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The Public Heart: the Impact of Sharing Emotions on Social Media

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This research demonstrates that posting brand-related emotions online (e.g., I love Starbucks) changes the intensity of these emotions, depending on the size of the audience. Specifically, posting to larger audiences decreases (increases) emotional intensity for those low (high) in public self-consciousness. Closeness with the audience mediates these results.

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Emotional Sharing in Social Networks: Its Stability Within and Impact on Sharers

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Paper #1: Collective Feelings: The Predictable and Systematic Nature of Human Emotion Expression Over Time

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Paper #2: Positive with Strangers, Negative with Friends: How Interpersonal Closeness Affect Word-of-Mouth Valence through Self-Construal

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Paper #3: If the Future Feels Fine: When Are People Likelier to Share the Past or the Future?

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Paper #4: The Public Heart: The Impact of Sharing Emotions on Social Media

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SESSION OVERVIEW

Hardly a waking hour goes by without communication. Millions of tweets and Facebook messages are shared each day, and people share all sorts of their and others' stories and news with friends and colleagues. This interpersonal communication is not only frequent, it is also important. The content of what people share affects everything from the products people buy (Chevalier and Mayzlin 2006) to the drugs doctors prescribe (Iyengar et al. 2011).

But, what role does the emotional charge of the content play in sharing? Emotional experiences happen all the time. People see upbeat movies, dread an upcoming exam, or sit through an embarrassing date. But while some work has begun to examine when people share positive versus negative word of mouth (Angelis et al. 2012; East, Hammond, and Wright 2007) and other work has demonstrated the more emotional things are more likely to be shared (Berger 2011; Berger and Milkman 2012; Rime 2009), we still know extremely little about the role of emotion in interpersonal communication. For example, how does sharing emotion impact the person who shares it? How do aspects of the audience (e.g., whether they are close or distant others), impact whether people share positive or negative word of mouth? How does emotion impact whether people talk about the future or the past? Is the expression of one emotion online related to future expression of other emotions? With what frequency are specific emotions, and not just valences, conveyed?

This session addresses these, and related questions, as it integrates various research perspectives to deepen our understanding of the relationship between emotion and word of mouth. **Stephen and Verocchi Coleman** analyze over 100,000 social media posts to ascertain the prevalence, stability, and evolution of specific emotions, finding firstly that some emotions (guilt, shame) are more stable and predictable than others (happiness, anger), and secondly that some emotions develop and evolve into others while neutral words do not. **Dubois, Bonezzi, and De Angelis** study when people share positive or negative word of mouth, demonstrating that close others activate an interdependent construal which leads people to share more nega-

tive things. **Weingarten and Berger** examine how emotionality impacts when people talk about, finding that people are more likely to talk about the same event if it is happening in the future because it evokes greater emotion. Finally, **Weber, Moore, MacDonnell, and Argo** study how emotional sharing affects the sender, illustrating that audience size (small versus large) moderates whether people feel more or less intense after emotional expression.

Taken together, these talks examine the multiplex ways in which emotion shapes, and is shaped by, word of mouth. We not only explore how audience factors such as tie-strength may influence word of mouth valence, but how emotionality can influence when people talk about, and how emotional sharing affects the sender.

Given the importance of interpersonal communication, this session should appeal to a wide range of audiences, including researchers who study word of mouth, emotion, social influence, self-regulation, attitude change, social connectedness, and social networks.

Collective Feelings: The Predictable and Systematic Nature of Human Emotion Expression Over Time

EXTENDED ABSTRACT

A fundamental characteristic of human communication is expressing emotion, which facilitates interpersonal communication and fosters collective understanding. Expressed emotions thus play a key role in organizing social systems. Emotions are so important to social interaction that emotionally deficient individuals have been shown to face social isolation, stunted relationships, and reduced well-being (Thoits 1985). However, despite the importance of emotions to people's relationships and interactions, researchers have been unsuccessful in reliably predicting individuals' emotional states over time, largely because emotions individuals experience and express are often caused by unforeseen situations. Thus, emotions are thought to be inherently unpredictable and predicting the patterns of specific emotions as they unfold over time is very difficult, if not completely impossible (for both biological and psychological reasons; Larsen & Kasimatis 1990). However, being able to predict emotions—or at least observe systematic patterns over time—could be beneficial. For example, predicting the collective emotional state of a population could be useful in diverse fields, such as public health monitoring, political campaigns, advertising, and marketing.

This research shows that it is possible to identify stable intertemporal patterns of emotional experience when individuals' emotions are examined in the aggregate. Our findings suggest that emotions may have properties similar to other phenomena that appear to be random at the micro level but are more systematic when examined at the macro level or in the aggregate. These phenomena, often termed "superorganisms," are manifestations of collective behavior whereby knowledge and behavior is shifted from the individual to the collective (Hölldobler & Wilson 2009). For example, this phenomenon has been found in the popular "wisdom of crowds" concept and economic prediction markets for events as diverse as elections and sporting events (Arrow et al. 2008).

We find a similar property exists when individuals' expressions of emotions in social media are examined over time in the aggregate. Although individuals' emotions might fluctuate randomly when examined by themselves, when they are looked at collectively they appear to have some stable and predictable patterns. We use data cover-

ing emotion expressions in social media posts over a 330-day period from January 1 to November 25, 2012. Social media is an ideal environment for studying emotions over time because users appear to express a range of emotions on a daily basis through what they write. Since emotions play a pivotal role in both communication and social relations, and social media is a pervasive and frequently used form of communication, examining emotions in the context of social media helps develop better understandings of both human communication and collective emotions.

Our data is comprised of daily samples of English-language social media posts that were collected by a research agency that randomly drew posts from all publicly available social media posts. The sampled posts were passed through a natural language processing algorithm that identified expressions of each of eight common emotions: anger, disgust, embarrassment, fear, guilt, happiness, sadness, and shame. For each day we know the number of posts in the sample that were identified as expressing each of these emotions. Our dataset contains 6,947,808 posts in which these emotions were expressed. We first examined the relative prevalence of these emotions in posts and how they varied over time. Fear, happiness, and guilt were the three most expressed emotions, and embarrassment was the least expressed emotion. On any given day, fear, guilt, and happiness were likely to be the most-expressed emotions, although there was some between-day variation in which of these emotions was the most prevalent. For example, the daily share of posts with expressions of fear—the generally most prevalent emotion—ranged from 4.20% to 43.94% (mean = 22.68%). There was also substantial between-day fluctuation in numbers of posts expressing each emotion.

We then considered whether these observed fluctuations over time were stable, systematic, and therefore at least potentially predictable, which would be evidence supporting our hypothesis that, when examined collectively, emotions do exhibit systematic intertemporal patterns. One way to test for the predictability of a time series is to examine its stochastic properties to see whether it is “stationary” or “non-stationary.” A “stationary” time series has constant mean and finite variance over time, thus making the series predictable in the sense that it will revert to the mean. A “non-stationary” time series has a mean and variance that change randomly (e.g., a random walk), which makes the series completely unpredictable because it will never revert to a stable mean level. We found that all of the eight emotions’ time series were stationary, either directly (five out of eight) or after accounting for time-trend components. Finally, we tested how accurately each emotion could be predicted into the future by fitting forecasting models to data. The fits of these models varied across emotions, indicating that not all emotions are as collectively systematic and predictable as others. For example, the model for happiness had excellent predictive fit but the model for disgust did not. However, the worst-fitting model still managed to account for 26% of the variance in the emotion, and averaging across emotions, the mean forecasting fit was high (mean $r^2 = .52$, std. dev. = .20).

While each emotion’s intertemporal variation indeed has an unpredictable random component, these results indicate that there is a nontrivial, relatively sizeable systematic component and, critically, that these time series are all stationary and expected to be stable in the long run. Prior to this current investigation, anticipating what the general emotional state of a population will be, based on current emotion states, would have been considered an exercise in futility—however, the present findings demonstrate that that type of aggregate-level prediction is, in fact, possible.

Positive with Strangers, Negative with Friends: How Interpersonal Closeness Affect Word-of-Mouth Valence through Self-Construal

EXTENDED ABSTRACT

A great deal of research in word-of-mouth (WOM) has aimed to understand whether consumers are more likely to share positive or negative information (Brown & Reingen 1987; Herr, Kardes, & Kim 1991). While some scholars have shown negative can trump positive WOM (e.g., Kamins, Folkes, & Pernes 1997), others have found positive WOM to prevail (e.g., East, Hammond, & Wright 2007). Yet, little is known about *when* consumers are more likely to share positive versus negative WOM.

This research explores the role of interpersonal closeness as one factor that can influence consumers’ tendency to share positive versus negative information. By interpersonal closeness, we refer to the perceived psychological proximity between a sender and a recipient (Gunia, Sivanathan, & Galinsky 2009). Perceived proximity can stem from social similarity (Latanè et al. 1995), tie strength (Marsden and Campbell 1984), or even the type of language used (Brown and Gilman 1960). To illustrate, the more two people have strong ties, occupy similar roles in society or share particular physical or physiological traits, the higher their interpersonal closeness.

Our theorizing builds off the premise that the act of communicating, because it is embedded within social interactions, might activate different social identities in senders’ mind (Brewer 1991). That is, addressing a close other should bring in mind social identities in which the self is closely associated with others (e.g., a friend); in contrast, addressing a distant other should bring in mind social identities in which the self is remotely associated with others (e.g., a distant acquaintance). Thus, communicating to a close other might highlight assimilation motives and activate an interdependent self-construal but communicating to a distant other might highlight contrasting motives and activate an independent self-construal. Self-construal refers to the extent to which the self is defined independently of others or interdependently (Markus and Kitayama 1991; Gardner et al. 1999). In turn, we propose that differences in self-construal might affect the valence of information a WOM sender might share by shifting the salience of positive vs. negative information. In support for this proposition, ample research has shown that changes in self-construal affect regulatory goals (Aaker and Lee 2001) and subsequently direct people’s attention to positive vs. negative information (Idson, Liberman, & Higgins, 2000; Cunningham et al. 2005).

Thus, we hypothesize that low interpersonal closeness activates an independent self-construal, prompting senders to share more positive relative to negative information, whereas high interpersonal closeness activates an interdependent self-construal, prompting senders to share more positive relative to negative information. Two experiments test this hypothesis.

Experiment 1 tested our basic hypothesis that senders of a WOM message tend to share more negative information, relative to positive information, the closer they feel to the message recipient. French participants read a review of a camera containing four positive and four negative attribute and wrote a WOM message to an hypothetical recipient either using the T pronoun (*tu*, typically used with close others) or the V pronoun (*vous*, typically used with distant others; Brown and Gilman 1960). Importantly, a separate pre-test revealed that merely using T-form (V-form) when answering the Singelis scale (1994) activated an interdependent (independent) self-construal. We counted the number of positive and negative attributes in the messages generated. Results revealed that participants included more negative attributes in their message when using the

T-form than when using the V-form ($p < .01$), suggesting that people shared more negative (positive) WOM when addressing a close (distant) other.

Experiment 2 aimed to further investigate the role of self-construal. That is, if the effect stems from differences in self-construal, activating an interdependent mindset should increase the relative proportion of cons in senders' message, even when senders feel distant from recipients; in contrast, activating an independent mindset should increase the relative proportion of pros in senders' message, even senders feel close from recipients. (Sedikides et al. 1993).

To examine this possibility, we manipulated interpersonal closeness between senders and recipients and their self-construal before participants wrote a WOM message using a 3 (self-construal: interdependent vs. independent vs. baseline) \times 2 (relationship: close vs. distant) between-subjects design. First, participants interacted in pairs with another participant to increase feelings of closeness by asking a series of questions to one another (Sedikides et al. 1993). At the end of the interaction, half of the participants stayed with their assigned partner for the following information-sharing task (close condition; initial pair preserved); the other half of the participants switch partner (distant condition; new pair formed). Next, we assigned one of the pair member to be a WOM sender and the other pair member to be a WOM recipient. We asked senders to write about their last experience at a restaurant and share this information with the recipient. However, before engaging in this information-sharing task, senders completed a self-construal priming task (Gardner et al. 1999) in the interdependent condition and in the independent condition. Senders assigned to the baseline condition did not complete any task.

We computed a valence index (number of positive thoughts minus negative thoughts divided by total number of thoughts). In the baseline condition, participants wrote more negative messages when addressing a close recipient than addressing a distant recipient ($p < .05$), replicating Experiment 1. When primed to be independent, participants' messages were positive ($p < .05$) and similar to messages generated in the baseline distant condition (ns). In contrast, when primed to be interdependent, participants' messages were negative ($p < .05$) and similar to messages in the baseline close condition (ns). Put simply, making senders more interdependent led them share more negative messages, even when addressing distant others. In contrast, making senders more independent led them share more positive messages, even when addressing close others.

Overall, this research provides new insights on WOM diffusion by investigating how a central feature of WOM communication – interpersonal closeness between senders and recipients – influence the sharing of positive vs. negative information. We show that consumers tend to share more positive information with distant compared to close others, and that this effect stems from the activation of different self-construal. Implications for WOM and self-construal are discussed.

If the Future Feels Fine: When Are People Likelier to Share the Past or the Future?

EXTENDED ABSTRACT

People talk frequently about emotional experiences they face in everyday life. They may discuss embarrassment due to running into an old girlfriend a day earlier, a recent frustrating sports game, or excitement about the upcoming weekend. But, how might the temporal position of an event, its placement in the past or future, change whether people talk about the event? Will people be likelier to discuss the same concert a week before or a week after it happens?

We propose that whether people are likelier to discuss events in the future or past depends on two factors: emotionality and self-presentation. Past word of mouth research has emphasized that people are likelier to share more emotional events (Berger 2011; Berger and Milkman 2012), and other work suggests the future is more emotionally evocative than the past (Van Boven and Ashworth 2007). Therefore, an event coming up in the future will be likelier to be shared than the same event in the past due to the former's heightened emotionality.

However, this pattern should be moderated by whether the event reflects well or badly on the sharer. Self-presentation has a major impact on what people share: people are likelier to share things that reflect favorably rather than unfavorably on them (De Angelis et al. 2012; Wojnicki and Godes 2008). We therefore propose that the future's increased emotionality will decrease sharing when the content reflects negatively on the sharer, but will increase sharing otherwise.

We test these hypotheses in 6,000 social media posts and two laboratory studies.

Study 1: Field Data

We first examined the distribution of past and future across social media posts and whether the future tended to have fewer negative posts, which may have content that reflects badly on people. We collected 3,000 tweets and 3,000 statuses and coded them based on when the posters were discussing (e.g., yesterday, an hour from now, a month from now). These tweets and statuses were also coded on valence (e.g., positive or negative). We found that for posts over a day from now, people were likelier to discuss future events versus past events ($\chi^2(1, N = 346) = 44.439, p < .001$). Consistent with our theory, these future posts had more positive (68.94%) events relative to neutral (8.95%) and negative (22.13%) events compared to past positive (49.55%) versus neutral (5.40%) and negative events (45.05%; $\chi^2(2, N = 346) = 19.15, p < .001$). This pattern may suggest that at temporal distances over a day away during which there is more future shared, there is less content that potentially reflects negatively on the sharer.

Two laboratory studies further test our hypotheses.

Study 2: Vacation

Study 2 tests how time frame and temporal distance influence sharing. Participants were asked to imagine that they were either going on week-long vacation at a friend's vacation a week from now (future condition) or had come back a week ago (past condition). We also manipulated if the vacation was a week from then or a month to test the generalizability of the effect. We asked participants to indicate how likely they would be to talk about the vacation with others and how emotional (happy) thinking about the vacation home made them.

First, as expected, a 2 (Past vs. Future) \times 2 (Week vs. Month) ANOVA showed a main effect of time frame ($F(1, 214) = 20.57, p < .001$). Participants were likelier to share using the vacation home in the future ($M = 5.94$) as opposed to the past ($M = 5.12$). Second, the same ANOVA on emotionality revealed a main effect of time frame: participants felt happier thinking about the vacation if it was in the future ($M = 5.94$) as opposed to the past ($M = 5.60$); $F(1, 214) = 8.22, p = .005$. Third, felt emotion mediated the impact of time frame on sharing (95% CI [.073, .396]). Taken together, Study 2 demonstrates that people are likelier to talk about the same event in the future (compared to the past) due to the heightened emotionality of the future.

Study 3: Court.

Study 3 explores whether the increased likelihood of discussing future events is moderated by if the event reflects negatively on the sharer.

Participants read about having a court date one week from now (future condition) or ago (past condition). We also manipulated whether the event reflected badly on them (they were in court for stealing from a local shop) or not (they were in court for jury duty). We measured participants' willingness to talk about this event with others and their felt emotionality.

As predicted, there was a Future x Reflection on Self interaction ($F(1, 599) = 8.20, p = .004$). When the event did not reflect negatively on them (i.e., they were in court for jury duty), participants were more likely to talk about it if it was happening in the future ($M = 5.13$) than if it happened in the past ($M = 4.51$; $F(1, 599) = 10.75, p = .001$). When the event did reflect negatively on them (i.e., they were in court for stealing), the pattern reversed, albeit nonsignificantly: people were slightly likelier to talk about the event if it was in the past than in the future ($M = 2.35$ vs. $M = 2.18$; $F(1, 599) = .73, ns$).

Moreover, a moderated mediation analysis shows that mood mediates these effects (95% CI [-.55, -.14]). As expected, feeling worse increased sharing when the event did not reflect negatively on the sharer (i.e., jury duty, 95% CI [.05, .24]) but decreased sharing when it did (i.e., stealing, 95% CI [-.35, -.05]).

Taken together, these results provide evidence for our hypotheses that (1) emotionality can drive people to talk about future (versus past) things and (2) that these effects are moderated by whether the event reflects negatively on the speaker.

In conclusion, these field data and laboratory studies enhance our understanding of the psychological processes underlying "when" people talk about, and can inform how processes such as emotionality and self-presentation interact.

The Public Heart: The Impact of Sharing Emotions on Social Media

EXTENDED ABSTRACT

Social media is a rapidly growing venue where consumers and firms can converse with larger audiences than ever before. For instance, Facebook has over one billion users and 15 million brands in their network (Koetsier 2013), and Facebook users have an average of 190 friends (Backstrom 2011). Across these platforms, sharing emotional content is common (e.g., minutes after Michael Jackson's death, the number of status updates on Facebook more than doubled; Facebook Data Science 2009). However, prior research has primarily focused on one-on-one emotional sharing (i.e., narrowcasting; Rimé et al. 1991). Our work investigates how broadly sharing positive brand-related emotions via social media impacts the sharer. We posit that when individuals share emotions, the intensity of these emotions changes depending on the size of the audience with whom they share (broad vs. narrow), and on their public self-consciousness (PSC; Fenigstein, Scheier and Buss 1975).

When they have an audience, individuals focus on themselves as an object of attention increases (Carver and Scheier 1978), and when they have broad social-media audiences, individuals focus even more on how their audience perceives them (e.g., Berger and Milkman 2012; Karakayali and Kilic 2013; Vitak 2012). Thus, we predict that sharing broadly (i.e., to a large audience) forces attention away from the emotion that is being shared and instead onto the sharer and their audience's perceptions, inhibiting individuals' ability to relive the emotion, and dampening it instead.

This should be particularly true of individuals low in PSC (LPSC), who do not normally focus on their audiences; thus, we expect LPSCs will feel more (less) intense after narrowcasting (broadcasting). However, focusing on the audience should be natural for individuals high in PSC (HPSC), who are habituated to considering their audience (Kassin 1984); thus, they should be able to relive emotions shared broadly. Further, because HPSCs care about how they are perceived by others (Bushman 1993) they should consider the social benefits they gain by sharing *positive* emotions, which will reflect well on them (cf. Berger and Milkman 2012). As such, broadcasting (narrowcasting) positive emotions should make HPSCs' emotions more (less) intense.

Finally, we expect that feelings of closeness with their sharing audience will mediate our results for HPSCs. This group focuses on their audience naturally and should thus feel more in tune and closer to them, especially when they share their positive emotions and experiences with them. LPSCs are less used to considering their audiences (Fenigstein 1984) and may not feel as close with them when they share. In general, we predict that sharing with an audience with whom one is (not) close will (dampen) increase emotional intensity.

Study 1 used a within-subjects design to determine whether broadly sharing a positive brand-related emotion via Facebook could dampen its intensity. Undergraduates ($N=57$) described a recent brand experience and reported how positive and intense the emotional experience was (4 items, pre-sharing). They then posted an "I love [brand]!" status update on their Facebook account, and completed the same measures about the emotional experience (post-sharing; $\alpha > 0.87$). Consistent with our predictions, participants' emotions were significantly less intense post-sharing ($M_{\text{post}} = 4.46, M_{\text{pre}} = 5.03$; $t(56) = 4.64, p < .01$). Further, a measure of how close individuals felt with the "majority of [their] Facebook friends" significantly predicted this decrease in emotional intensity, providing early evidence for our mediator.

Study 2 used a 2 (PSC: high vs. low) by 2 (Facebook sharing: broad vs. narrow) between-subjects design. Undergraduates ($N=81$) recalled a recent positive experience they had at a restaurant and then reported the name of the restaurant and the positive emotion they experienced. They then logged into their Facebook accounts and either posted a status update (broad) that said "I love [restaurant]!" or sent the same message to a single friend of their choosing (narrow). Following this, participants completed emotional intensity measures ($\alpha = 0.78$) about the experience and a single-item measure of audience closeness. PSC was measured at the start of the semester via mass testing.

The two-way interaction between sharing and PSC was significant ($F(3, 69) = 9.408, p = .003$). Using bootstrapping and Hayes' (2013) simple moderation model, we decomposed the interaction between our broad (post) vs. narrow (message) conditions. At the mean level of PSC, there was no difference for sharing ($p > .8$). However, LPSCs (-1 SD) had lower emotional intensity, while HPSCs (+1 SD) had higher emotional intensity, after sharing broadly compared to narrowly. Moderated mediation analysis showed that audience closeness significantly mediated ($p < .05$) the impact of sharing on emotional intensity for those at the mean and high levels of PSC, but not for those low in PSC.

Study 3 will hold audience size constant (broad) and use a 3 (Facebook sharing: own vs. brand vs. neutral) by measured PSC between-subjects design. We will manipulate whether participants post a positive status update about a brand to their own Facebook page, the brand's page, or a neutral page setup by the experimenters. This will assess the impact of audience *type*, where posting on one's own page is broadcasting to friends—whose perceptions can be anticipat-

ed by HPSCs, and from whom positive benefits can be gained—but posting on a brand or neutral page is broadcasting to an unknown audience, whose reactions will be unknown and from whom positive benefits are not be as important. To the extent that HPSCs gain emotional intensity by anticipating that sharing reflects well on them in the eyes of their friends, we should replicate our Study 2 findings in the “own” page condition. In the “brand” and “neutral” page conditions, we expect no intensity boost for HPSCs, but rather mitigated emotional intensity, as with LPSCs. We will also measure the extent to which individuals focus on themselves, their audience, and their emotions, to elucidate the underlying process.

The current investigation finds that individuals high (low) in PSC feel more (less) intense after sharing positive emotions broadly. Closeness with one’s audience mediates the findings for HPSCs.

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