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Romano, A.; Saral, A.S.; Wu, J.

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Review

Direct and indirect reciprocity among individuals and groups

Angelo Romano[1], Ali Seyhun Saral[2] and Junhui Wu[3,4]

Abstract

Direct and indirect reciprocity are two fundamental mechanisms that promote prosocial behavior within groups and across societies. Here, we review recent work that illustrates how a (direct and indirect) reciprocity framework can illuminate our understanding of several factors related to prosocial behavior — namely group membership, gossip, and third-party punishment. We propose that each of these factors can promote prosocial behavior via proximate psychological mechanisms related to direct and indirect reciprocity: reputational concern, expectations, and anticipation of future interaction. Finally, we discuss the implications of adopting such a framework and highlight a number of avenues for future research.

Addresses

[1] Social, Economic and Organizational Psychology, Leiden University, the Netherlands

[2] Department of Economics, University of Bologna, Italy

[3] CAS Key Laboratory of Behavioral Science, Institute of Psychology, Chinese Academy of Sciences, China

[4] Department of Psychology, University of Chinese Academy of Sciences, China

Corresponding author: Romano, Angelo (a.romano@fsw.leidenuniv.nl)

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Introduction

A large body of literature has examined prosocial behavior by looking at situations where people pay a monetary cost to benefit unrelated strangers (for a review on experimental games see Van Dijk and De Dreu [1] and Thielmann et al. [2]). Prosocial behavior can be defined as a costly act that confers benefits on other people [3,4]. Direct and indirect reciprocity are considered two fundamental mechanisms promoting prosocial behavior [5,6]. Direct reciprocity can be broadly defined as a mechanism where people help those who have helped them in the past. Indirect reciprocity is the principle that describes the tendency to help others who have previously helped someone else, also known as downstream indirect reciprocity (or 'pay-it-forward' after having received benefits from others, also known as upstream indirect reciprocity) [5,6]. In direct and indirect reciprocity models, past experience and reputation information are extremely important as people are hypothesized to condition their prosocial behavior on others previous behavior and reputation ([7–10]). Over the years, an abundance of theoretical and empirical research has outlined how past experience and reputation information are effective in promoting prosocial behavior in the lab [11], in field settings [12], across human development [13–15], and across several societies [16].

Direct and indirect reciprocity models not only provide insights into the ultimate mechanisms promoting the evolution of prosocial behavior but can also inform the proximate psychological mechanisms that can govern and underlie prosocial behavior in humans [17,18]. In this review, we focus on a set of psychological mechanisms related to direct and indirect reciprocity that can explain how people behave across several situations.[1] In our reciprocity framework, we argue that humans are equipped with complex *reciprocity psychology* that evolved to evaluate, enforce, and condition their social behavior on present and/or future opportunities to gain either direct or indirect personal benefits [17,19]. We propose three potential psychological mechanisms related to a reciprocity framework, reputational concern (i.e. the extent to which people care about others' evaluations), expectations (i.e. beliefs about whether one's interaction partner will behave in a prosocial way), and anticipation of future interaction (i.e. assuming or understanding whether one will meet their interaction partner in the future). Although each psychological mechanism has been hypothesized to play a crucial role

[1] Other theoretical models, such as partner choice and competitive altruism models (see for example [50]), highlight similar psychological mechanisms, particularly in relation to indirect reciprocity. Here, we will not discuss the differences among these models, but rather focus on the predictive power of key psychological mechanisms to understand prosocial behavior.

in promoting prosocial behavior [20,21], these mechanisms are often not understood within a broad reciprocity framework.

Notably, these three proposed mechanisms are not mutually exclusive, rather they may be related to each other. For instance, people can be highly concerned about their reputation when they anticipate future interactions. However, this is not always the case, as in some situations, people may anticipate future interactions and not be concerned about their reputation (e.g. in interactions with outgroup members [22]). Moreover, one of these mechanisms may be relatively more relevant in one situation than another. For example, the presence of bystanders may activate greater reputational concern than the anticipation of a future interaction or a positive expectation about the interacting partner's prosocial behavior.

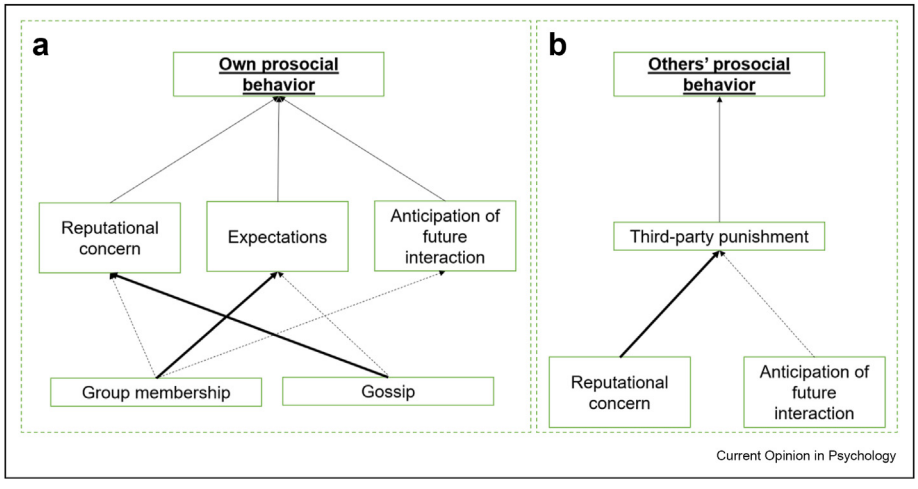
Here, we illustrate a reciprocity framework and specify how these three psychological mechanisms can explain the effect of three prominent factors related to prosocial behavior among individuals and groups: group membership, gossip, and third-party punishment (see Figure 1a and b for a summary of the framework). It is important to note that while group membership and cues of gossip may influence the actor's prosocial behavior (own prosocial behavior), one's punishment behavior as a third-party observer (i.e. third-party punishment) may influence others' prosocial behavior. For each of these factors driving prosocial behavior, we present recent empirical evidence that supports the hypothesis that the positive effects of group membership and gossip on prosocial behavior, and the willingness to engage in third-party punishment can be explained by individuals' tendency to (*i*) be concerned about their personal reputations, (*ii*) have positive expectations about the interacting partner's behavior, and (*iii*) anticipate when the shadow of future benefits (or costs) is salient and at stake. Finally, we briefly outline how future research can use a reciprocity framework to inform our understanding of several other factors related to prosocial behavior.

Group membership

Past research shows that group membership is an important factor promoting prosocial behavior. In fact, humans have evolved psychology to be more prosocial with ingroup members than outgroup members [23]. This tendency is known as ingroup favoritism. The theory of bounded generalized reciprocity offers an explanation that is in line with a reciprocity framework [22]. Bounded generalized reciprocity predicts that group membership functions as a heuristic for indirect reciprocity, such that people are more prosocial with ingroup members because they expect more prosocial behaviors and indirect benefits within their own group [18,21,24].

Recent theoretical and empirical advances have enriched the support for this perspective as an explanation for ingroup favoritism in humans [25]. Agent-based models show that simple reputation heuristics can lead to the endogenous emergence of group formation [26] and have illustrated how groups can coevolve with intra-group cooperation in indirect

Figure 1



Summary of the conceptual framework. Arrows represent the hypothesized relation between pairs of variables. Bold arrows mean stronger relations between variables than dashed arrows. (**a**) shows how the effects of group membership and cues of gossip on one's own prosocial behavior are explained by reputational concern, expectations, and anticipation of future interaction. (**b**) shows that reputational concern and anticipation of future interactions affect third-party punishment, which, in turn, has a positive effect on others' prosocial behavior.

reciprocity systems (i.e. social interactions based on reputation information) [27]. Experimental research has also highlighted the importance of anticipated future interactions or expectations in regulating intergroup relations. Across several studies, researchers found that anticipation of future interactions with outgroup members can eliminate ingroup favoritism in prosocial behavior and this holds true for both adults and young children [13]. In an experiment on the intergroup relations between Taiwanese and mainland Chinese, Chiang [28] investigated the relevance of eight different theoretical perspectives (e.g. extended contact theory, social identity theory) and found strong evidence for indirect reciprocity: people were more likely to reward outgroup (vs ingroup) members who had behaved generously with fellow ingroup members, which decreased intergroup discrimination. This is an example of downstream indirect reciprocity, an uninvolved ingroup member rewards an outgroup member for having been prosocial toward another ingroup member. These positive interactions shaped individuals' expectations of their partners' prosocial behavior and, in turn, moderated the influence of partner's group membership on prosocial behavior [29]. Moreover, expectations seemed to explain why people show ingroup favoritism in situations where interacting partners have different (economic) returns from their prosocial behavior [28]. Expectations also accounted for why people favor fellow citizens across 42 nations around the world [16]. Another recent study found that people tend to positively or negatively reciprocate an outgroup member based on their previous (positive or negative) experience with other outgroup members. This finding further supports the idea that expectations (via upstream indirect reciprocity) govern group relations [30]. In line with this argument, past positive (or negative) interactions between ingroup and outgroup members are also shown to be relevant in moderating ingroup favoritism in economic transactions between refugees in Syria and Iraq [31]. In this case, the past experience of conflict between groups affected the expected prosociality of outgroup members and this, in turn, exacerbated the intergroup conflict.

Overall, this collection of evidence provides convergent support for a reciprocity framework. People are more prone to help ingroup members because they anticipate future interactions with them and have greater reputational concern within their group. In particular, the effect of group membership on prosocial behavior (and its variation across situations) is explained by changes in the extent to which people expect ingroup or outgroup members to be prosocial with them.

Gossip

Prosocial behavior can also be promoted by other factors, such as gossip. Gossip is an indirect way to punish defection and promote prosocial behavior. Gossip is a pervasive feature in human interactions and widespread across cultures and organizations [32]. Gossip can be defined as a situation where a sender communicates to a receiver about a target who is absent or unaware of the content [33]. Gossip is a key factor that helps the functioning and efficiency of reciprocity, and it has been documented to influence reputation formation and prosocial behavior [34]. For example, an abundance of studies found that people are more prosocial toward unknown others when possibilities for gossip are present [20,35,36]. In line with a reciprocity framework, this positive effect of gossip on prosocial behavior is explained by greater reputational concern [20]. A recent experience sampling study tested several key hypotheses from indirect reciprocity to understand the content of gossip in daily life [34]. The authors found that people who receive positive gossip about a specific target are more inclined to help these targets in future interactions. This is most likely due to expectations of more prosocial behavior from these interactions. These results suggest that gossip is used in daily life to influence and update reputations in a way that enables indirect reciprocity. In line with this, recent research also shows that even inaccurate gossip can promote trust among strangers via enhanced reputational concern [36].

Third-party punishment

Another factor promoting prosocial behavior in social interactions is third-party punishment (Figure 1b). While second-party punishment can be considered a clear instance of negative reciprocity under the anticipation of future interaction [37], third-party punishment represents a more interesting case as the importance of a direct and indirect reciprocity framework may not be clear at first glance. In fact, prominent studies have found that uninterested third parties often punish defectors by incurring a personal cost, and this, in turn, promotes prosocial behavior among defectors [38]. Thus, third-party punishment can also be conceptualized as a form of prosocial behavior that promotes prosocial behavior in others. However, whether third-party punishment is always prosocial in nature is still debated [39]. Theoretical accounts in line with a reciprocity framework hypothesize that third-party punishment is used as (a) a tool to manage reputation even in one-shot interactions (e.g. to signal trustworthiness to potential future partners) [40,41], and (b) a way to avoid the mistreatment by the defector whom the third party may encounter in the future [19].

Recent research supports the potential role of psychological mechanisms related to a reciprocity framework in explaining why people engage in third-party punishment. For example, previous research found robust evidence that participants who witness a distant stranger

being insulted by another person only punish the insulter when observed by other bystanders and when they are concerned about their reputation [42]. By contrast, in anonymous situations people intervene less when a stranger is insulted, compared to a friend or a close other [42]. Moreover, in support of a reciprocity framework, recent research found that people report more moral outrage in response to defection when they cannot signal their trustworthiness through direct prosociality, again suggesting that third-party punishment can be used as a tool to upregulate the punisher's own reputation [40]. In line with this, across 24 studies, researchers found that the opportunity to gain reputational and partner choice benefits explain why third-parties may prefer compensation over punishment [43]. Reciprocal interactions also seem to be important in the evolution of parochial third-party punishment (i.e., the tendency to punish more harshly outgroup members, compared to ingroup members) [44]. A recent longitudinal study documenting punishment responses to norm violations in daily life also suggests that people upregulate their punishment in situations where their reputation is at stake [45].

Future directions

In the earlier sections, we have outlined how a reciprocity framework may explain the effect of group membership, gossip, and third-party punishment on prosocial behavior. Future research may use a reciprocity framework to illuminate our understanding of other factors related to prosocial behavior, such as observability (i.e. the degree to which one's behavior is observed by others), social norms, or other domains such as cross-societal variation in prosocial behavior [16]. In fact, recent research shows that cues of observability (e.g. watching eyes, having one's name identifiable by potential partners) enhance prosocial behavior [16,23,46] (for a review on observability and prosocial behavior see [47]). Future research is needed to understand whether the effect of observability on prosocial behavior might be explained by reputational concerns, expectations, or anticipation of future interactions. Also, although previous research has highlighted that the positive effects of social norms and conformity on prosocial behavior can be driven by reputational concerns and expectations [48,49], less is known about whether social norms remain effective in promoting prosocial behavior when there is no anticipation of future interactions. Finally, future cross-societal research is needed to investigate whether cross-societal variation in prosocial behavior is explained by differences in reputational concerns, expectations, and anticipation of future interactions across societies.

Conclusions

Decades of research have provided evidence for the importance of direct and indirect reciprocity in regulating prosocial behavior in humans. The goal of this review was to present the empirical evidence that illustrates how a (direct and indirect) reciprocity framework can help us understand the role of several factors affecting prosocial behavior. To do so, we focused on three factors, group membership, gossip, and third-party punishment. For each factor promoting prosocial behavior, we presented recent empirical and theoretical evidence from social sciences that supports hypotheses driven by an (in)direct reciprocity framework. In particular, we show that people cooperate with ingroup members because of higher reputational concerns and more positive expectations of ingroup members' prosocial behavior that people condition their behavior in situations involving gossip opportunities via greater reputational concerns and expected partner's prosocial behavior and people punish defection for maintaining a positive reputation and deterring future mistreatment of themselves.

To conclude, humans possess complex reciprocity psychology to condition their behavior based on the possibility to gain either direct or indirect benefits. Key psychological mechanisms related to direct and indirect reciprocity can explain why group membership, gossip, and third-party punishment promote prosocial behavior among individuals and groups. When designing studies and interventions on prosocial behavior, researchers and practitioners should take into account how different situational cues may favor reciprocal benefit opportunities.

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Author contributions

Angelo Romano: Conceptualization, Writing – original draft, Visualization. **Ali Seyhun Saral:** Writing – review and editing. **Junhui Wu:** Conceptualization, Writing – review and editing.

Conflict of interest statement

Nothing declared.

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