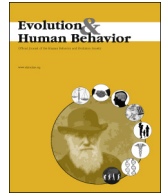




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Original Article

Reputation management: Why and how gossip enhances generosity

Junhui Wu*, Daniel Balliet, Paul A. M. Van Lange

Department of Experimental and Applied Psychology, Vrije Universiteit Amsterdam, Van der Boechorststraat 1, 1081 BT Amsterdam, the Netherlands

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ABSTRACT

We advance a framework for understanding why and how gossip may promote generosity and cooperation, especially in situations that can result in greater indirect benefits from others. Drawing on evolutionary theory, we derive novel hypotheses about how two reliably recurring properties of human social networks – they are “small” and contain fewer well-connected people – provide insight about when people may maximize *indirect* benefits of generosity. Across three studies, we find support for the hypothesis that people increase their generosity when the recipient (or an observer) is connected and can gossip to at least one or many others whom they might interact with in the future. Moreover, reputational concern, rather than expected indirect benefits from one’s future partners, primarily mediated this observed gossip-based generosity, and the mediation effect of reputational concern was statistically more pronounced for proselves than for prosocials. We discuss the importance of these findings in the context of evolutionary perspectives on human cooperation, along with some novel insights about how properties of social networks influence social behavior.

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1. Introduction

Reputation exchange through gossip is important for the evolution of human cooperation among genetically unrelated individuals (Milinski, Semmann, & Krambeck, 2002; Nowak & Sigmund, 2005). The functions of gossip and reputation have been studied in various disciplines (Feinberg, Willer, Stellar, & Keltner, 2012; Macfarlan, Remiker, & Quinlan, 2012), and the broad conclusions are that (a) gossip and reputation promote cooperation, (b) people do gossip about others’ (un)cooperative behaviors, and (c) people benefit from a cooperative reputation and also condition their cooperation on others’ reputation. Yet, the nascent research on reputation-based cooperation has not examined its psychological mechanisms in social networks. The adaptive benefit of reputation-based cooperation is clear (Griskevicius, Tybur, & Van den Bergh, 2010; Sylwester & Roberts, 2010), but the *how* – the proximate mechanisms underlying this phenomenon – has received less attention.

The present research adopts an evolutionary framework to understand how gossip and reputation promote generosity and cooperation. We hypothesize that natural selection may have shaped psychological mechanisms to identify opportunities when cooperation will promote a positive reputation and lead to indirect benefits. This perspective assumes that two properties of social networks – they are densely connected, but unevenly distributed in terms of their members’ network connections – can identify specific situations where cooperation results in greater indirect benefits. Therefore, we hypothesize that people would condition their cooperation on whether their partner can gossip to (a) at least one or (b) many others with whom they anticipate future interactions.

While the hypothesized proximate mechanism may function to identify opportunities to promote a good reputation, this mechanism may not involve explicit and conscious calculations of potential indirect benefits. We further examine if the enhanced cooperation in response to these features of social networks can be explained by (a) a motivational concern for one’s reputation and/or (b) estimated indirect benefits. Below, we elaborate on the importance of indirect reciprocity in the evolution of cooperation and some hypothesized information processing procedures that may promote generosity and cooperation.

1.1. Indirect reciprocity and the evolution of gossip-based cooperation

Although evolutionary perspectives can explain cooperation among genetic relatives (Hamilton, 1964) and unrelated strangers interacting over time (Trivers, 1971), they have difficulty explaining cooperation among strangers with uncertain future interdependence (for an exception, see Delton, Krasnow, Cosmides, & Tooby, 2011). One solution to this challenge is that human social networks contain systems of indirect reciprocity, where cooperators gain a good reputation and receive future indirect benefits from third parties (Nowak & Sigmund, 2005). Mathematical models demonstrate that cooperation among strangers can flourish when people condition their cooperation on partner reputation (Leimar & Hammerstein, 2001; Panchanathan & Boyd, 2004).

Indeed, people act more cooperatively when their behavior affects reputation (Griskevicius et al., 2010; Van Vugt & Hardy, 2010), or when their partner would gossip (Beersma & Van Kleef, 2011; Piazza & Bering, 2008). People also have a strong tendency to gossip about others to affect their reputation (Foster, 2004). Importantly, people condition their cooperation on others’ reputation, and gossip can still exert an influence even when people can observe others’ behavior

* Corresponding author. Tel.: +31 205982168.

E-mail address: j.wu@vu.nl (J. Wu).

(Sommerfeld, Krambeck, Semmann, & Milinski, 2007; for a recent review, see Van Lange, Joireman, Parks, & Van Dijk, 2013).

Yet, prior theorizing has not seriously considered how the psychology of individuals has been shaped through natural selection to harness the fitness benefits and avoid the fitness costs associated with gossip in a system of indirect reciprocity. We suggest that this void may be filled by applying theory from evolutionary psychology to derive hypotheses about how specific characteristics of the social environment promote indirect reciprocity. In particular, we focus on potential psychological adaptations for reputation management.

1.2. Efficient reputation management

According to evolutionary psychology, the human mind contains a collection of specialized information processing procedures shaped through natural selection to encourage behaviors that have adaptively maximized fitness in the ancestral environment (Cosmides & Tooby, 2013; Delton et al., 2011). We generate hypotheses about human behavior from this perspective by specifying reliably recurring situations that posed fitness relevant outcomes in the ancestral past and outlining potential adaptive specializations that have evolved to influence behavior in these situations.

A cooperative reputation is relevant to one's fitness, because it precludes (or, at least, reduces) the costs of exclusion and secures future (in)direct benefits (e.g., food, support, materials, and information) from others in the network. But how can one manage a reputation as a cooperator? One solution would be to always cooperate with others. Yet, unconditional cooperation comes at a great cost, because unconditional cooperators are often taken advantage of (e.g., Kuhlman & Marshello, 1975; Van Lange & Visser, 1999). Indeed, evolutionary game theory suggests that unconditional cooperation is not a viable solution to promoting cooperation. Moreover, when a population contains abundant unconditional cooperators, unconditional defectors can thrive and take over a population (Nowak & Sigmund, 2005).

Hence, natural selection should have favored conditional cooperation with and generosity toward others in situations where those behaviors minimize costs of exclusion and maximize potential indirect benefits via enhanced reputation. Thus, one key fitness-relevant problem for a conditionally cooperative species such as humans involves determining when to selectively cooperate to receive direct and indirect benefits.

Properties of social networks might inform people when to cooperate. Recent research has revealed strikingly similar properties of social networks in large-scale modern societies and small-scale hunter-gatherer societies (Apicella, Marlowe, Fowler, & Christakis, 2012; Hamilton, Milne, Walker, Burger, & Brown, 2007; Hill et al., 2011; Porter, Mucha, Newman, & Warmbrand, 2005). In fact, research has derived several properties that characterize almost every social network, including online social networks that retain the essentials of real-world networks (McGlohon, Akoglu, & Faloutsos, 2011). We focus on two properties of social networks at any point in time – (a) they are “small” and (b) people differ in their number of connections – and describe how these properties highlight situations where one's behavior has a stronger effect on reputation and future indirect benefits/costs. Applying this framework, we derive two hypotheses about conditions that encourage generosity.

1.2.1. Single-tie hypothesis

One statistical property of social networks is that they are “small”: it only takes a few connections (and often less than 6) to travel from one end of a social network to another (Dodds, Muhamad, & Watts, 2003; McGlohon et al., 2011; Watts, 1999). Given that this is the case for social networks in large modern societies, it was certainly true for hunter-gatherer societies with smaller and less mobile populations. We also note that information transfer, such as gossip about one's behavior, may extend to three degrees of separation in a social network (Fowler

& Christakis, 2010; Lind, da Silva, Andrade, & Herrmann, 2007), and thus can easily permeate this small world. Thus, gossip about one's behavior, even from a single person, can potentially circulate and widely affect one's reputation within a social network. Therefore, in social interactions, people should be responsive to information about whether their interaction partner is connected with (and can gossip to) someone else within their network, and condition their behavior on this information. We hypothesize that people may selectively incur a cost to benefit others when the other is connected and can gossip to only one person in the network whom they might interact with in the future (*single-tie hypothesis*).

1.2.2. Multiple-ties hypothesis

Another statistical property of social networks is that there are fewer well-connected people than less well-connected people (Barabási & Albert, 1999; McGlohon et al., 2011; Watts, 2004). That is, the distribution of network members' connections is skewed: only a few people have more connections than the mode. This aspect of social networks has been observed in business firms (Axtell, 2001), scientific collaborations (Redner, 1998; Seglen, 1992), and movie-actor collaborations (Amaral, Scala, Barthelemy, & Stanley, 2000). If this reliable, ubiquitous property of social networks also existed in the ancestral environment, then one's interaction partner's network connections may indicate an opportunity to enhance indirect benefits through a cooperative reputation. Well-connected people have a relatively larger broadcasting potential to disseminate others' reputation, and this is especially the case when newcomers to social networks preferentially connect with well-connected members (Barabási & Albert, 1999). Therefore, people may be more willing to incur a cost to benefit someone who is connected and can gossip to more, compared to fewer, people with whom they anticipate future interactions (*multiple-ties hypothesis*). Indeed, research shows that people are more altruistic to well-connected members in their social networks (Curry & Dunbar, 2011), but the causal link between partner's network connections and generosity is not clear and the underlying mechanism remains to be tested.

1.2.3. Reputational concern and expected indirect benefits

Evolution may have selected for psychological mechanisms that enable people to respond to cues of when behavior affects reputation, so that people can secure a good reputation and acquire indirect benefits. Are people able to explicitly compute the potential benefits from a good reputation, and base their cooperative decisions on this? The hypothesized gossip-based cooperation may work through two potential (non-mutually exclusive) mechanisms: (1) concerns about reputational consequences of one's behavior and (2) estimated indirect benefits from the actions of others who know one's reputation. These two mechanisms represent alternative hypotheses suggested by evolutionary psychology and rational choice models.

From an evolutionary psychology perspective, natural selection may have favored an adaptation to condition cooperation on cues that have, at least in the ancestral past, been reliably related to reputational consequences, and ultimately, indirect benefits. The argument is that humans may have evolved a proximate concern for their reputation in response to recurrent situational cues of others' network connections and thus ability to gossip. Reputational concern involves concerns for others' collective beliefs about oneself – and such concerns can be activated by cues of others evaluating one's behavior (Emler, 1990; Sperber & Baumard, 2012). This perspective would predict that cues of gossip to others within one's social network may proximally activate concerns for one's reputation, which would motivate people to adjust their behavior to secure a good reputation. However, this process does not necessarily involve conscious calculation of potential indirect benefits of cooperation, although a good reputation guarantees opportunities for indirect reciprocity. Thus, reputational concern would be the main mechanism explaining the relation between gossip and generosity (*reputational concern as mediator hypothesis*).

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