

# Arousal Increases Social Transmission of Information

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Social transmission is everywhere. Friends talk about restaurants, policy wonks rant about legislation, analysts trade stock tips, neighbors gossip, and teens chitchat. Further, such interpersonal communication affects everything from decision making and well-being (Asch, 1956; Mehl, Vazire, Holleran, & Clark, 2010) to the spread of ideas, the persistence of stereotypes, and the diffusion of culture (Heath, 1996; Heath, Bell, & Sternberg, 2001; Kashima, 2008; Schaller, Conway, & Tanchuk, 2002; Schaller & Crandall, 2004). But although it is clear that social transmission is both frequent and important, what drives people to share, and why are some stories and information shared more than others?

Traditionally, researchers have argued that rumors spread in the “3 Cs”—times of conflict, crisis, and catastrophe (e.g., wars or natural disasters; Koenig, 1985)—and the major explanation for this phenomenon has been generalized anxiety (i.e., apprehension about negative outcomes). Such theories can explain why rumors flourish in times of panic, but they are less useful in explaining the prevalence of rumors in positive situations, such as the Cannes Film Festival or the dot-com boom. Further, although recent work on the social sharing of emotion suggests that positive emotion may also increase transmission, why emotions drive sharing and why some emotions boost sharing more than others remains unclear.

I suggest that transmission is driven in part by arousal. Physiological arousal is characterized by activation of the autonomic nervous system (Heilman, 1997), and the mobilization provided by this excitatory state may boost sharing. This hypothesis not only suggests why content that evokes more of certain emotions (e.g., disgust) may be shared more than other content (Heath et al., 2001; Luminet, Bouts, Delie, Manstead, & Rimé, 2000; Peters, Kashima, & Clark, 2009; see Rimé, 2009, for a review), but also suggests a more precise prediction, namely, that emotions characterized by high arousal, such as anxiety or amusement (Gross & Levenson, 1995), will boost sharing more than emotions characterized by low arousal, such as sadness or contentment.

This idea was tested in two experiments. They examined how manipulations that increase general arousal (i.e., watching emotional videos or jogging in place) affect the social

transmission of unrelated content (e.g., a neutral news article). If arousal increases transmission, even incidental arousal (i.e., outside the focal content being shared) should spill over and boost sharing.

## Experiment 1: Specific Emotion

In the first experiment, 93 students completed what they were told were two unrelated studies. The first evoked specific emotions by using film clips validated in prior research (Christie & Friedman, 2004; Gross & Levenson, 1995). Participants in the control condition watched a neutral clip; those in the experimental conditions watched an emotional clip. Emotional arousal and valence were manipulated independently so that high- and low-arousal emotions of both a positive (amusement vs. contentment) and a negative (anxiety vs. sadness) nature were evoked in different conditions. Participants rated how aroused they felt after watching the video, using three 7-point scales (passive–active, mellow–fired up, and low–high energy). These ratings were averaged to form an arousal index ( $\alpha = .85$ ).

In what participants were told was the second study, social transmission was measured. Participants were shown an article and a video, both pretested to be emotionally neutral, and rated how willing they would be to share each with friends, family members, and coworkers, using a scale ranging from 1 (*not at all*) to 7 (*extremely*). Ratings for the article and video were averaged to form an index of social transmission ( $\alpha = .74$ ).

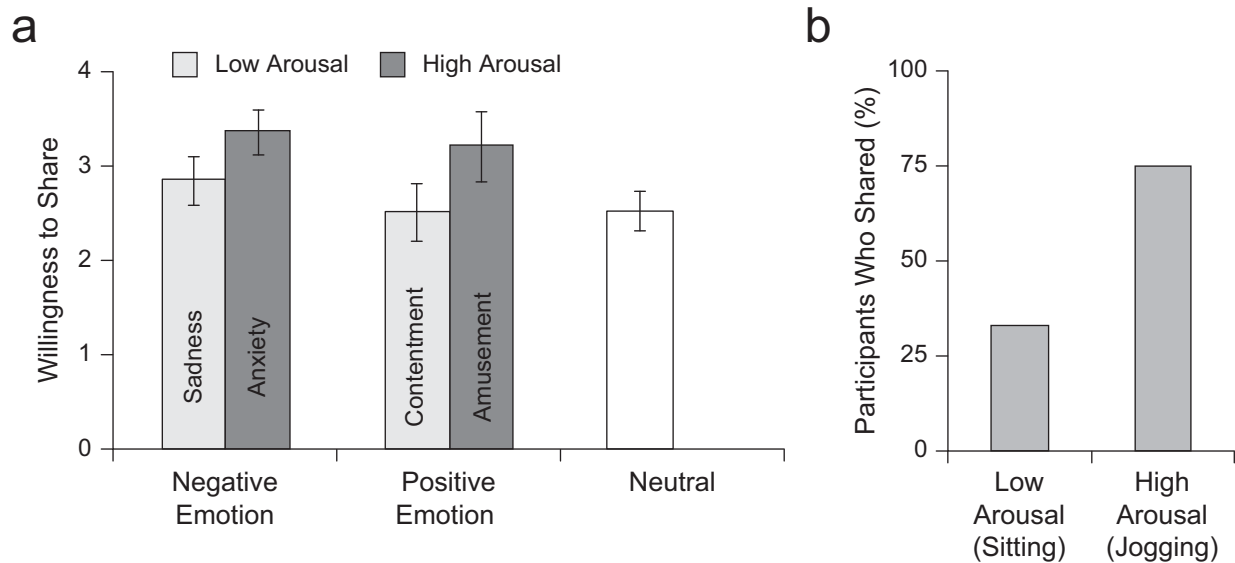
A 2 (valence: positive, negative)  $\times$  2 (arousal: high, low) analysis of variance (ANOVA) on social transmission revealed only a main effect of the arousal manipulation (Fig. 1a). Compared with participants induced to feel contentment or sadness (low arousal), participants induced to feel amusement or anxiety (high arousal) were more willing to share content with

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**Fig. 1.** Experimental results. For Experiment 1 (a), willingness to share information with other people is shown as a function of induced emotion. Error bars represent  $\pm 1$  SEM. For Experiment 2 (b), the percentage of participants who actually shared information is shown as a function of previous activity.

other people,  $F(1, 71) = 6.65, p < .05$ . In addition, comparing each experimental condition with the control condition indicated that emotions characterized by high arousal boosted transmission,<sup>1</sup>  $t(89) = 2.30, p = .02$ , for anxiety and  $t(89) = 1.72, p = .09$ , for amusement.

Finally, a mediation analysis was used to further test the driving role of arousal in these effects. Results were consistent with the rationale behind this experiment. Felt arousal mediated the effect of emotion induction on social transmission (Sobel's  $z = 2.27, p < .05$ ). (See the Supplemental Material available online for additional information on the method and results of this experiment.)

## Experiment 2: Jogging

In Experiment 2, arousal was manipulated outside of an emotional context. Forty students completed what appeared to be two unrelated studies.

In the first study, participants were told that the experimenters were interested in how bodily states affect visual perception. They either sat still or jogged lightly in place for 60 s, a task shown to boost general arousal (Wegner & Giuliano, 1980). Then they were asked to rate the brightness of five neutral images (this task was intended to complete the cover story). Finally, in what they were told was a second, unrelated study, participants read a neutral online news article that they could e-mail to anyone they wanted.

Arousal again boosted sharing of information. Compared with sitting still, running in place increased the percentage of people who e-mailed the article (from 33% to 75%),  $\chi^2(1, N = 40) = 6.67, p < .01$  (see Fig. 1b). Participants also rated how positive they felt, but positivity was not related to sharing,  $r = -.09$ ,

$p > .50$ ; this result casts doubt on the possibility that mood drove the observed effect.

## General Discussion

When and why do people share stories, news, and information? Rather than narrowly focusing on diffuse notions of anxiety or emotion in general, the current research took a broader approach. It demonstrates that physiological arousal can plausibly explain transmission of news or information in a wide range of settings. Situations that heighten arousal should boost social transmission, regardless of whether they are positive (e.g., inaugurations) or negative (e.g., panics) in nature.

These findings have a number of important implications. First, they suggest that arousal-inducing content should be shared more than content that does not induce arousal. Public-health information, for example, might spread more effectively if it evokes anxiety rather than sadness. More broadly, the findings suggest how psychological processes might shape collective outcomes (i.e., culture): More arousing content should be more likely to spread quickly on the Internet and should be more likely to capture public attention (Berger & Milkman, 2011). Future research might examine how specific action tendencies evoked by different emotions affect the transmission of news and information and whether these effects vary according to culture or audience. Overall, this work sheds light on what people talk about and why (Berger & Schwartz, in press) and how internal states (i.e., arousal) shape interpersonal communication.

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### 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.

### Supplemental Material

Additional supporting information may be found at <http://pss.sagepub.com/content/by/supplemental-data>

### Note

1. Sadness,  $t < 1$ ,  $p > .36$ , and contentment,  $t < .1$ ,  $p > .96$ , neither increased nor decreased social transmission.

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