; Kevrekidis et al., 2008) and in lab tests (Schulte-Rüther et al., 2008).

Is it possible that the emotional contagion exhibited by female support providers facilitated the emotional recovery of their support recipients? Our data do not support this line of reasoning, for two reasons. First, regardless of whether support providers were men or women, support recipients' emotional state improved to a similar extent. Therefore, female support providers' generally elevated susceptibility to emotional contagion did not translate into greater emotional relief for their support recipients. Second, deterioration in support providers' emotional state was never associated with an improvement in the support recipients' emotional state, as evidenced by the positive association between changes in support recipients' emotional state and changes in female support providers' emotional state. Therefore, our data demonstrate that feeling worse, as a support provider, does not contribute to the emotional recovery of the support recipient.

Our study had a number of limitations that should be taken into consideration when interpreting its results. First, allowing dyadic gender composition to vary naturalistically, combined with randomly assigning participants to the role of support recipient or support seeker, resulted in an unbalanced design with female–female dyads being more common than any other combination. Although the resulting data still enabled us to conduct the analyses presented here, a larger and more balanced sample would allow a more fine-grained inquiry into possible interactions of specific dyadic gender compositions. Second, most of our participants were young adults in their early 20s. The literature on life span changes in susceptibility to emotional contagion is at its early stages, with some suggestion that the effect is greater for young adults when compared with middle-aged adults (Baird & Jenkins, 2003). Therefore, we recommend caution when extrapolating our findings to different age groups. Third, from an ethnicity perspective, our sample consisted largely of Asian American and White participants, with relatively few participants from other ethnic groups. Ethnic and cultural variations in emotional contagion remain virtually unexplored, and our sample size did not permit us to test for interethnic gender differences in susceptibility to emotional contagion. Therefore, our findings should be interpreted with care when applied to populations that are more ethnically diverse, and future studies that directly compare ethnic variations in emotional contagion are warranted. Finally, the supportive interaction in our study consisted of a relatively short, 8-min long conversation. While many real-world interactions are just a few minutes long, other interactions are certainly longer, and we recognize the importance of studying the emotional dynamics of extended interactions, especially as they relate to burnout and compassion fatigue (Baird & Jenkins, 2003; Bride, Radey, & Figley, 2007). Similarly, although our study revealed no short-term benefits to the emotional contagion that support providers experienced, the long-term consequences of emotional contagion remain to be explored.

Supportive interactions among friends and family are ubiquitous in daily life, and these interactions confer important benefits on support recipients. Our findings highlight the importance of understanding the costs and benefits of exchanging support among friends in the course of daily life, in order to ensure that such interactions are more beneficial and more sustainable for both support providers and support recipients.

Authors' Note

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Declaration of Conflicting Interests

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