

The Virtues of Gossip: Reputational Information Sharing as Prosocial Behavior

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Reputation systems promote cooperation and deter antisocial behavior in groups. Little is known, however, about how and why people share reputational information. Here, we seek to establish the existence and dynamics of *prosocial gossip*, the sharing of negative evaluative information about a target in a way that protects others from antisocial or exploitative behavior. We present a model of prosocial gossip and the results of 4 studies testing the model's claims. Results of Studies 1 through 3 demonstrate that (a) individuals who observe an antisocial act experience negative affect and are compelled to share information about the antisocial actor with a potentially vulnerable person, (b) sharing such information reduces negative affect created by observing the antisocial behavior, and (c) individuals possessing more prosocial orientations are the most motivated to engage in such gossip, even at a personal cost, and exhibit the greatest reduction in negative affect as a result. Study 4 demonstrates that prosocial gossip can effectively deter selfishness and promote cooperation. Taken together these results highlight the roles of prosocial motivations and negative affective reactions to injustice in maintaining reputational information sharing in groups. We conclude by discussing implications for reputational theories of the maintenance of cooperation in human groups.

Keywords: gossip, prosocial behavior, reputation systems, cooperation, social dilemmas

Cooperation is fundamental to social life, yielding benefits ranging from the production of public goods to rewarding feelings of cohesion and solidarity (Axelrod & Hamilton, 1981; Kollock, 1998; Sober & Wilson, 1998). Despite the benefits of cooperation, there are strong incentives for individuals to behave selfishly at the expense of others, either by behaving in an untrustworthy way, failing to make costly contributions to group efforts, or defecting when others have cooperated (Dawes, 1980; Kollock, 1998; Weber, Kopelman, & Messick, 2004). Selfish actions like these undermine collective efforts to produce public goods (Hardin, 1968). Situations such as these in which the interests of the group and the individual are at odds are called *social dilemmas* (Dawes, 1980; Frank, 1988; Komorita & Parks, 1996; Willer, 2009). Social dilemmas are common in the real world (e.g., conserving water during droughts, funding charities, organizing social movements) and pose critical problems for human groups. Solutions to social dilemmas center on an age-old question: How do individuals motivate group members to cooperate despite the temptation of selfish action?

One solution to the problem of cooperation is for people to selectively interact with only those individuals who will reliably

cooperate (Brown, Palameta, & Moore, 2003; Dunbar, 1996, 2004; Frank, 1988). But how can individuals make accurate judgments about another's cooperative tendencies, in particular in the initial stages of relationships? If individuals' reputations from previous interactions are known, then such judgments can be made readily and reliably. The widespread sharing of reputational information tracks individuals' past behaviors in mixed-motive settings in ways that can help sustain cooperation in groups. Although this role of reputation systems as a solution to the problem of cooperation has garnered a great deal of interest in recent years (Barclay, 2004; Barclay & Willer, 2007; Hardy & van Vugt, 2006; Milinski, Semmann, & Krambeck, 2002; Willer, 2009), little research has examined the dynamics of reputational information sharing.

Guided by these theoretical concerns, in this article we investigate the role of a social process that, on the surface, seems like an unlikely source of cooperation in groups—gossip. Defined here as communicating negatively about an absent third party in an evaluative manner, gossip is typically viewed as trivial or antisocial, and it often is (Foster, 2004).¹ Even so, we contend that a specific type of gossip helps solve the problem of cooperation (Dunbar, 1996, 2004; Sommerfeld, Krambeck, Semmann, & Milinski, 2007; Wilson, Wilczynski, Wells, & Weiser, 2000). We refer to this particular kind of gossip as *prosocial gossip*, the sharing of negative evaluative information about a target in a way that protects others from antisocial or exploitative behavior. Such information sharing is prosocial because of the overall cooperation and group

This article was published Online First January 9, 2012.

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This research was supported by a graduate research fellowship from the National Science Foundation.

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¹ Defining gossip is a complicated task (see Foster, 2004, for a discussion). Researchers have not come to a consensus. We have chosen the definition of gossip used here because we believe it is closest to the lay understanding of the word.

benefit it engenders. In this article, we present the results of a series of studies testing the underlying motives and functions of prosocial gossip.

Gossip as a Tool for Solving Social Dilemmas

In studies using social dilemmas, select evidence reveals that reputation systems promote cooperation and deter selfishness (e.g., Wedekind & Milinski, 2000). Individuals will refrain from defecting on others and selfishly depleting limited group resources if doing so enhances their reputation. Recent studies have revealed that participants will contribute significantly more to a public good if they can earn greater status and prestige for their generous behavior (Barclay, 2004; Barclay & Willer, 2007; Hardy & Van Vugt, 2006; Willer, 2009). Building on these findings showing that reputational information helps solve social dilemmas, we focus here on how and why such reputational information is spread. Although often considered an antisocial behavior (Archer & Coyne, 2005), gossip may serve as a means by which reputational information is shared, thus helping solve social dilemmas (Dunbar, 1996, 2004; Sommerfeld et al., 2007; Wilson et al., 2000). Through gossip, we suggest, groups can monitor their members and deter antisocial behavior, leading to the proliferation of cooperation and collective action (see also Barkow, 1992; Enquist & Leimar, 1993; McAndrew, 2008).

Ethnographic evidence attests to the benefits of some gossip, which led scholars to introduce the term *good gossip* (Ben-Ze'ev, 1994). This term refers to any act of gossip that serves a goal other than the selfish personal ends of the gossiper—a category in which prosocial gossip falls. For instance, Gluckman (1963, 1968) concluded from observational field data that gossip serves to bind groups together, reinforcing cultural norms and rules and marginalizing those who have veered from group-level expectations (Baumeister, Zhang, & Vohs, 2004). Similarly, in their review of observational studies of gossip in small societies, Wilson et al. (2000) concluded that gossip deters selfishness and free riding (see also Acheson, 1988; Boehm, 1997, 1999; Ellickson, 1991; Haviland, 1977; Lee, 1990; McPherson, 1991).

Additionally, a recent case study of gossip in an organization revealed that a crucial motive behind some gossip is to enhance group-level interests, finding that free riders who shirked responsibilities and hindered the organization's success were frequent targets of gossip (Kniffin & Wilson, 2005). Content analyses revealed that common themes of gossip columns and newspaper headlines center on reputational information, for example, about cheating or generosity, all of which also serve an integral role in successfully navigating social dilemmas (Cosmides & Tooby, 1992; Davis & McLeod, 2003; Foster, 2004; McAndrew & Milenkovic, 2002).

Along with the aforementioned evidence, a few empirical studies have documented that people use information about an individual's previous actions—cooperative or competitive—to guide their own cooperative or competitive behavior toward that individual (e.g., Barclay, 2004; Sommerfeld et al., 2007; Wedekind & Milinski, 2000). In addition, a few studies have begun to document that gossip may be one social process by which group members share reputational information to promote cooperation. For example, participants reacted favorably toward individuals portrayed in vignettes who used gossip as a means of maintaining social order

and cooperation (Wilson et al., 2000). Still other studies provide initial evidence for the hypothesis that gossip deters antisocial behavior. Specifically, in one study participants behaved more generously if they knew that their interaction partners had reported a high propensity to gossip (Beersma & van Kleef, 2011). In another study, participants who knew that information about their generous or selfish behavior might get relayed to someone they had become acquainted with also acted in a more generous fashion (Piazza & Bering, 2008). In a sociometric study of a sorority house, those sisters who reported the greatest tendencies toward Machiavellianism (i.e., selfish, manipulative, and uncooperative behavior) were the most likely to be nominated by their group members as frequent targets of gossip (Keltner, van Kleef, Chen, & Kraus, 2008). These scattered findings provide suggestive evidence that gossip can enable cooperation in groups.

The Present Research: The Dynamics of Prosocial Gossip

Theoretical claims about how the sharing of reputational information enables cooperation in groups outpace existing empirical evidence. It remains unclear why individuals who possess such valuable reputational information about others would freely share it with others. Also, no studies to date have systematically examined how gossip helps solve social dilemmas by enabling cooperation. In the present research, we ask two questions: First, what motivates individuals to engage in prosocial gossip (i.e., to share reputationally damaging information about selfishly exploitative individuals) when they do not derive any obvious benefit from the act? Second, does prosocial gossip actually promote cooperation within social dilemmas?

With respect to the first question, in the present research, we examined the underlying motives behind prosocial gossip. Although there may be multiple reasons for prosocial gossip (e.g., a desire to elicit reciprocal favors from others, an effort to promote one's reputation, forming close social bonds), we hypothesize that prosocial concerns, such as preferences for cooperation and fairness and an aversion to social exploitation, motivate such gossip. We argue, specifically, that selfish and exploitative behavior challenges these prosocial preferences, thereby motivating individuals to restore cooperation and prevent future antisocial behavior. Individuals engage in prosocial gossip as an effective and efficient means for achieving this prosocial goal (see also Feinberg, Cheng, & Willer, in press).

In addition, we hypothesize that although prosocial goals motivate prosocial gossip, negative affect drives individuals to engage in it. Selfish and exploitative behavior contradicts individuals' prosocial preferences, which in turn causes them to experience negative affect, such as frustration and annoyance. Such a claim builds on past research demonstrating the human tendency to react negatively to unfairness and selfishness. Such transgressions elicit negative emotions and physiological arousal (Haidt, 2001; Horberg & Keltner, 2007) and do so both in those personally affected by the injustice and in uninvolved bystanders (Fehr & Fischbacher, 2004; Markovsky, 1988; Rupp & Bell, 2010). This kind of emotional reaction to unfairness evokes a desire to undo the injustice, to make things right (e.g., Horberg & Keltner, 2007; Lerner, 1980; Miller, 2001). Indeed, research has shown that this negative affect drives responses that help repair the unjust situa-

tion, even when action may be costly to the actor (Fetchenhauer & Huang, 2004; Frank, 1988; Miller, 2001), suggesting that although negative affect drives this behavior, the ultimate goal is positive and prosocial. Such a formulation also dovetails with the recent literature on strong reciprocity—the tendency to cooperate with cooperators and to punish noncooperators (Bowles & Gintis, 2004; Fehr & Fischbacher, 2003; Fehr & Gächter, 2002; Gintis, 2000). In particular, research has demonstrated that strong reciprocity leads to altruistic punishment—sacrificing one's own self-interest to penalize antisocial behavior, a behavior driven by negative affective reactions (Fehr & Fischbacher, 2004; Fehr & Gächter, 2002).

A third hypothesis readily follows from this analysis. If individuals experience negative affect because they witness antisocial behavior that contradicts their prosocial preferences and if engaging in prosocial gossip helps to restore fairness and correct past antisocial acts or prevent future ones, then individuals should experience negative affect relief after engaging in prosocial gossip. Such behavior should lead individuals to experience reduced negative affect because they took action that should lead to outcomes in line with their preference for cooperation and aversion for exploitation. This prediction is in keeping with findings showing that helping others reduces the negative arousal associated with observing someone suffering or in trouble (Cialdini, Darby, & Vincent, 1973; Cialdini & Kenrick, 1976).

Finally, in line with past research, we predict that prosocial gossip will benefit groups, helping to solve social dilemmas by promoting cooperation and deterring selfishness. This hypothesis derives from two arguments. First, recipients of the gossip will avoid interacting with individuals known to be selfish, choosing to interact only with those with a reputation for cooperating (Sommerfeld et al., 2007; Wedekind & Milinski, 2000). Second, when prosocial gossip is possible, individuals will behave more prosocially because they do not wish to develop a negative reputation in the eyes of their future interaction partners (Beersma & van Kleef, 2011; Piazza & Bering, 2008). This latter effect should be especially pronounced among more egoistic group members, who are more likely to defect in the absence of the threat of gossip.

Our claims about the beneficial functions of prosocial gossip resemble those made about social sanctioning (Fehr & Gächter, 2002; Horne, 2004; Yamagishi, 1986). Gossip and social sanctioning are both second-order behaviors (i.e., behaviors enacted by a third party that influence the social interaction between two other individuals), in that they promote cooperation and decrease exploitation in groups. However, a key difference between prosocial gossip and punishment is the target of the action. The sanctioning literature suggests that individuals police deviant behavior by directly punishing those who behave in a deviant manner (Horne, 2004). Prosocial gossip, by contrast, responds to the actions of exploitative individuals in a less direct manner, spreading reputational information about those who have behaved antisocially but who are not present during the act of gossip. In this way, the behavior likely involves little risk of retaliation.

Prosocial Orientation and Prosocial Gossip

In our analysis of prosocial gossip, we also argue that individual differences in prosociality will moderate the likelihood and consequences of prosocial gossip. Although people generally have preferences for cooperation and fairness (e.g., Henrich et al.,

2001), such preferences vary across individuals (van Lange, 1999). Individuals possessing a more prosocial orientation place a greater value on the outcomes of others and have the strongest preferences for fairness and cooperation (Liebrand, 1986; Messick & McClintock, 1968; Pruitt & Kimmel, 1977; Simpson & Willer, 2008).² To the extent that certain forms of gossip serve prosocial ends (by warning others of individuals likely to behave selfishly), then the most prosocial individuals should also be the most inclined to engage in such gossip. In light of the analysis we have offered thus far, we would thus expect more prosocial individuals to experience greater negative arousal when witnessing an unfair act, to be more likely to engage in prosocial gossip, and to experience the most negative affect relief after gossiping in a prosocial fashion.

Past research supports the plausibility of these hypotheses. More prosocial individuals respond more negatively toward selfish and unfair acts, behaving in a more aggressive and competitive manner toward transgressors than less prosocial individuals do (Kelley & Stahelsky, 1970; van Lange, 1992). This *overassimilation effect*, where prosocial individuals take on extremely competitive demeanors in response to uncooperative others, has been documented in situations such as social dilemmas and negotiations (Steinel & De Dreu, 2004) and may help explain the existence of strong reciprocity (Bowles & Gintis, 2004; Gintis, 2000). Additionally, recent neuroscientific research has found that, compared with less prosocial individuals, more prosocial individuals respond with increased amygdala activity when exposed to unfair resource distributions (Haruno & Frith, 2010), suggesting that prosocial individuals experience inequity aversion likely driven by an intuitive, affective reaction (Adolphs, Tranel, & Damasio, 1998; Anderson & Phelps, 2002). Taken together, these findings suggest that, although negative affective reactions to unfair behavior are normative, more prosocial individuals experience greater affective reactions and an increased inclination to gossip.

There is also good reason to expect that the individual's prosociality will also influence his or her response to prosocial gossip. Given our claim that the fear of being gossiped about deters selfish behavior, we expect those scoring lowest on prosocial orientation to be most influenced by the prospect that others may gossip about them. Thus, those lowest in prosocial orientation should respond to the threat of prosocial gossip by becoming significantly more cooperative. We anticipate this both because such individuals are more likely to behave selfishly in the absence of prosocial gossip

² One might wonder how different levels of prosociality could have emerged through natural selection. Some evolutionary game theorists suggest that relative proportions of prosocial versus egoistic individuals would be likely to fluctuate over time rather than settling at a single equilibrium wherein one strategy dominates (e.g., Frank, 1988). This is because a community of egoists could be invaded by a group of cooperators if the cooperators could identify and selectively interact with one another. By virtue of greater returns for cooperation, these traits would spread in the population for the greater fitness they offer, reducing the proportion of egoists. As cooperation spreads, however, the profitability of defection in turn increases, favoring increased proportions of egoists. Additionally, as prosociality increases in a population, the value of capacities to identify and selectively interact with other cooperators declines and may no longer be selected for, also making a community of cooperators vulnerable to invasion.

and because research has demonstrated that more egoistic individuals care more about their reputations (Willer, Feinberg, Flynn, & Simpson, 2011) and behave more generously in situations where reputation is at stake (Simpson & Willer, 2008).

Overview of Present Studies

In the present research, we tested the following hypotheses derived from our theorizing about the motives and functions of prosocial gossip:

Frustration hypothesis: Witnessing an antisocial act will evoke negative affect, especially among more prosocial individuals. The more negative affect individuals experience, the more likely they will be to engage in prosocial gossip.

Prosocial hypothesis: A primary motivation driving prosocial gossip will be to help and protect others.

Relief hypothesis: Engaging in prosocial gossip will lead to reduced negative affect, and those highest in prosocial orientation will experience larger amounts of this relief.

Deterrence hypothesis: Prosocial gossip will help solve social dilemmas by deterring selfish behavior, especially among those who are more egoistic and prone to exploit others.

We conducted four studies testing these hypotheses. In Study 1, participants observed another study participant behaving antisocially in a social dilemma, exploiting the generosity of another individual. Participants were then given the opportunity to gossip to another participant who was to interact next with the transgressor. During this study, we measured both physiological and reported emotional reactions to examine the motives and affective reactions associated with such gossip. In Study 2, we included a measure of social value orientation to more directly test our claims about the moderating role of individual differences in prosociality. We also used questionnaires and content analyses to measure the role of prosocial motivations in prosocial gossip. Study 3 expanded on these studies, making it costly to engage in prosocial gossip to further assess the extent to which prosocial motivations drive prosocial gossip. Finally, in Study 4, we manipulated whether participants' behavior in a social dilemma game was anonymous, observed by a third party, or observed by a third party who could also engage in prosocial gossip. Such a design allowed us to test whether the threat of prosocial gossip can effectively solve social dilemmas by deterring selfish behavior and promoting cooperation, especially in those most prone to exploit others.

Study 1

In Study 1, participants witnessed another participant acting selfishly in a social dilemma situation at the expense of another participant. Then, in one condition, participants who witnessed the selfish behavior were given the opportunity to gossip in a prosocial fashion. Participants in this condition, we hypothesized, would engage in prosocial gossip even without any apparent social or material incentive (prosocial hypothesis). We assessed participants' physiological and self-reported emotional responses both before and after the gossip opportunity. We hypothesized that exposure to antisocial acts would evoke negative affect, such as frustration and annoyance (frustration hypothesis), and that partic-

ipants given the chance to gossip would report reduced negative affect and show reductions in autonomic arousal relative to a control condition (relief hypothesis).

Method

Participants. Fifty-three (15 male, 38 female) undergraduates took part in exchange for extra credit in a sociology course. One participant was excluded for expressing suspicion after recognizing the confederate, leaving a total sample size of 52 participants.

Procedure. The study was advertised as a group study involving four participants. When participants arrived at the laboratory, two confederates posing as participants were already waiting for the study to begin. The experimenter noted that they were waiting for one more participant but that they would begin the study by taking two participants (the participant and one of the confederates) to one of the study rooms. The participant and the confederate took part at adjacent computer stations separated by a cloth divider to prevent them from seeing one another. The experimenter instructed them not to communicate with one another unless instructed to do so. Both the participant and the confederate were connected to an MP 150 data acquisition and analysis system (Biopac Systems, Inc.) to measure heart rate. We sampled electrocardiogram (ECG) recordings by attaching leads to the right and left side of the abdomen in a Lead II configuration with a 35-Hz filter. The aim of such physiological measures was both to complement our self-report measures and to help rule out the possibility that participants' responses might be driven by demand effects.

Participants filled out background surveys lasting approximately 15 min. After completing the surveys, the experimenter informed the participants that all four participants were going to take part in two rounds of an economic exercise. The participant and confederate read the instructions for the *trust game* (Berg, Dickhaut, & McCabe, 1995) and answered questions to ensure that they understood the rules of the game.

The game involves two players, the investor and the trustee. The investor receives an initial endowment of 10 points (exchangeable for money at the end of the study). The investor can choose to send any portion of the 10 points (including 0) to the trustee and keep the remainder for himself or herself. The amount the investor chooses to send is tripled, and the trustee then has the option to share any number of these points with the investor. The game offers behavioral measures of the investor's level of trust—because he or she will send resources to the extent that he or she believes they will be returned—and the trustee's level of trustworthiness—because he or she is not required to send any resources back.

The instructions for the game informed participants that there would be four game roles—Investor A, Investor B, trustee, and observer. In addition, only two trust games would be played. In the first game, Investor A would play with the trustee. Then, in the second game, Investor B would play with the trustee. For both rounds, the observer would be shown the results of the games, including the amounts that Investor A/Investor B sent over and how much the trustee sent back.

The participant and confederate drew one of four envelopes for their role assignment. All envelopes contained a slip of paper with

Observer printed on it. Once the participant and confederate selected their envelopes, the experimenter asked them to state what their role assignment was. The confederate always announced that she had selected Investor B. After participants stated that they had selected the role of observer, the experimenter handed participants \$3 in cash as a flat rate payment for their role.

As Investor B, the confederate would play with the trustee in the second trust game. The participant and the confederate waited silently while Investor A and the trustee ostensibly played the first round. The experimenter then brought the participant (but not Investor B) a piece of paper with results of how the other two players played during the trust game. In reality, these results always showed that Investor A shared all 10 points, which were tripled to 30, and the trustee kept all 30 for himself or herself, returning nothing to Investor A. The experimenter, who was unaware of the condition and the study hypotheses, also provided the participant and confederate with a small packet with a cover page that stated, "Do not open this packet until the computer instructs you to do so." There were two types of packets, one for the experimental condition and one for the control. Which packet a participant received was randomly determined.

After viewing these results, participants completed a brief survey of negative affect (described later) on their computer. The participant and confederate next opened their packets. In the packets, the participant was reminded that Investor B would next play the trust game with the trustee from the previous round. In the gossip condition, participants were instructed that they could pass to Investor B a one to two sentence, handwritten note about any topic of their choosing, which would not be shown to the trustee. The instructions explicitly stated that writing the note was optional to participants. In addition, participants were told that, although Investor B had been told a piece of paper might be passed to him or her, Investor B had not been informed about the purpose of that paper—ensuring that a choice to not write a note would not evoke any negative perceptions of the participant. Along those lines, the instructions also informed participants that when the game was over, all participants would be dismissed separately and would never see each other. All of this information was provided to ensure that participants had no social or material incentive for writing anything in the note. In the control condition, the packet simply asked participants to copy a gibberish statement onto the note form and pass it over to Investor B. So that the participant would not feel embarrassed or uncomfortable giving it to Investor B, participants were told that Investor B was expecting such a note.

After writing and passing the note under the cloth divider (if participants chose to do so), participants completed a second measure of negative affect. In addition, after answering all other affect measures, participants answered two items designed to directly measure negative affect relief: "How relieved do you feel after writing the note?" and "Overall, how much better do you feel after writing the note?" These two items formed a *relief composite* (Cronbach's $\alpha = .87$). Although all data were collected at this point, the experimenter and confederate staged the remainder of the trust game, prior to the participant completing a survey designed to probe for suspicion. Finally, participants were disconnected from the physiological device and debriefed.

Self-reported negative affect. Before and after passing a note to Investor B, participants reported how frustrated, annoyed, and irritated they felt on a 100-point scale ranging from 0 (*not at*

all) to 100 (*very much*), as part of a larger set of emotions that served as filler items. Responses were averaged together to form a *frustration composite* (Cronbach's $\alpha s > .93$).

Heart rate. Although heart rate measures were gathered over the course of the entire experiment, data were aggregated over 1.5-min intervals during two critical time periods: after receiving the results for the first round and immediately after participants passed the note. ECG readings were transformed into a measure of heart rate by detecting the number of beats, measured as R spikes in the QRS complex, using the MP 150 data acquisition and analysis system (Biopac Systems, Inc.). Heart rate was then averaged over the two 1.5-min intervals of interest.

Coding of gossip notes. Two coders read through the gossip notes and indicated whether each note did or did not correspond with our definition of prosocial gossip: sharing evaluative information about a target in a way that protects others from antisocial or exploitative behavior. Any discrepancies were discussed until agreement was reached. Representative examples of passages from gossip notes include, "Trustee didn't send anything back last round. I'd advise not sending anything," "Try to keep all the money you can, because the trustee will not give you much in return," and "Your trustee is not reliable, he/she is playing for their own selfish interest. Try being careful with your investment."

Results

Coders classified 96% (26 out of 27) of the notes participants in the gossip condition wrote as consistent with our definition of prosocial gossip.³

Self-reported negative affect and relief. We expected that individuals would exhibit negative affect relief in the gossip condition due to writing a note warning the confederate. A 2×2 mixed-design ANOVA (within: negative affect at Time 1 and Time 2; between: experimental condition) yielded a significant interaction, $F(1, 50) = 6.18, p < .05$. Simple effect analyses revealed that levels of negative affect for participants in the gossip condition decreased significantly from Time 1 to Time 2 ($M_{decrease} = 9.69$), $F(1, 25) = 13.01, p < .01$, whereas there was no significant change for participants in the control condition from Time 1 to Time 2 ($M_{decrease} = 0.16$), $F(1, 25) = 0.00, p = .96$.⁴

We also examined participants' scores on the relief composite. Comparing scores on this composite for participants in the gossip condition ($M = 64.35$) with those for participants in the control condition ($M = 27.65$) yielded a significant difference, $t(50) = 5.61, p < .001$, suggesting that engaging in the prosocial gossip generated more relief from negative affect, consistent with our relief hypothesis. Additionally, we compared the means on the relief composite for each condition with the scale's midpoint of 50, which represented no change in affect. These analyses verified that participants were significantly above the midpoint in the gossip condition, $t(25) = 3.34, p < .01$, and significantly below the midpoint in the control condition, $t(25) = -4.52, p < .001$.

³ All analyses presented for this study exclude this one participant's data. If included, however, all significant and marginally significant results are maintained.

⁴ Throughout all of our studies, we examined the potential influence of participant gender on our results. We found no significant effects of gender in any analysis (all $ps > .35$).

Heart rate. A 2×2 mixed-design ANOVA (within: heart rate at Time 1 and Time 2; between: experimental condition) revealed a marginally significant interaction, $F(1, 47) = 3.71, p = .06$. Simple effects analyses revealed participants' heart rates in the control condition rose from Time 1 ($M = 77.02, SD = 8.70$) to Time 2 ($M = 78.46, SD = 9.11$), $M_{increase} = 1.44, F(1, 24) = 5.65, p < .05$, but did not significantly change in the gossip condition from Time 1 ($M = 74.03, SD = 12.64$) to Time 2 ($M = 73.82, SD = 12.22$), $M_{decrease} = 0.21, F(1, 23) = .01, p = .91$. Such a result suggests that witnessing the unfair play of the trustee led to elevated heart rates for participants who had no opportunity to gossip, in keeping with our frustration hypothesis and also consistent with studies linking anger and unfairness to increased cardiovascular arousal (Levenson, Ekman, & Friesen, 1990), whereas engaging in prosocial gossip had a palliative effect, buffering participants from this increase in cardiovascular arousal.

Discussion

In Study 1, participants were given the opportunity to gossip to an individual facing the prospects of playing an economic social dilemma game with a person seen behaving in a selfish and exploitative way. When faced with this situation, participants overwhelmingly chose to engage in prosocial gossip, sharing evaluative information about the trustee that would protect Investor B from being exploited, even when no apparent social or material incentives were present (prosocial hypothesis). As our analyses of the self-report and physiological measures revealed, people responded to the unfair behavior of the transgressor with negative affect and arousal (frustration hypothesis), and engaging in prosocial gossip led to reductions in the rise in negative affect and arousal experienced after witnessing the unfair act (relief hypothesis). Moreover, because self-report measures were consistent with physiological measures, it is unlikely that participants' responses were driven by demand effects.

Study 2

Although Study 1's results support our hypotheses, it is possible our effects were due more to the act of writing than specifically to engaging in prosocial gossip. Past research has shown that simply expressing one's emotions on paper can have a palliative effect (e.g., Pennebaker, 1993, 1997). Thus, in Study 2, instead of copying down a gibberish sentence, participants in the control condition got to write the same note as those in the gossip condition, but they knew that their note would not be sent to another participant and, therefore, would not spread reputational information to anyone. Such a control condition helped us to rule out the possibility that participants in the gossip condition experienced negative affect relief simply by having an opportunity to express their feelings of injustice.

We also examined the motivations underlying participants' prosocial gossip to determine if, as hypothesized, a central motivation driving prosocial gossip was to help others avoid exploitation (prosocial hypothesis). Toward this end, we used an array of measures, including self-reported goals and content analyses of open-ended responses regarding participant motives, aimed at determining whether individuals engaged in this behavior for prosocial reasons. In addition, we utilized a measure of prosocial value

orientation (van Lange, 1999; van Lange, Otten, De Bruin, & Joireman, 1997). If, as hypothesized, prosocial gossip is indeed driven by preferences for cooperation and fairness, then we would expect more prosocial individuals to experience greater negative affect after witnessing unfairness, to be more likely to gossip (frustration hypothesis), and to experience greater relief after gossiping (relief hypothesis).

Finally, we also included, in the gossip condition, an item measuring participants' beliefs about how much their notes would affect the play of the person to whom they were writing. We included this item for two reasons. First, we wanted to determine if participants who wrote a prosocial gossip note believed that the recipient of the note would trust and utilize the information provided rather than simply discounting it as cheap talk (Farrell & Rabin, 1996). Second, in a related vein, if negative affect motivated participants to pass on helpful information to vulnerable others, then we would expect perceptions of the efficacy of information sharing to be positively correlated with the extent of negative affect relief.

Method

Participants. One hundred and eleven (29 male, 81 female, and one did not indicate) undergraduates participated for credit in a sociology course.

Procedure. Between eight and 10 participants took part at a time. An experimenter unaware of both experimental condition and study hypotheses seated participants at individual stations separated by dividers in a large computer laboratory. Participants completed a demographic survey followed by a nine-item measure of social value orientation (van Lange, 1999; van Lange et al., 1997; described later).

Participants were told they would play multiple rounds of an economic exercise—again the trust game—with other study participants, interacting with one another no more than one time. The instructions emphasized that all interactions would be completely anonymous, with each participant receiving a code name (e.g., Participant C). The instructions explained that there would be three different game roles: investor, trustee, and observer. Participants selected a number between 1 and 10 as a means for randomly assigning their game role. Regardless of their selection, all participants were assigned to be the observer. As observer, the participants were paid a flat rate of \$3 and watched as the trustee played the trust game with different investors across multiple rounds.

After waiting for the other participants to finish reading their instructions, participants observed Participant B playing as the trustee with three separate investors. In each round, the investors sent a majority of their 10 points (ranging from 6 to 10 points) to Participant B, and in all cases Participant B behaved in an untrustworthy way, keeping all the resources. In actuality, all participants were assigned to be observers, and the behavior of the others was simulated.

After Round 3, participants filled out the same state affect items as in Study 1 (Cronbach α s for frustration composite = .94) and an additional item measuring how happy participants felt, which was included as a measure of positive affect. Then, participants were given the opportunity to write an electronic note containing any information they wanted to send to Investor C—the next interaction partner of Participant B. The instructions made it clear that

writing this note was completely optional. In the gossip condition, the instructions informed participants that the note would be sent to Investor C prior to that investor playing the trust game with Participant B. To help ensure that participants did not act on social desirability concerns, the instructions also emphasized that Investor C was unaware that the participant had this opportunity to send a note and would never know about it if the participants chose not to write anything. In the control condition, the instructions said that the note was hypothetical and would not be sent to anyone. Once participants had written and sent the note, they filled out the state affect measures a second time (Cronbach α s for frustration composite = .93). Participants in the gossip condition also responded to the following item: "How much do you think your note affected Participant C's play as Investor?" This item was rated on a 100-point scale ranging from 0 (*not at all*) to 100 (*very much*). Finally, participants in the gossip condition answered two questions regarding their motives for writing the note: "How much did the note's content aim to help Participant C?" and "How much did the note's content aim to hurt/punish Participant B?" These questions were followed by an open-ended item: "If you chose to write the note, please briefly (1–3 sentences) explain why you chose to write it, and why you wrote what you wrote."

Social value orientation. The Social Value Orientation Questionnaire (van Lange, 1997, 1999) presents participants with nine separate decision scenarios designed to gauge general preferences for resource distributions between oneself and a hypothetical other. For each scenario, respondents chose among three options. A prosocial option involves distributing points to maximize the shared gain for both the respondent and the hypothetical other. An egoist option involves maximizing one's own gain independent of the hypothetical other's outcome. Finally, a competitor option maximizes the difference between payoffs to self versus the hypothetical other. Because our primary focus was on prosocial value orientation, we used the number of times participants selected the prosocial option as a measure of prosociality (Feinberg, Willer, & Keltner, 2011; Piff, Kraus, Cote, Cheng, & Keltner, 2010). The mean number of times the prosocial option was selected was 4.96 with a range of 0 to 9 and a standard deviation of 4.14.

Coding of gossip notes. As in Study 1, two coders, indicated either *yes* or *no* for whether a participant's note corresponded with our definition of prosocial gossip. Discrepancies were discussed until agreement was reached. Representative examples of prosocial gossip notes include, "Be careful when playing with Participant B. B does not send back any money at all," "Try not to give too much to Participant B. He/she's really selfish," and "Participant B is extremely greedy; send 0 points."

Coding of the open-ended item measuring reasons for gossip. Three coders, unaware of the study hypotheses, rated the open-ended responses of participants who engaged in prosocial gossip on how much they exhibited intention to *help*, *protect*, and *warn* Investor C as well as on how much they exhibited intention to *punish* the trustee and portray the trustee as *immoral* and *unfair*. All ratings were made on 7-point scales ranging from 1 (*not at all*) to 7 (*very much*). Agreement between coders was moderate to high (average intraclass correlation = .71). We aggregated the first three variables together to form a *help composite* (Cronbach's α = .83) and aggregated the second three variables together to form a *punishment composite* (Cronbach's α = .82).⁵

Results

Prosocial gossip motivations. We hypothesized that, if the affective motivations underlying prosocial gossip are driven by a preference for cooperation and fairness, then those highest in prosocial value orientation should be the most likely to engage in prosocial gossip (our prosocial hypothesis). A binomial logistic regression analysis yielded a marginally significant, positive effect of prosocial value orientation ($B = .19, p = .06$), suggesting that the more prosocial participants were, the more likely they were to engage in prosocial gossip.

We further analyzed participants' intentions in the following ways. An analysis comparing self-reported intentions to help Investor C versus hurt or punish the trustee yielded a significant difference, $t(50) = 3.81, p < .001$, indicating that participants aimed to help ($M = 77.96$) more than they aimed to hurt or punish ($M = 57.31$). Content analyses of participants' free-response explanations for why they chose to write the note suggested that the aim behind their note was more to warn and protect Investor C ($M = 4.63$) than to punish the trustee ($M = 3.28$), $t(48) = 4.61, p < .001$. In total, coders indicated that 43 out of 51 (84%) participants in the gossip condition engaged in prosocial gossip.⁶

Self-reported negative affect. We hypothesized that the more intensely participants experienced negative affect after witnessing the selfish behavior of the trustee, the more likely they would be to engage in prosocial gossip (our frustration hypothesis). A binomial logistic regression analysis, entering frustration composite at Time 1 as the predictor and whether or not the participant engaged in prosocial gossip as the dependent variable, showed a marginally significant effect of negative affect ($B = .03, p = .06$). This result supports our prediction that negative affect experienced after witnessing unfair or antisocial behavior motivates individuals to engage in prosocial gossip.

Positive and negative affect change. To test our hypotheses that engaging in prosocial gossip would create negative affect relief and increase positive affect (our relief hypothesis) and that participants' prosocial value orientation would moderate this effect, we conducted a multivariate analysis of variance (MANOVA) entering experimental condition and scores on the measure of social value orientation as the independent variables and entering participants' change from Time 1 to Time 2 in our frustration composite and the measure of happiness as the dependent variables. We found significant multivariate effects for our experimental condition, $F(2, 97) = 5.52, p < .01$, prosocial orientation, $F(2, 97) = 5.03, p < .01$, and the Condition \times Prosocial Orientation interaction, $F(2, 97) = 7.52, p < .001$. Participants in the gossip condition demonstrated a greater decrease in frustration ($M_{decrease} = 18.39$) than participants in the control condition ($M_{decrease} = 7.16$), $F(1, 98) = 7.40, p < .01$. Likewise, participants in the gossip condition demonstrated a greater increase in happiness ($M_{increase} = 16.90$) than participants in the control condition ($M_{increase} = 5.57$), $F(1, 98) = 5.85, p < .05$. Taken

⁵ To ensure that the help items and punishment items formed two distinct factors, we conducted a principal components factor analysis (with varimax rotation). This analysis confirmed that the items fit together as the two hypothesized factors.

⁶ As in Study 1, unless otherwise noted, analyses presented for this study exclude those whose note was not classified as prosocial gossip. However, when their data are included, all significant effects remain significant.

together, these findings are consistent with our claim that relaying reputational information about a transgressor to a vulnerable target led to improved affect over and above the palliative effect of simply expressing one's thoughts on paper.

Prosocial value orientation moderation. To more directly explore the role of prosocial value orientation, we conducted a correlation analysis measuring the association between prosocial orientation and the frustration composite at Time 1. This analysis yielded a significant effect, indicating that more prosocial individuals experienced greater frustration after witnessing the trustee behave selfishly in the first three rounds, $r(110) = .23, p < .05$, consistent with our prosocial hypothesis. Next, we tested the hypothesis that more prosocial individuals would experience greater negative affect relief as a result of sharing information with a potentially vulnerable other. Unpacking the significant interactions reported in the MANOVA between experimental condition and scores on the measure of social value orientation in predicting changes in affect, we used a multiple regression framework to more specifically determine the nature of each of these interactions. In particular, a simple slopes analysis, looking at participants a standard deviation above and a standard deviation below the mean on prosocial value orientation, revealed that more prosocial individuals experienced significantly improved affect due to writing the note (frustration composite decrease: $B = -23.35, p < .001$; happiness change: $B = 23.97, p < .001$), whereas those with less prosocial orientations experienced no change in affect (frustration composite change: $B = 1.91, p = .73$; happiness change: $B = 2.35, p = .72$). Figure 1 depicts the interaction between prosocial orientation and experimental condition on participants' frustration composite changes.

Role of perceived note efficacy. We also predicted that perceptions of the note's efficacy for participants in the gossip

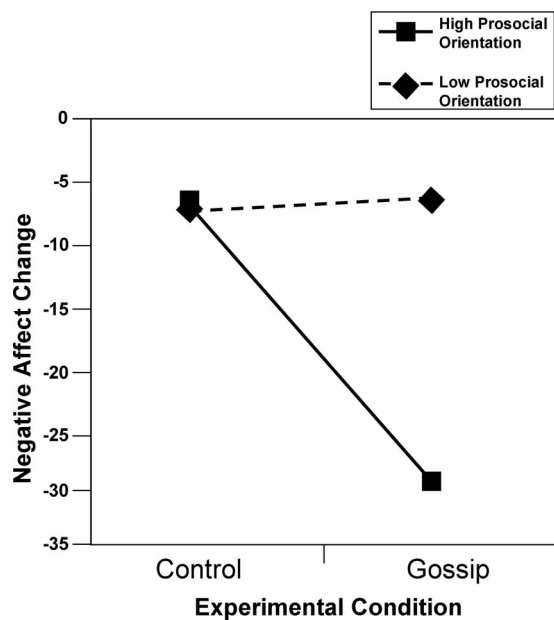


Figure 1. Negative affect changes due to the Prosocial Value Orientation \times Experimental Condition interaction. High and low prosocial orientations are depicted at 1 and -1 standard deviations from the mean (Study 2).

condition would influence changes in affect. Regression analyses revealed that the extent of participants' beliefs that the note would actually affect Investor C's play predicted their increased positive affect ($\beta = .33, p < .05$), as well as marginally predicting decreased negative affect ($\beta = .28, p = .08$), suggesting that the more participants believed their prosocial gossip would affect Investor C's play, the more their affect improved.

Discussion

In Study 2, participants exhibited, both in self-reported motivations and free response narratives, prosocial reasons for their gossip (prosocial hypothesis). Findings related to individual differences also converged on the claim that gossip can serve more prosocial means. Results of Study 2 also provide further evidence that prosocial gossip is driven by feelings of negative affect and brings about feelings of relief. Participants' negative affect was a significant predictor of the likelihood that an individual would engage in prosocial gossip (frustration hypothesis). Further, engaging in prosocial gossip led to decreased frustration and increased happiness (relief hypothesis), especially when participants believed that their gossip note would effectively influence how the vulnerable individual would interact with the selfish actor. Finally participants' prosocial value orientation moderated the changes in affect participants experienced after writing the note, suggesting that engaging in prosocial gossip had the strongest emotional impact on those who are more prosocial.

Study 3

Study 3 was designed to document that a primary motivation driving prosocial gossip is to help protect others from exploitation. Although self-reported and coder rated measurements of participants' motivation found that a central motive behind engaging in gossip was to warn and protect vulnerable others, one might argue that this apparent helping was actually an indirect means of punishing the transgressor. Participants' notes tended to instruct the vulnerable investors to be cautious and not send anything over to the trustees, a behavior that both helped the investor and, indirectly, hurt the trustee. Thus, it is possible, that participants actually used this gossip as a means for punishing the selfish trustee by preventing him or her from receiving any resources. Additionally, it is conceivable that participants' reported prosocial reasons for engaging in prosocial gossip were more due to a self-perception dynamic, wherein participants saw their behavior as bringing about prosocial ends and thus convinced themselves that they must have been directed by prosocial intentions. To eliminate this concern, we designed Study 3 so that participants' gossip notes could have no bearing on the transgressor's earnings and could affect only the receiver of the gossip's study pay. This design feature removed any means by which participants could punish the transgressor.

To further establish the role of prosocial motivations, we also made gossiping a costly behavior. Participants were asked to indicate the greatest amount they were willing to pay to engage in the prosocial gossip, with larger amounts leading to a greater likelihood that the gossip note would be transferred. This design feature allowed us to more confidently infer that participants were gossiping for prosocial reasons and not simply out of concerns of social desirability.

Method

Participants. Forty-five (18 male, 27 female) undergraduates participated for credit in a sociology course.

Procedure. Participants completed the same Social Value Orientation Questionnaire as in Study 2 as part of a larger online survey. The mean number of times the prosocial option was selected was 6.01 with a range spanning from 0 to 9 and a standard deviation of 3.63. Approximately 2 to 3 months later, participants attended a laboratory session in groups of 14 to 18 participants. Participants were seated at computer workstations. The experimenter, who was unaware of the study hypotheses and conditions, explained that the participants would be interacting with one another on computers as they played in multiple rounds of an economic game. The computer then explained to participants how to play an economic exercise—the *dictator game* (Forsythe, Horowitz, Savin, & Sefton, 1994; Ledyard, 1995). The game involved two players, a sender and a receiver. The sender had the option to give any amount of a pool of \$11 (including \$0) to the receiver. Instructions explained that participants would be randomly assigned to play as the sender, a receiver, or an observer. In addition, the instructions explained that the sender would interact with a different receiver in each round and that at the beginning of each round, the receiver could opt out of playing the game by taking a flat pay of \$4 instead of playing with the sender for that round. If the receiver chose to opt out, the sender would automatically receive all \$11, and the round would end. It is important to note that this experimental design eliminated participants' ability to indirectly punish the transgressor, implying that any decision to engage in prosocial gossip was likely due to a desire to help protect the vulnerable other.

The same, apparently random, assignment technique used in Study 2 assigned all participants to be observers, for which they received a flat payment of \$5. Participants were instructed that they would observe one sender play multiple rounds of the dictator game with different receivers each round. In both the first and second rounds, the sender chose to keep all \$11, not sharing any money with the receiver. Then, prior to the third round, the computer informed participants that they could send a note to the next receiver, providing him or her with any information they would like to convey. Participants were told that there was a charge for sending the note but that the cost was a secret amount between \$0 and \$2. Participants could offer any amount they wished between \$0 and \$2, but they would only be able to write and send the note if the amount they offered was greater than the secret amount. In actuality, if participants offered any amount besides \$0, the computer informed them that the amount they offered was higher than the secret amount. Those who offered \$0 were told that their offer was lower than the secret amount and that they would not be able to write the note. Participants on average invested \$0.89 to send their note ($SD = 0.78$, range = \$0 to \$2). We used this secret amount methodology to gauge the maximum amount participants were willing to pay to send the note. Such an amount, we believe, represents a quantifiable behavioral measure of participants' motivation to prosocially gossip.

Participants completed a frustration composite measure as part of a larger set of emotions that served as filler items. The measure was completed at two time points: immediately after the results of Round 2 (Time 1) and after the note-sending portion of Round 3

(Time 2). This composite asked participants how much of each of the following emotions they were experiencing at that moment, on scales ranging from 0 (*not at all*) to 100 (*very much*): frustrated, annoyed, irritated, and distressed (Cronbach's α s were .96 and .97 for each round, respectively). Finally, participants were paid and debriefed.

Results

Prosociality and prosocial gossip. Thirty-four of the 45 participants (76%) spent at least \$0.01 to send their note, even though their notes could have no direct or indirect effect on the transgressor's outcomes. Moreover, these participants paid to engage in prosocial gossip, offering an average of \$1.19 to send their gossip note to the receiver, demonstrating that most participants were willing to endure personal costs to engage in prosocial gossip. Further, in keeping with our prosocial hypothesis, the more highly individuals scored on the measure of prosocial value orientation, the more they were willing to pay to send their prosocial gossip note to the receiver, $r(44) = .32$, $p < .05$.

Negative affect. We next examined whether participants' levels of frustration were related to their motivation to engage in prosocial gossip. A correlation analysis revealed that the more frustration participants experienced at Time 1, the more they were willing to pay to send their gossip notes, $r(44) = .33$, $p < .05$, a finding that is in keeping with our frustration hypothesis. Such a result suggests that the negative affect individuals experience after witnessing an antisocial act motivates them to engage in prosocial gossip.

We next examined whether those who engaged in prosocial gossip (those who paid a nonzero amount to transfer the note) experienced negative affect relief and whether such relief was moderated by the amount of money the participants paid to send their prosocial gossip note and/or prosocial orientation. We first ran a paired samples t test to verify that participants' frustration levels dropped from Time 1 to Time 2. This analysis yielded a significant decrease ($M_{decrease} = 8.09$), $t(34) = 2.29$, $p < .05$, in keeping with our relief hypothesis. We then created a difference score by subtracting Time 2 frustration composite scores from Time 1's scores and ran a multiple regression analysis entering both prosocial orientation scores and amount participants paid to send the note as predictors. This analysis yielded a significant effect of payment, $\beta = .48$, $p < .01$, revealing that the more participants paid to send the note, the more negative affect relief they experienced. The multiple regression analysis also yielded a nonsignificant effect of prosocial orientation, $\beta = .14$, $p = .37$, suggesting that the amount paid to send the note (i.e., a behavioral measure of prosocial intentions) was the more robust influence on participants' affective reactions.

Discussion

In Study 3, participants still chose to gossip even when the possibility of influencing a transgressor's outcomes was removed, suggesting that participants were not engaging in prosocial gossip as a means for indirectly punishing the transgressor. Further, many participants gossiped even though doing so required them to expend their own resources, attesting that participants' motivations to convey reputational information to the vulnerable other were both

prosocial and nontrivial. Two additional findings also underscored the prosocial nature of the gossip: More prosocial individuals paid more to gossip about a selfish individual, and the more resources participants expended to gossip, the more negative affect relief they experienced.

Study 4

In our first three studies, we examined the motives underlying prosocial gossip. In Study 4, we examined whether prosocial gossip can effectively solve social dilemmas by deterring selfishness and promoting cooperation. Past research has shown that reputation systems can promote cooperation both by deterring antisocial behavior (e.g., Milinski et al., 2002) and by facilitating strategic partner choice (e.g., Barclay & Willer, 2007). Guided by these past findings, we hypothesize that prosocial gossip promotes cooperation both (a) by encouraging receivers of the gossip to selectively interact only with those who have a cooperative reputation and (b) by deterring more egoistic individuals from acting selfishly by making it known that their selfish reputation will be conveyed to others (our deterrence hypothesis). Recent research on reputational information sharing offers support for the first of these hypotheses, showing that individuals use information conveyed through gossip as a guide for interacting with the gossip targets in social dilemma situations (Sommerfeld et al., 2007); thus, we sought to test the latter hypothesis here (deterrence hypothesis).

To do this, in Study 4 participants played the same economic trust game as participants in Studies 1 and 2, but instead of assigning participants the role of observer, we assigned them the role of trustee, a role that pits their individual interest against group interests. In one condition, we informed participants that an observer would watch their play during the first segment of the game and then have an opportunity to send a gossip note to the participants' interaction partners for the second segment of the game. In a second condition, we only informed participants that they would be observed but said nothing about the possibility of being gossiped about. Finally, in a control condition, we provided no information about an observer or the potential for gossip. We hypothesized that participants in the threat-of-gossip condition would share more points with their interaction partners, relative to participants in the other conditions. Further, we expected that this effect would be primarily due to more egoistic participants in the threat-of-gossip condition giving significantly more than their egoistic counterparts in the other conditions.

Method

Participants. Three hundred and ninety-nine participants (97 male, 302 female) were recruited online from 30 major American cities through craigslist.org websites. In exchange for participation, participants were entered into a drawing for a \$50 prize or an iPod.

Procedure. Participants took part online. After clicking a recruitment link given in an online posting advertising for the study, participants were told they were part of a large group interaction study. The computer provided participants with a measure of prosocial tendency (described later) and filler questionnaires as they waited for more participants to join the experiment. In actuality, the entire study involved only one participant with all

interaction partners simulated. When enough participants had ostensibly been recruited for the study session, participants learned how to play the same trust game used in Studies 1 and 2 and answered questions to ensure that they understood the rules of the game. As before, the instructions informed participants that players would interact with one another no more than one time and that all interactions would be completely anonymous with each participant receiving a code name (e.g., Participant C).

Unlike Studies 1 and 2, participants learned that there would be two game segments of three rounds each. Participants in the two observed conditions learned that there would be three different game roles: investor, trustee, and observer. For the threat-of-gossip condition, during the first segment of the game, participants were told that the observer would watch how the trustee played and then be given the opportunity to write a note about the trustee to be sent to the investors that the trustee would interact with during the second segment of the game. In the observed condition, participants were told the trustee would also be observed, but there was no mention of an opportunity to write a note. Finally, participants in the control condition were told that the game involved only two roles: investor and trustee. No mention was made of an observer role. All participants then selected a number between 1 and 10 as a means for randomly assigning their game role. Regardless of their selection, all participants were assigned to be trustees.

Participants then played as the trustee for the first three rounds. Investors sent participants eight, six, and 10 points across the first three rounds, with the amount sent tripled each time. After participants played the first three rounds (Segment 1), the computer informed them that there would be no need to play the final three rounds (Segment 2), and the study ended.

NEO Personality Inventory–Revised altruism facet. The altruism facet of the NEO Personality Inventory–Revised of the five factor model of personality (McCrae & Costa, 1992) is an eight-item measure of altruistic tendency that is part of the Agreeableness factor. Participants indicate how much they agree or disagree with each item (e.g., “I think of myself as a charitable person” and “I go out of my way to help others if I can”) on a 5-point scale ranging from *strongly disagree* to *strongly agree*. The reliability for the scale was high (Cronbach's $\alpha = .81$).

Results and Discussion

We calculated the total number of tickets sent back across the three rounds to form a measure of participants' cooperative behavior in the trust game ($M = 36.76$). We then ran a factorial analysis of variance (ANOVA) entering experimental condition and scores on the NEO measure of altruism (kept continuous) as independent variables. This analysis yielded a significant overall effect of condition, $F(2, 398) = 3.40, p < .05$, a nonsignificant effect of scores on the NEO, $F(1, 398) = 0.41, p = .71$, and a significant omnibus interaction, $F(2, 398) = 3.29, p < .05$. Simple comparisons of the means of each experimental condition revealed that, in line with our deterrence hypothesis, participants in the gossip condition sent back significantly more tickets ($M = 39.43$) than participants in either the observed condition ($M = 35.42$), $t(394) = 2.25, p < .05$, or the control condition ($M = 35.58$), $t(394) = 2.16, p < .05$, suggesting that knowing an observer could prosocially gossip about their behavior to future interaction partners caused participants to give more of their points to the inves-

tors in the first segment of the game. As such, Study 4 provides evidence that prosocial gossip can promote cooperation and deter antisocial behavior in a social dilemma situation.

Next, we specifically examined our a priori claim from the deterrence hypothesis that the threat of prosocial gossip would have the strongest effect on participants who scored lower on prosociality (i.e., those who would be most likely to behave antisocially). We conducted simple slopes analyses to compare the effect of condition among participants scoring a standard deviation below the mean on the NEO altruism measure. As Figure 2 reveals, these more egoistic participants (-1 *SD* below the mean), when assigned to the threat-of-gossip condition, contributed significantly more ($M = 41.69$) than their egoistic counterparts in either the observed condition ($M = 35.58$), $B = -6.88$, $t(394) = 2.56$, $p = .01$, or the control condition ($M = 33.86$), $B = -5.78$, $t(394) = 3.34$, $p < .001$. Parallel analyses examining the effect of condition on participants scoring a standard deviation above the mean revealed no significant differences across conditions (all $ps > .50$).

The results from Study 4 complement and expand on recent research demonstrating that individuals act more prosocially when interacting with others who can easily spread reputation information about them (Piazza & Bering, 2008) and with those known as gossipers (Beersma & van Kleef, 2011). Our results indicate that the threat of prosocial gossip can effectively deter selfishness and promote cooperation in a social dilemma situation. In addition, our results suggest that more egoistic individuals drove this effect. Those who scored lower on prosociality gave significantly more when their reputation mattered most—when an observer could comment on their selfish or generous behavior to future game partners. Such results, we believe, extend past research by demonstrating an additional way in which prosocial gossip can help solve social dilemmas.

General Discussion

Gossip is a complex social behavior, astonishingly common yet widely criticized. Here we propose that gossip solves a basic problem of social groups: Gossip enables group members to track the cooperative or egoistic reputations of fellow group members, a central problem in analyses of the emergence of cooperation (Axelrod & Hamilton, 1981; Kollock, 1998; Wedekind & Milinski, 2000). Guided by these theoretical assumptions, we posited that one form of gossip, prosocial gossip, acts as a means by which group members warn others of selfish and exploitative others.

The four studies presented here used different methods and measures to establish support for hypotheses derived from our analysis of prosocial gossip. Our prosocial hypothesis asserted that gossip can be prosocially motivated. We argued that prosocial gossip primarily stems from motivations to help others avoid being the targets of exploitation and antisocial behavior. Our findings demonstrated the prosociality underlying such gossip in several ways: Content analyses of participants' reasons for writing their gossip notes as well as self-reported reasons for gossiping indicated that an integral motivation driving participants' gossip was to help and protect others from exploitation (Study 2). Gossip was more common in individuals with prosocial orientations (Studies 2 and 3). Finally, in Study 3, we ensured that participants' gossip notes could not serve as a means for punishing the transgressor and still found that individuals readily shared this valuable reputational information, even when sharing such information was costly.

Our frustration hypothesis asserted that witnessing an unfair act would evoke negative arousal, especially among more prosocial individuals, and that the more negative affect participants felt, the more compelled they would be to engage in prosocial gossip. We found results consistent with these predictions. Participants exposed to exploitative behavior felt negative affect (Studies 1–3),

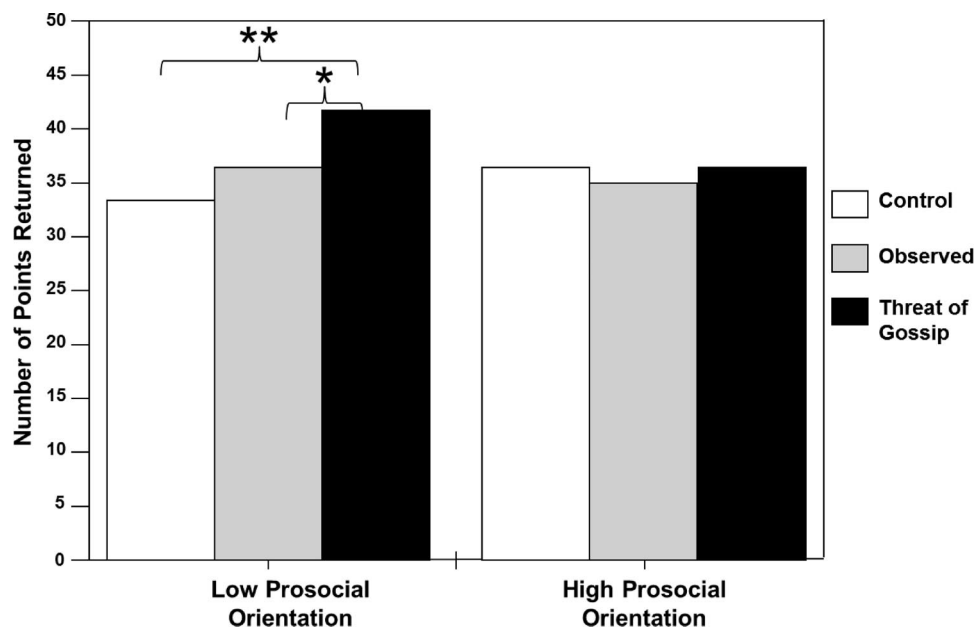


Figure 2. The Prosocial Orientation \times Experimental Manipulation interaction in predicting the portion of points returned to investors across the first three rounds of the trust game (Study 4). High and low prosocial orientations are depicted at 1 and -1 standard deviations from the mean. * $p < .01$. ** $p < .001$.

and this was especially true for more prosocial individuals (Studies 2 and 3), a striking finding when one considers that, in general, prosocial individuals are dispositionally prone to more positive emotions (Shiota, Keltner, & John, 2006). Likewise, our results demonstrated that participants' negative affect predicted their likelihood of engaging in prosocial gossip (Studies 2 and 3). In addition, in line with our relief hypothesis, after engaging in prosocial gossip, participants experienced a reduction in negative affect, a result that was most pronounced among more prosocial individuals (Studies 1–3).

These findings shed light on the social consequences of negative affect, such as frustration and anger. In many contexts, frustration and anger compel negative outcomes (Berkowitz, 2003). Children who feel high levels of frustration and anger are more prone to antisocial behavior (e.g., Keltner, Moffitt, & Stouthamer-Loeber, 1995). In marriages, displays of negative affect predict marital difficulties (Levenson, Carstensen, & Gottman, 1994). More generally, feelings of negative affect can be powerful, proximal determinants of antisocial behavior (Berkowitz, 2003). Yet, in our studies, negative affect predicted more prosocial gossip and was more strongly felt by more prosocial individuals, who also felt greater negative affect relief after gossiping. These patterns of results are in keeping with broader claims that negative affect helps guard basic social rules regarding selfishness, fairness, and public resources (Steinel & De Dreu, 2004)—rules that are the fabric of cooperative social groups (Haidt, 2003; Nesse, 1990). Although negative emotions are frequently tied to antisocial behaviors, when situated within groups and the motivator of prosocial gossip, their prosocial functions come into focus.

Finally, Study 4 yielded evidence for our deterrence hypothesis, that gossip acts as a deterrent for exploitative behavior and promotes cooperation—that it is a solution to social dilemmas. Participants behaved more cooperatively when they knew that observers could potentially gossip about their behavior in a trust game. Most significantly, we found that the potential to be gossiped about had the greatest impact on those who had the most selfish tendencies, implying that the threat of prosocial gossip effectively deterred these individuals from pursuing egoistic strategies. This evidence, coupled with existing findings that individuals rely on reputational information as a guide for whom they choose to interact and develop relationships with (Sommerfeld et al., 2007; Wedekind & Milinski, 2000), suggests a clear model for how prosocial gossip can solve the cooperation problem. Receivers of prosocial gossip are likely to avoid interacting with selfish individuals, opting instead to interact with individuals with more positive reputations. In addition, those who would otherwise exploit cooperative individuals restrain their selfishness to avoid developing a negative reputation and being ostracized.

The present research points to a potential answer to an important question raised by the burgeoning literature on reputation systems as solutions to social dilemmas (e.g., Barclay, 2004; Barclay & Willer, 2007; Milinski et al., 2002; Wedekind & Milinski, 2000; Willer, 2009). Where past theory and research has established that reputational systems can help group members overcome problems of cooperation and trust (e.g., Barclay, 2004; Hardy & van Vugt, 2006; Willer, 2009; Willer, Feinberg, Irwin, Schultz, & Simpson, 2010), how reputational information is shared and why individuals would readily share such valuable information has largely gone unaddressed. Particularly, because reputational information is of

value to other group members, it was puzzling what motivations drive such information sharing. The present research demonstrates that one proximal motive driving prosocial gossip is negative affective reactions to unjust or selfish behavior. These findings suggest that an answer to the puzzle of why reputational information is shared is similar to social psychological answers to first-order social dilemmas: Individuals' underlying prosociality, their regard for the well-being of others, drives them to share information of value to vulnerable others. In this way, prosociality may be critical to the functioning of reputation systems.

It is noteworthy that unlike many other methods for solving social dilemmas, such as peer sanctioning (Fehr & Gächter, 2002; Horne, 2004) or formal sanctions administered by a central authority, sharing reputational information in the form of prosocial gossip is cheap and efficient. As such, prosocial gossip may effectively bypass the *second-order free-rider problem*, wherein the costs associated with solving one social dilemma produce a new one (Heckathorn, 1989; Kiyonari & Barclay, 2008). Many other proposed solutions to social dilemmas involve either a costly punishment or reward system that group members must pay for, which itself entails a social dilemma. Prosocial gossip, being essentially free and affectively motivated, such that people feel intrinsically compelled to spontaneously engage in it, should not face a second-order free-rider problem (Feinberg, Cheng, & Willer, in press). Indeed, Study 3's results demonstrate that individuals will even expend resources to engage in prosocial gossip.

The present research also provides support for Dunbar's (1996) theory about the evolution of language and gossip's role in that process. Dunbar hypothesized that as our human ancestors began to live in larger groups, it became impossible for them to personally monitor the behavior of all group members, because the number of group members and past interactions precluded any attempt to record each individual's tendency to cooperate or defect. This gave rise to the evolution of linguistic practices, in particular gossip, as a means for sharing reputational information about the past behavior of group members. Linguistic practices like gossip allowed group members to track one another's reputation as trustworthy interaction partners, even if they could not personally observe others' behavior themselves. With reputational concerns almost always present, group members were forced to keep selfish motives in check or risk ostracism. Though the present research does not directly test this evolutionary argument, it is consistent with it, as our study participants demonstrated strong motivations to utilize gossip as a means for policing defectors.

Questions and Future Directions

Clearly our focus on prosocial gossip raises important questions about gossip for future research to pursue. One intriguing possibility concerns the social costs and benefits for engaging in prosocial gossip. Our studies clearly show that prosocial gossip involves taking a position and a potentially costly action regarding what is and is not socially acceptable behavior. In this fashion, gossip, although frowned upon in many ways, may actually serve as a social signal that one adheres to prosocial norms (Baumeister, Zhang, & Vohs, 2004; Willer, 2009; Willer et al., 2010). Observers of this signal, in turn, may feel more compelled to interact with and trust prosocial gossipers. For example, were one to use the paradigms from Studies 1 through 3, one might imagine that partici-

pants might view the observers of unfair actions who did gossip as more prosocial, likeable, and trustworthy than those who did not.

Prosocial gossip might also benefit the gossiper because people share reputational information with the expectation of reciprocity, anticipating that they will in turn receive information back on who can and cannot be trusted. If this were true, then it would suggest that people would be less likely to continue sharing reputational information if they did not receive information back in kind. Still another possibility is that prosocial gossip can benefit the gossiper by deterring the antisocial behavior of others because it informs them that the gossiper has an extensive social network through which he or she will readily spread reputational information (Willer, 2009; Willer et al., 2010). By engaging in prosocial gossip, then, individuals advertise that any transgression against them will become well publicized, resulting in a severely tarnished reputation for the transgressor. Thus, egoists contemplating taking advantage of a prosocial gossiper may instead focus their sights on a different target that does not prosocially gossip. Future research could test this possibility by recruiting known egoists to participate in a study in which they choose potential interaction partners for economic games and provide them with a choice between potential partners who have a reputation for prosocially gossiping and those who do not.

Although individuals may gain many of the benefits hypothesized here, this does not necessarily mean that individuals are motivated to engage in prosocial gossip in pursuit of such benefits. Such thinking raises another pertinent question regarding whether prosocial gossip is altruistically motivated. On the basis of our findings highlighting the role of prosociality in motivating prosocial gossip, one could conclude that such behavior was altruistically motivated. On the other hand, one could argue that participants engaged in prosocial gossip for the selfish reason of reducing the negative affect they experienced after witnessing the transgressor behaving unfairly, an argument closely resembling a long-standing argument against the existence of empathy-induced altruism (e.g., Cialdini et al., 1987). Yet, our results provide no indication that the reduction of negative affect was what led participants to engage in prosocial gossip. We also found consistent evidence for a causal role of prosocial motivations underlying prosocial gossip. Our findings suggest that prosocially motivated participants, frustrated after observing antisocial acts, gossiped in an effort to protect a vulnerable other and then experienced reduced negative affect as a byproduct, a reaction to their knowing that the vulnerable other would likely utilize the information they sent. Further, the results of Study 3 showed that participants were even willing to suffer a personal cost to help another—a pattern that conforms to typical conceptions of altruism (e.g., Batson & Shaw, 1991). That said, future research could more directly investigate the question of whether prosocial gossip is altruistically motivated. If future results offer further evidence that such gossip is altruistic, it would clearly contradict the lay notions of gossip as an antisocial act.

There is also a dearth of knowledge about why receivers of gossip would trust the information conveyed to them. People may have negatively tinged views of gossip because of the deceptive nature of some gossip. Acts of gossip could appear to be prosocial, in warning others of exploitative individuals, but the information conveyed could be unreliable, inaccurate, or even intentionally misleading (Wilson et al., 2000). Despite such negative attributes,

as our current studies suggest, recipients of gossip seem willing to trust it and even utilize such information in their decisions and behaviors (Sommerfeld et al., 2007). Why might this be the case? Why do recipients not simply perceive it as cheap talk? In our studies, there would be little reason to suspect a gossiper of deception given the absence of ulterior motives. In the field, where ulterior motives may often exist, a potential check on the prevalence of false gossip may lie in the social costs of spreading inaccurate information. If, as we claim, gossip serves an integral role in maintaining a smoothly functioning group, then propagating falsehoods could threaten a group's cohesion and viability, making such acts decidedly antisocial. Thus, developing a reputation as a false gossiper would likely be quite damaging and would undo any potential benefits one might achieve through spreading such false gossip. If we are correct, then false gossip should be rare, and recipients of gossip should willingly trust the information they receive. Overall, we believe that the processes by which group members establish the validity of reputational information in gossip is a fascinating question warranting future research.

We argue that prosocial gossip fosters cooperation in groups, helping individuals selectively interact with those who have a reputation for cooperation while ostracizing those who have a reputation for selfishness. Along these lines, prosocial gossip should make behaving selfishly difficult, even maladaptive. Yet, cases of individuals behaving selfishly and exploiting others are common in everyday life, suggesting that egoistic strategies continue to exist. If prosocial gossip is so effective, how do these less prosocial strategies exist? We believe that although prosocial gossip may be an essential factor in the maintenance of cooperation within groups, its ability to eliminate antisocial strategies is not perfect. Individuals wanting to exploit others, for instance, can ensure that they behave antisocially only when others are unlikely to observe their actions. Likewise, these individuals can selectively exploit others with less extensive social networks, making it less likely that the transgressor's negative reputation spreads widely. In addition, recent research has found an association between individuals' propensities for egoism and strategic impression management (Willer, Feinberg, Flynn, & Simpson, 2011). As such, it is likely the case that more egoistic strategies could persist by being strategically prosocial where reputation is at stake. Results from Study 4 fit with this argument, as less prosocial participants behaved like their more prosocial counterparts when the threat of prosocial gossip was present.

Finally, although we explore the dynamics and potential downstream consequences of spreading negative evaluative information, we have not addressed the spread of *positive* evaluative information. Conveying positive evaluative information about others does not fall into the realm of prosocial gossip as we conceptualize it. We recognize, however, that conveying positive evaluative information to others would also be useful in promoting cooperation in groups. It remains to be seen whether and when individuals, after witnessing another behave in a highly prosocial manner, spread positive reputational information about this prosocial other. When individuals do spread such information, we would hypothesize that the behavior would have more positive emotional underpinnings, such as elevation, inspiration, or awe. Overall, such questions about the sharing of positive reputational information about others leave open a potentially fruitful avenue for future research.

Limitations

The present studies are limited in many ways. The reliance on self-report data in parts of our research limits us in making inferences about motives for behavior. Our claims based on those data—that gossip is driven by prosocial motives and negative affective reactions—would be well served by experimental manipulations and observations of real gossip behavior, though we have tried here to complement these findings with behavioral and physiological data.

Another concern is demand effects. Experiments examining gossiping behavior require creating situations with enough impact that participants will engage in gossip but not so strong that all participants feel they are required to do so. This difficult balance may help explain why there are few experimental studies examining gossiping behavior and motives (Wilson et al., 2000), despite the ubiquity and social significance of the behavior. Throughout the current research, we took many precautions to avoid creating situations where participants engaged in gossip because they felt that such behavior was expected of them. For instance, we emphasized in Studies 1 through 3 that writing the notes was completely optional, and consistent with this, there were participants in each of our studies who chose not to write anything. Also, in Study 1, we used physiological measures, and in Study 3, we made sending the note personally costly, in both cases to avoid demand effects. Even so, we believe that an important goal of future research in this vein should be the development of even better methodologies that successfully avoid such methodological concerns.

Another limitation to our research was that it was conducted in laboratory settings, using procedures that allowed for strong experimental control but limited the extent to which one can generalize our results to the complexities of gossip in the real world. Indeed, unlike our studies that involved anonymous interactions, most real-world gossip occurs face to face between friends. It would be compelling for researchers to track real situations where selfish behavior occurs and observers do or do not choose to convey reputational information about the selfish actor. It would be interesting to survey the motivations behind the observers' chosen action as well as to follow how receivers of such gossip behave toward the selfish actor. Do they, as we would hypothesize, trust him or her less or even ostracize him or her?

Conclusion

Though gossip is often viewed as trivial or even antisocial, these results support a view of gossip as, in fact, prosocial and critical to the reputation systems that help sustain fairness and cooperation in groups. Through the sharing of reputational information, antisocial individuals' reputations can precede them, serving as a warning to others who might otherwise have faced exploitation. A critical factor driving individuals' reputational information sharing is their underlying prosocial motivations, their desires to benefit and help others. As a result of these benevolent motives, individuals can more carefully select their interaction partners, developing mutually beneficial and trusting relationships with others.

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Received February 9, 2011

Revision received November 9, 2011

Accepted November 10, 2011 ■