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Group-bounded indirect reciprocity and intergroup gossip[☆]Hirotaka Imada^{a,*}, Nobuhiro Mifune^b, Hannah Zibell^c^a Department of Psychology, Royal Holloway, University of London, United Kingdom^b School of Economics & Management, Kochi University of Technology, Japan^c School of Psychology, University of Kent, United Kingdom

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ABSTRACT

Gossip, the exchange of information about absent others, is ingrained in the system of indirect reciprocity, in which participating members selectively interact and cooperate with others with a good reputation. Previous psychological theorizing suggests that indirect reciprocity is perceived to be bounded by group membership. We aimed to examine whether the group-bounded indirect reciprocity perspective explains intergroup gossip. We thus explored how group membership shapes the expectations about how gossip is used and willingness to gossip within and across group boundaries. We conducted three studies (total $N = 986$) and re-analyzed a published dataset ($N = 690$) and comprehensively investigated how willing people expect others to be to engage in within- and between-group gossip as well as how willing they themselves are to engage in both types of gossip, in minimal and university contexts. We found that consistent with the group-bounded indirect reciprocity perspective, people expected within group gossip to be more likely than intergroup gossip. In addition, in the minimal group context, we found that people were, in general, more willing to gossip towards in-group members rather than out-group members. However, in the university context, they were more willing to gossip about in-group and out-group members towards out-group and in-group members, respectively, suggesting that people may utilize intergroup gossip for strategic reasons. Our research was the first to experimentally elucidate the role of group membership in shaping expectations about gossip and willingness to gossip, and offers a promising starting point for future work on intergroup gossip and indirect reciprocity.

Gossip, the exchange of reputational information about absent others (Dores Cruz, Nieper, et al., 2021; Foster, 2004) helps individuals disseminate, acquire, and exchange reputational information of others (Dores Cruz, Thielmann, et al., 2021). Such reputational information sharing enables people to identify others with a desirable reputation and to selectively interact with them, which, in turn, promotes cooperation (Wu et al., 2016b). Given the ubiquity and its vital role, the previous empirical literature on gossip has been proliferating, resulting in a wide array of studies examining, for instance, motivations behind gossip (Dores Cruz et al., 2019; Hartung et al., 2019; Imada et al., 2022), gossip veracity (Dores Cruz et al., 2023; Hess & Hagen, 2006; Peters & Fonseca, 2020), and its effectiveness in promoting prosocial behavior (e.g., Imada, 2023; Imada et al., 2021; Wu et al., 2015, 2016a). While the field is rapidly growing, a relatively understudied aspect is how group membership influences gossiping behavior and people's expectation about how gossip is used. Drawing upon the previous literature on indirect reciprocity and intergroup processes, we argue that group

membership plays a critical role in shaping gossip and report four studies exploring how group membership shapes people's expectation about gossip and willingness to gossip.

1. Indirect reciprocity and groups

Indirect reciprocity, a system in which participating members selectively cooperate with one another on the basis of their reputation (Nowak & Sigmund, 1998, 2005; Wedekind & Milinski, 2000), contributes to fostering and sustaining cooperation in groups (for a review, see Wu et al., 2016b). In the system of indirect reciprocity, non-cooperators (i.e., those who are assigned a bad reputation) are typically avoided, punished, and ostracized, because of their bad reputation. Consequently, individuals are motivated to maintain a positive reputation so that they can, for instance, be trusted (Imada et al., 2021; Wu et al., 2015), be selected for cooperative interactions (Hardy & Van Vugt, 2006; Sylwester & Roberts, 2010), and avoid ostracism (Feinberg

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et al., 2014). Gossip plays a pivotal role in indirect reciprocity, as it allows participating members to exchange reputation information of others and permits reputation-based interactions (Sommerfeld et al., 2007). Supporting this, previous experimental studies showed that the potential to be gossiped about promoted a variety of prosocial behaviors, such as cooperation (e.g., Feinberg et al., 2014; Sommerfeld et al., 2007; Sommerfeld et al., 2008), prosocial giving (e.g., Imada et al., 2021; Piazza & Bering, 2008; Wu et al., 2015), and trust (e.g., Bozoyan & Vogt, 2016; Fonseca & Peters, 2018), by increasing reputational concern (e.g., Imada et al., 2021; Wu et al., 2015). Moreover, utilizing an experience sampling method, Dores Cruz, Nieper, et al. (2021) found that everyday gossip in fact influences helping and avoiding behavior outside of laboratory contexts.

Nevertheless, previous psychological studies have found that the perceived realm of indirect reciprocity is flexible, and group membership is one of the crucial determinants of it (Imada et al., 2023). Yamagishi and colleagues argued that individuals, by default, assume that indirect reciprocity is assumed to be bounded by group membership (Yamagishi et al., 1999; Yamagishi & Kiyonari, 2000; Yamagishi & Mifune, 2008). In other words, people intuitively believe that in-group members, but not out-group members, belong to the same system of indirect reciprocity. As a result, people can expect more cooperation (Imada et al., 2023; Imada et al., 2024; Yamagishi et al., 1999) and experience more reputational concern (Kajiwaru et al., 2022; Mifune et al., 2010; Yamagishi & Mifune, 2008) when interacting with in-group members, compared to when interacting with out-group members. Previous experimental studies suggested that this default assumption of group-bounded indirect reciprocity leads to the emergence of in-group favoritism in cooperation through increased expected cooperation and reputational concern (e.g., Güth et al., 2009; Mifune et al., 2010; Yamagishi et al., 1999; Yamagishi & Kiyonari, 2000; Yamagishi & Mifune, 2008). Moreover, a large-scale meta-analysis also offered supporting evidence for the perspective (Balliet et al., 2014).

We note that previous experimental studies collated conflicting results with the group-bounded indirect reciprocity perspective (Romano et al., 2017, 2021). More specifically, Romano and colleagues demonstrated that the manipulation to enhance reputational concern, including the presence (vs. absence) of the potential to be gossiped about (Romano et al., 2017), promoted cooperation with both in-group and out-group members, suggesting that indirect reciprocity is not perceived to be bounded by group membership. Recently, however, Imada et al. (2023) reconciled the conflict, proposing the dynamic indirect reciprocity perspective; According to the dynamic indirect reciprocity perspective (Imada et al., 2023), indirect reciprocity is, by default (i.e., when group membership is a sole cue that individuals can base their behavior on), perceived to be bounded by group membership. When there are other cues (e.g., cues of direct exchange and future indirect benefits), however, individuals perceive the realm of indirect reciprocity *not* to be constrained by group boundaries. Overall, the previous studies and the dynamic indirect reciprocity perspective suggest that different ecologies and cues induce different expectations about the realm of indirect reciprocity, and the group-bounded indirect reciprocity represents the default expectation. The present work is focused on a simplistic context where group membership is the only clue that individuals can base their decisions on, and we thus built the subsequent discussions and hypothesis derivation on the group-bounded indirect reciprocity perspective.

2. Gossip and group-bounded indirect reciprocity

As gossip is ingrained in the system of indirect reciprocity, the group-bounded indirect reciprocity perspective signifies how important gossip is to maintain in-group cooperation. Nevertheless, it also suggests gossip has a limited role in fostering intergroup cooperation; given the default assumption of group-bounded indirect reciprocity, people might not expect other in-group members to send gossip about themselves to out-

group members, and they might be unwilling to gossip about in-group members towards out-group members. That is, people may expect that gossip, as a means to exchange reputation information, is also bounded by group membership, and they engage in gossip within the group boundaries. We hereby define between-group gossip as gossip sent and received by individuals from different groups (i.e., when a gossip sender and a gossip recipient belong to different groups) and within-group gossip as gossip sent and received by individuals who belong to the same group. In the following sections, we discuss in more detail how group membership shapes (expectations about) between- and within-group gossip and theoretical implications.

2.1. Expectations about intergroup gossip

Regarding the expectation about how gossip is used between- and within-group boundaries, it can be reasonably expected that individuals generally anticipate that between-group gossip is unlikely. Previous studies consistently found that people are more cooperative with in-group members than out-group members when their reputation is at stake (for a large-scale meta-analysis, see Balliet et al., 2014). Consistent with the original theorizing of group-bounded indirect reciprocity (Yamagishi et al., 1999), this suggests that people do not expect non-cooperation towards out-group members to result in negative reputational consequences. This finding can be interpreted as suggesting (1) people may expect out-group members not to gossip about their behavior towards in-group members, and thus they are less concerned about how their behavior is perceived by out-group members, and (2) people may expect in-group members not to base their judgement on gossip from out-group member sources. Peters and Fonseca (2020) empirically demonstrated that gossip from in-group and out-group members had a similar impact on trust towards a gossip target unless there is a competition between two groups. Their results are in favor of the first interpretation, while there may be some other situations in which people discount gossip for out-group members when evaluating in-group members. Group membership of gossipers per se does not influence how people behave towards gossip targets. Therefore, we favor the first interpretation that people, as a whole, expect out-group members not to gossip about their behavior towards in-group members. To put it differently, we hypothesize that people may not anticipate between-group gossip as much as within-group gossip when they are the targets of gossip (i.e., when they are the subjects of gossip: Dores Cruz, Nieper, et al., 2021).

We argue that the investigation into expectations about how others use gossip in intergroup contexts provides valuable theoretical implications. The group-bounded indirect reciprocity perspective places expected cooperation and reputational concern as the key psychological mechanisms leading to in-group favoritism, and these two explanations are referred to as the expectation and reputation management hypotheses, respectively (Imada et al., 2023; Imada et al., 2024; Yamagishi et al., 1999; Yamagishi & Mifune, 2008). Expectations about how others gossip in intergroup contexts are relevant to the reputation management hypothesis; the expectation that others engage in within-group gossip rather than between-group gossip is essential for people to feel increased reputational concern and display increased reputation management (i.e., cooperation) in the eyes of in-group members. Thus, the test of our hypothesis serves to buttress the reputation management account.

Despite previous studies suggesting that reputational concern is associated with in-group favoritism (Kajiwaru et al., 2022; Mifune et al., 2010; Mifune & Yamagishi, 2015; Yamagishi & Mifune, 2008), some recent studies suggest that the assumption of group-bounded indirect reciprocity shapes in-group favoritism via expected cooperation rather than reputational concern (Imada et al., 2023; Imada et al., 2024). In other words, those studies challenged the reputation management hypothesis of the group-bounded indirect reciprocity perspective as an explanation of in-group favoritism, calling for further verification of the account. Consequently, the elucidation of expectations about gossip in

intergroup contexts offers imperative insights into the explanatory power of the group-bounded indirect reciprocity perspective, more specifically, its reputation management hypothesis.

Finally, expectations about gossip are indeed important to understand cooperation (Romano et al., 2022), but we note that previous studies demonstrated that the expectation about how much others gossip about oneself is directly associated with a wide range of group behavior beyond cooperation, for example organizational citizenship behavior (pro-organizational behavior) and workplace performance (for a review, see Wax et al., 2022). Therefore, our research on expectations about gossip would offer relevant underpinnings to a diverse set our intergroup and within-group behavior.

2.2. Willingness to instigate intergroup gossip

Previous studies point to the important role of gossip in communicating and enforcing norms to maintain cooperation within group boundaries (Beersma & Van Kleef, 2012; Eriksson et al., 2021; Imada et al., 2022; Molho et al., 2020; Peters et al., 2017); individuals can utilize gossip as a means to punish non-cooperators (Eriksson et al., 2021; Molho et al., 2020), clarify social norms (Peters et al., 2017), and strengthen social cohesion (Beersma & Van Kleef, 2012; Peters et al., 2017). These functions of gossip serve to maintain group cooperation. Accordingly, it can be expected that people would be inclined to instigate within-group gossip, that is, gossip about in-group members towards other in-group members, to facilitate within-group cooperation. In addition, Estévez and Takács (2022) investigated how individuals in different informal groups within the same organization exchange gossip within and across the informal groups. They found that the shared membership between the sender and the receiver facilitated both positive and negative gossip, suggesting that people are more willing to engage in within-group gossip than between-group gossip. However, we note that the focal in-group membership was an informal subgroup within the same company, and between-group gossip in their study was conducted within the same company. Thus, their findings should be interpreted with caution as evidence related to intergroup gossip.

On the other hand, Imada et al. (2022) suggest that individuals may be motivated to engage in between-group gossip as well. They found that the more strongly individuals desired to protect gossip receivers from exploitative gossip targets, the more willing people were to gossip about selfish and exploitative in-group members when gossip receivers were out-group members. Overall, unlike the expectations about within- and between-group gossip, we do not have a sound empirical basis to hypothesize how much people are willing to engage in within-group and between-group gossip.

We argue that the illumination of the correspondence between expectations about gossip and one's willingness and tendency to gossip is crucial to understand the strength of the expectation of group-bounded indirect reciprocity as a default assumption. Previous studies demonstrated that individuals can unlearn default expectations and in-group favoritism if they keep encountering evidence against their initial beliefs (i.e., reciprocal out-group members; Duncan et al., 2023). This suggests that the default assumption is most resilient when people act on their expectations. That is, assuming that individuals hold the expectation that others are more likely to engage in within-group gossip than between-group gossip, if people nonetheless tend to engage in between-group gossip rather than within-group gossip, it is more likely for individuals to encounter evidence against their expectation. Yamagishi et al. (1999) in fact pointed out that the default assumption of group-bounded indirect reciprocity has the self-fulfilling nature in that people expect in-group members to be more cooperative, and they themselves also display more cooperation with in-group members, as compared to out-group members.

3. The present research

While the group-bounded indirect reciprocity perspective and previous findings point to the essential role of gossip in shaping expectations about how gossip is used and willingness to gossip within and across group boundaries, to our knowledge, there are no direct empirical examinations of the perspective through the lens of gossip. To fill this gap, in the present research, we aimed to first elucidate how group membership shapes expectations about how willing others are to engage in within-group and between-group gossip (Studies 1 and 2) with the hypothesis that when people are the target of gossip, they expect others to be more willing to engage in within-group gossip than between-group gossip. That is, people expect in-group members and out-group members to be more willing to gossip about their behavior towards other in-group and out-group members, respectively. More specifically, In Studies 1 and 2, we had participants imagine they were the target of gossip, and we orthogonally manipulated the group membership of the sender and receiver. We examined expectations about within- and between-group gossip by asking participants how willing they believed in-group and out-group gossip senders were to gossip about their behavior towards in-group and out-group gossip receivers. In addition, we further manipulated the valence of behavior of target behavior, positive social norm deviation and negative norm deviation (Imada et al., 2022), since some previous work suggests that the valence of gossip influences intergroup gossip behavior (Estévez & Takács, 2022). Studies 1 and 2 varied in the focal group context and how we operationally defined positive and negative behavior (see Table 1).

In Studies 3 and 4, we had participants imagine playing a role of a gossip sender and we explored their willingness to gossip about positive and negative social norm deviations they witnessed. We orthogonally manipulated the group membership of the gossip target and gossip receiver, and we asked participants how willing they were to gossip about the observed behavior of the gossip target towards in-group and out-group gossip receivers. Studies 3 and 4 mirrored Studies 1 and 2 (see Table 1) and we did not have any specific hypotheses. We note that Study 4 involved re-analyses of data from Imada et al. (2022).

In Studies 1 and 3, we focused on minimal group contexts (Rabbie & Horwitz, 1969; Tajfel et al., 1971). Minimal groups are arbitrarily created experimental groups that allow us to elucidate the influence of group membership per se on the expectations about and the willingness to instigate within- and between-group gossip. In Studies 2 and 4, contrastingly, we turned to one of the commonly studied actual group memberships, university affiliation (Hackel et al., 2017; Imada et al., 2022; Ockenfels & Werner, 2014).

4. Study 1

In Study 1, we first aimed to examine expectations about how others engage in within- and between-group gossip. To this end, we focused on minimal groups and had participants play the role of gossip target. More specifically, we investigated expectations of how willing others (in-group or out-group members) were to gossip about one's own good or bad deed. According to the group-bounded indirect reciprocity

Table 1
Summary of Studies 1–4.

| | Study1 | Study 2 | Study 3 | Study 4 |
|--------------------|--|--------------|---|--------------|
| N | 366 adults | 269 students | 351 adults | 690 students |
| Group context | Minimal | University | Minimal | University |
| Participants' role | group | affiliation | group | affiliation |
| | Gossip target | | Gossip Sender | |
| Main DV | How willing participants believe others are to gossip about them | | How willing participants are to gossip about gossip targets | |

perspective, individuals feel more reputational concern in the eyes of in-group members compared to out-group members because people fear that they would be ostracized and punished by in-group members (Mifune et al., 2010; Yamagishi & Mifune, 2008). We thus hypothesized that people expect in-group members to be more likely to instigate gossip about them compared to out-group members when they are gossip targets. Study materials, data, analysis code, and supplementary results are available at <https://osf.io/d7tn5/>.

4.1. Methods

The study followed a 2 (gossip sender: in-group vs. out-group) \times 2 (gossip receiver: in-group vs. out-group) \times 2 (behavior: positive vs. negative) mixed design with the second factor being a within-subjects factor. We recruited 350 Japanese participants and ended up with 366 complete responses (211 men, 153 women, $M_{age} = 43.94$, $SD = 9.79$) via Lancers (<https://www.lancers.jp/>). The target sample size was determined on the basis of our budgetary constraints. After giving consent, participants were informed that the study consisted of two different parts: an artistic preference test and a decision-making task. We conducted a post-hoc sensitivity power analysis for the linear mixed regressions examining the simple main effect of gossip recipient in the positive \times in-group gossip condition in which we had the least sample size ($N = 176$). We found that our analyses could detect a standardized regression coefficient of 0.17, with statistical power of 0.80 and $\alpha = 0.05$. We report results on gossip motivations in online supplementary results.

In the first part, participants were presented with thirteen pairs of paintings, one by Paul Klee and the other by Wassily Kandinsky, and asked to indicate which one they preferred. After they finished the task, we instructed participants that based on their actual preferences, they were either a member of the Klee or Kandinsky group. We introduced the task to establish arbitrarily created experimental groups (i.e., minimal groups: Rabbie & Horwitz, 1969; Tajfel et al., 1971).

In the decision-making task, participants first read the rules of a dictator game; the game is played by two players, an allocator and a receiver. The allocator receives 1000 yen from an experimenter and decides how much they would like to transfer to the receiver. The receiver can only accept the division of the money decided by the allocator. In addition to this, we further informed participants that the task had been widely used in previous studies and allocators, on average, transferred 28%¹ of the initial endowment to the receiver. We presented this number in order to establish a norm and operationally define positive and negative behavior (i.e., more and less generous allocations compared to the norm).

In the positive and negative behavior conditions, participants were asked to imagine that they played the game as an allocator and decided to give 500 yen (50% of the initial endowment and 22% above the norm) and 60 yen (6% of the initial endowment and 22% below the norm), respectively. They were then led to imagine that an in-group or an out-group member (i.e., gossip sender), who was not involved in the dictator game, observed their behavior, and were asked to estimate how willing the in-group or the out-group gossip sender would be to talk about and communicate their behavior to other in-group and out-group members (i.e., gossip receivers). Here, we orthogonally manipulated the group membership of the gossip sender and the gossip receiver. The former was a between-subjects factor, and the latter was a within-subjects factor. We randomized the order of the in-group and out-group gossip receiver conditions. We measured the expected willingness to gossip with one item, "How willing do you think the observer was to talk about and communicate your behavior to in-group/out-group members?",

using a 7-point Likert scale ranging from 1 = *not at all* to 7 = *very much*. In addition, we asked participants to answer six questions measuring expected gossip motivation (Beersma & Van Kleef, 2012; Hartung et al., 2019; Imada et al., 2022). The six items each measured information validation/gathering ("to gain knowledge about me"), negative influence (i.e., to harm the person being gossiped about, "to say negative things about me"), social enjoyment ("to have a good time"), relationship building ("to improve the relationship with gossip recipients"), protection ("to protect gossip recipients from being exploited by me"), and group image concern ("to protect the image of their group") motivations. They were measured by a 7-point Likert scale ranging from 1 = *strongly disagree* to 7 = *strongly agree*. Imada et al. (2022) had three items each to measure the six gossip motivations, but we reduced the number of items to minimize the length of the study. We chose the item with the largest factor loading for each gossip motivation and translated it into Japanese.

After participants completed the decision-making task, we asked them to indicate their assigned sex, age, and whether or not they had completed the artistic preference task or something similar before.

4.2. Results and discussion

We report descriptive statistics of the expected willingness to gossip in Fig. 1. We first regressed the expected willingness to gossip on the three factors and their interactions. Since the data involved one within-subject factor, we let intercepts vary depending on participants and, thus, it was a linear mixed-effects model with one random effect. The independent variables were contrast-coded such that -1 and 1 were assigned to the negative and positive behavior conditions, respectively. For group membership manipulation, the in-group and out-group conditions were respectively assigned 1 and -1 . We used the same coding scheme in Studies 2–4. The analysis revealed that the two-way interaction between gossip receiver and sender was significant, $b = 0.34$ [$0.25, 0.43$], $t(362) = 7.51$, $p < .001$. In addition, the main effect of observer was also significant, $b = -0.38$ [$-0.52, -0.23$], $t(362) = -5.19$, $p < .001$. The other effects were not significant (see Table 2). To further probe the significant interaction, we examined the main effect of receiver group membership separately in the ingroup and outgroup gossip sender conditions. In the in-group gossip sender condition, the effect of gossip receiver group membership was significant such that people expected the in-group sender to be more willing to gossip about their own positive behavior towards other in-group members (in-group receivers) than other out-group members (out-group receivers), $b = 0.43$ [$0.29, 0.56$], $t(181) = 6.29$, $p < .001$. In the out-group gossip sender condition, participants expected the out-group sender to be more likely to gossip about their behavior towards other out-group members than in-group members: $b = -0.26$ [$-0.38, -0.14$], $t(183) = -4.26$, $p < .001$. These findings together suggest that people expect that others are generally more willing to gossip towards those who belong to the same group; people expect that within-group gossip is more likely than between-group gossip.

Our findings are consistent with and underpin the group-bounded indirect reciprocity perspective, as they demonstrate people in general expect out-group members to be likely to gossip about them to out-group members. In other words, they do not anticipate that their negative behavior in the eyes of out-group members would influence their reputation in their in-group as much as it would in the eyes of in-group members.

5. Study 2

In Study 1, consistently with our hypothesis and the group-bounded indirect reciprocity perspective, we found that individuals expect that within-group gossip is more likely than between-group gossip when they are gossip targets in the minimal group context. While a large-scale meta-analysis suggested the group-bounded indirect reciprocity was

¹ Engel's (2011) meta-analysis revealed that allocators on average gave 28.35% of the initial endowment to their receiver and we rounded the number for simplicity.

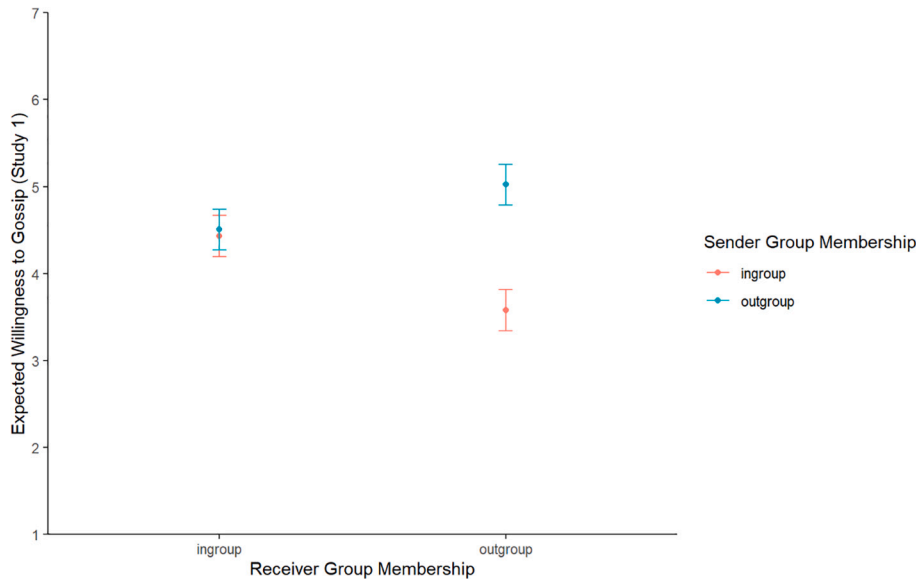


Fig. 1. Estimated marginal means and standard errors of the expected willingness to gossip by sender and receiver group membership (Study 1).

Table 2
Regression results (Studies 1 and 2).

| Term | Study 1 | | Study 2 | |
|---|----------------------|---------|---------------------|---------|
| | B | p | B | p |
| Condition (negative = −1; positive = 1) | −0.05 [−0.19, 0.09] | 0.49 | 0.39 [0.23, 0.54] | < 0.001 |
| Receiver (outgroup = −1; ingroup = 1) | 0.08 [−0.006, 0.17] | 0.07 | 0.24 [0.14, 0.34] | < 0.001 |
| Sender (outgroup = −1; ingroup = 1) | −0.38 [−0.52, −0.24] | < 0.001 | 0.02 [−0.14, 0.18] | 0.81 |
| Condition x Receiver | −0.01 [−1.0, 0.08] | 0.77 | −0.09 [−0.19, 0.01] | 0.08 |
| Condition x Sender | 0.08 [−0.07, 0.22] | 0.30 | −0.03 [−0.18, 0.13] | 0.74 |
| Receiver x Sender | 0.34 [0.25, 0.43] | < 0.001 | 0.51 [0.41, 0.61] | < 0.001 |
| Condition x Receiver x Sender | −0.04 [−0.13, 0.05] | 0.37 | 0.16 [0.05, 0.26] | 0.003 |

Note. Numbers in square brackets indicate 95% confidence intervals.

found to explain intergroup cooperation both in minimal and actual group contexts (Balliet et al., 2014), recent studies suggest that the default assumption of group-bounded indirect reciprocity can be overridden by other cues such as future interactions (Imada et al., 2023). As such, findings from minimal group studies may not be generalizable to explaining intergroup gossip in actual intergroup contexts in which people can anticipate future interactions with out-group members. Thus, in Study 2, we chose university affiliation as a focal group membership, in order to investigate whether the findings from the minimal group context held in an actual group context. We recruited undergraduate students at a British university and chose another university located in the same city as the focal out-group. The city is home to three universities, and interactions in the city between students of the two universities are common. In addition, we operationally defined positive and negative behavior using an experimental vignette that simulates day-to-day behavior (Beersma & Van Kleef, 2012; Imada et al., 2022). Study materials, data, analysis code, and supplementary results are available at <https://osf.io/2edj4/>.

5.1. Methods

As in Study 1, the present study followed a 2 (gossip sender: in-group

vs. out-group) x 2 (gossip receiver: in-group vs. out-group) x 2 (behavior: positive vs. negative) mixed design with the second factor being a within-subjects factor. We recruited university students at a British university, in exchange for partial course credit. To maximize the final sample size, we had the study open for participation for one semester, and we collected 296 completed responses (51 men, 239 women, $M_{age} = 19.79$, $SD = 3.01$). We conducted a post-hoc sensitivity power analysis for the linear mixed regression examining the simple main effect of gossip recipient in the positive behavior x in-group gossip condition in which we had the least observations ($N = 146$). The analysis revealed that it could detect a standardized regression coefficient of 0.19 with a statistical power of 0.80 and $\alpha = 0.05$.

After giving informed consent, participants read the following scenario; “Imagine you are working in a bar located in Canterbury (a town in which participants’ university is located). The owner of the bar graduated from the University of Kent (participants’ university, i.e., the ingroup) and they are famous for employing students at the University of Kent. In the bar, employees work in a team, and there is a common norm that team members help each other out with chores when needed. One day, the bar was filled with groups of students from University of Kent (in-group)/Canterbury Christ Church University (CCCU, out-group) and it was a very busy night. The owner thought you were working very hard (positive behavior condition)/The owner thought you were procrastinating (negative behavior condition) and the owner praised you out loud (positive behavior condition)/reproached you out loud (negative behavior condition). There were many University of Kent (in-group)/Canterbury Christ Church University (CCCU, out-group) students hearing that you were complimented (positive behavior condition)/you were rebuked (negative behavior condition).” In the scenario, we manipulated the group membership of gossip sender and receiver and target behavior (positive/negative). Participants then answered two comprehension check questions about it.

After reading the scenario, participants were asked to answer four questions measuring to what extent they would feel reputational concern, using the reputational concern scale (e.g., “I would think about how others would think about me.”, $\alpha = 0.74$, Wu et al., 2015). Participants were subsequently asked to answer how likely they thought the in-group or out-group gossip sender at the bar would talk about them to other [in-group / out-group] university students who were not at the bar, using a scale from 1 = extremely unlikely to 7 = extremely likely. Since the group membership of gossip receiver was a within-subjects factor, participants completed the measures outlined above in a randomized

order. In addition, in each of the recipient conditions, participants answered a set of questions measuring their emotional experiences, their expectations about potential reputational consequences, and expected gossip content. We measured them for exploratory purposes, and we do not discuss them in the paper but report some analyses in the online supplementary material. Lastly, participants indicated how often they had interactions with out-group university students and how many online friends they had from the out-group university, and they provided their demographic information (sex and age).

5.2. Results and discussion

Analytic strategy was identical to that in Study 1. See Fig. 2 for descriptive statistics of the expected willingness to gossip. We regressed the expected willingness to gossip on the three factors and their interactions, and found a significant three-way interaction, $b = 0.16$ [0.05, 0.26], $t(292) = 2.97$, $p = .003$ (See Table 2 for full regression results). To follow-up the interaction, we conducted simple effect analyses, focusing on the main effect of gossip recipient. When the gossip sender was an in-group member, participants expected the sender to be more likely to gossip about their positive and negative behavior towards other in-group members than out-group gossip receivers: the positive behavior condition: $b = 0.69$ [0.50, 0.87], $t(74) = 7.39$, $p < .001$; the negative behavior condition: $b = 0.82$ [0.62, 1.02], $t(72) = 7.99$, $p < .001$. In the positive behavior \times out-group gossip sender condition, however, the simple main effect of the group membership of gossip receiver was not significant, $b = -0.02$ [-0.24, 0.20], $t(72) = -0.18$, $p = .856$. In the negative behavior \times out-group gossip sender condition, participants expected the out-group sender to be more willing to gossip towards out-group members than in-group members, $b = -0.51$ [-0.73, -0.30], $t(74) = -4.69$, $p < .001$. These results held when we controlled for participants' contact with out-group university members. Our results are overall consistent with those in Study 1 in that participants expected that within-group gossip is more likely than between-group gossip. Nevertheless, they expected that the out-group gossip was indifferent to the group membership of gossip receiver when their positive behavior was observed. All in all, we found that expectations about gossip are not fully consistent with the group-bounded indirect reciprocity perspective in the natural intergroup context.

6. Study 3

In Study 1, we found that individuals tended to expect others to be more willing to engage in within-group gossip, supporting the group-bounded indirect reciprocity perspective. In Study 3, we turned to the willingness to instigate within- and between-group gossip, in order to examine whether people's expectations about how others use gossip would be matched with how they themselves use it. The study design and procedure mirrored that of Study 1; we focused on the minimal group context and operationally defined positive and negative behavior as generous and selfish dictator giving. Unlike Study 1, as we focused on the willingness to gossip, we had participants play the role of gossip sender. Study materials, data, analysis code, and supplementary results are available at <https://osf.io/6egd5/>.

6.1. Methods

The present study followed a 2 (gossip target: in-group vs. out-group) \times 2 (gossip receiver: in-group vs. out-group) \times 2 (behavior: positive vs. negative) mixed design with the second factor being a within-subjects factor. Following Study 1, we recruited 350 Japanese participants and ended up with 351 complete responses (221 men, 129 women, $M_{age} = 43.62$, $SD = 9.22$) via Lancers (<https://www.lancers.jp/>). We conducted a post-hoc sensitivity power analysis for the linear mixed regression examining the simple main effect of gossip recipient in the negative behavior \times in-group gossip condition in which we had the least

observations ($N = 156$). The analysis revealed that it could detect a standardized regression coefficient of 0.14 with statistical power of 0.80 and $\alpha = 0.05$. We report results using variables measured for exploratory purposes in online supplementary materials.

After giving consent, participants were told that the study consisted of two different parts: an artistic preference test and a decision-making task. The artistic preference test was identical to that in Study 1, and participants were first assigned to either the Klee or Kandinsky group. In the decision-making task, participants received the same instruction about the dictator game as used in Study 1. Instead of being asked to imagine they made a generous or selfish decision, they were asked to imagine that they observed an in-group and an out-group member making those decisions, in the in-group and out-group gossip target conditions, respectively. Positive and negative behavior were defined in the same way as they were in Study 1 (i.e., giving 60 yen and 500 yen in the negative and positive behavior conditions, respectively). Participants were then asked to imagine that they had an opportunity to talk about the behavior of the in-group or out-group member in the dictator game towards other in-group members and out-group members (i.e., in-group and out-group gossip receiver conditions). They indicated to what extent they were willing to talk about the gossip target, using a 7-point Likert scale ranging from 1 = *not at all* to 7 = *very willing to*.

We also measured gossip motivations using six items from Imada et al.'s (2022). The items each served to measure information validation, negative influence, social enjoyment, relationship, protection, and group image concern motivations, and they were measured with a 7-point scale from 1 = *strongly disagree* to 7 = *strongly agree*. As a manipulation check, we also asked participants to indicate how positively and negatively they saw the target behavior, using a scale from 1 = *very negatively* to 7 = *very positively* for exploratory purposes. Participants were further asked to indicate how they perceived the gossip target on eight dimensions (e.g., warmth and competence). Lastly, participants provided their demographic information (sex and age) and also indicated whether or not they had completed any surveys before that included the artistic preference test or something similar.

6.2. Results and discussion

As a manipulation check, we conducted a Welch's t -test. We found that those in the positive behavior condition ($M = 5.42$, $SD = 1.13$) evaluated the target behavior significantly more positively than those in the negative behavior condition ($M = 3.16$, $SD = 1.21$), $t(346.09) = 18.15$, $p < .001$, *Cohen's d* = 1.94 [1.65, 2.23]. The manipulation of the valence of the target behavior was thus successful.

We regressed the willingness to gossip on the three factors and built a linear mixed-effect model in which we let intercepts vary depending on participants (i.e., a random-intercept model). Descriptive statistics of the willingness to gossip by conditions are reported in Fig. 3. We found a significant two-way interaction between gossip receiver group membership and gossip target group membership, $b = 0.11$ [0.04, 0.19], $t(347) = 2.89$, $p < .001$. In addition, the interaction between behavior condition and gossip receiver group membership was also significant, $b = -0.12$ [-0.20, -0.05], $t(347) = -3.18$, $p < .001$. The three main effects were all significant, but the other interaction terms were not significant (see Table 3 for full regression results).

We first followed up the significant interaction between receiver and target group memberships. In both of the in-group and out-group gossip target conditions, the effect of gossip receiver group membership was significant, such that participants were more willing to gossip towards in-group receivers than out-group receivers: the in-group gossip target condition: $b = 0.38$ [0.27, 0.48], $t(175) = 6.95$, $p < .001$; the out-group gossip target condition: $b = 0.17$ [0.06, 0.29], $t(174) = 3.03$, $p < .001$. Given the significant interaction term, the results overall suggested that the increased willingness for within-group gossip was stronger when a gossip target was in-group member (see Fig. 3).

We then followed up the significant interaction between behavior

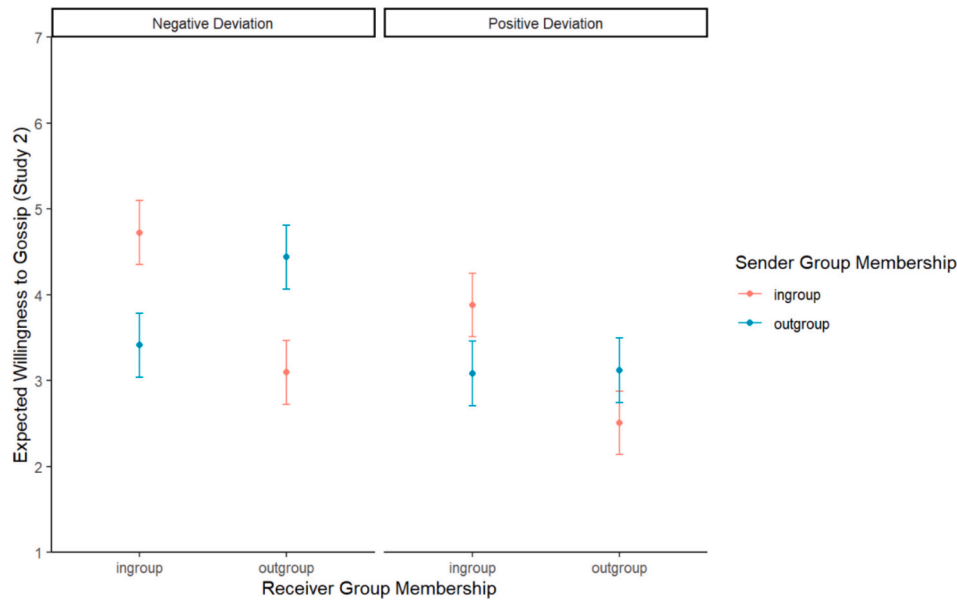


Fig. 2. Estimated marginal means and standard errors of the expected willingness to gossip by sender and receiver group membership and target behavior (Study 2).

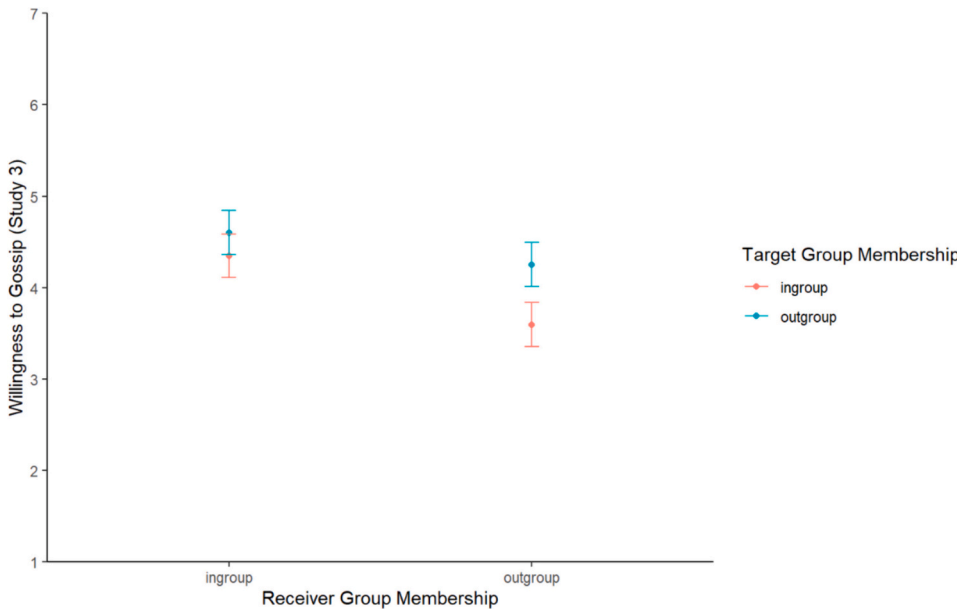


Fig. 3. Estimated marginal means and standard errors of the expected willingness to gossip by sender and receiver group membership (Study 3).

condition and gossip receiver group membership. In the positive and negative behavior conditions, the effect of receiver group membership was significant such that participants were more willing to gossip towards in-group receivers than out-group receivers: the positive behavior condition: $b = 0.16$ [0.06, 0.26], $t(176) = 3.23$, $p < .001$; the negative behavior condition: $b = 0.39$ [0.27, 0.51], $t(173) = 6.44$, $p < .001$. Given the significant interaction term, the results overall suggested that the increased willingness for within-group gossip was stronger when a gossip target displays a negative behavior (see Fig. 4). Overall, Study 3 suggested that individuals are more willing to engage in within-group gossip than between-group gossip, consistently with the results of Study 1 that individuals expect within-group gossip to be more likely than between-group gossip. Thus, in the minimal group contexts, Studies 1 and 3 together offer experimental evidence supporting the group-bounded indirect reciprocity perspective; gossip is expected to be shared and people are more willing to gossip within

group boundaries.

Study 4 (re-analyses of data from Imada et al., 2022).

In Study 4, mirroring Studies 1 and 2, we aimed to examine the willingness to engage in intergroup gossip in the university context. Imada et al. (2022) data allows us to address this and we thus did not conduct an additional study but re-analyzed their data. Study materials, data, analysis code, and supplementary results are available at <https://osf.io/mnkbv/>. We retrieved the data from <https://osf.io/u3yxt/>.

6.3. Methods

Imada et al. (2022) conducted a preregistered study ($N = 690$) in which they examined the willingness to gossip about positive and

Table 3
Regression results (Studies 3 and 4).

| Term | Study 3 | | Study 4 | |
|---|----------------------|-------|----------------------|-------|
| | B | p | B | p |
| Condition (negative = -1; positive = 1) | 0.19 [0.04, 0.34] | 0.01 | 0.07 [-0.02, 0.16] | 0.15 |
| Receiver (outgroup = -1; ingroup = 1) | 0.27 [0.19, 0.34] | < | 0.14 [0.09, 0.19] | < |
| Target (outgroup = -1; ingroup = 1) | -0.25 [-0.40, -0.10] | < | 0.01 [-0.08, 0.10] | 0.85 |
| Condition x Receiver | -0.12 [-0.20, -0.05] | < | -0.08 [-0.13, -0.03] | 0.002 |
| Condition x Target | -0.04 [-0.19, 0.11] | 0.57 | 0.03 [-0.07, 0.12] | 0.60 |
| Receiver x Target | 0.11 [0.04, 0.19] | < | -0.32 [-0.37, -0.27] | < |
| Condition x Receiver x Target | 0.07 [-0.01, 0.15] | 0.001 | -0.05 [-0.10, 0.001] | 0.001 |

Note. Numbers in square brackets indicate 95% confidence intervals.

6.4. Results and discussion

Following Study 3, we regressed the willingness to gossip on the three factors and built a linear mixed-effect model in which we let intercepts vary depending on participants (i.e., a random-intercept model). We found a significant interaction between gossip receiver and target group memberships, $b = -0.32 [-0.37, -0.27]$, $t(686) = -12.64$, $p < .001$. In addition, the interaction between behavior condition and gossip receiver group membership was significant, $b = -0.32 [-0.37, -0.27]$, $t(686) = -12.64$, $p = .002$. See Table 3 for full regression results.

We first followed up the significant interaction between receiver and target group memberships (Fig. 5). In the in-group gossip target condition, we found that participants were more willing to gossip towards out-group gossip receivers than in-group gossip receivers, $b = -0.18 [-0.26, -0.11]$, $t(339) = -4.91$, $p < .001$. Contrastingly, in the out-group gossip target condition, participants were more willing to gossip towards in-group gossip receivers, $b = 0.46 [0.39, 0.53]$, $t(349) = 12.88$,

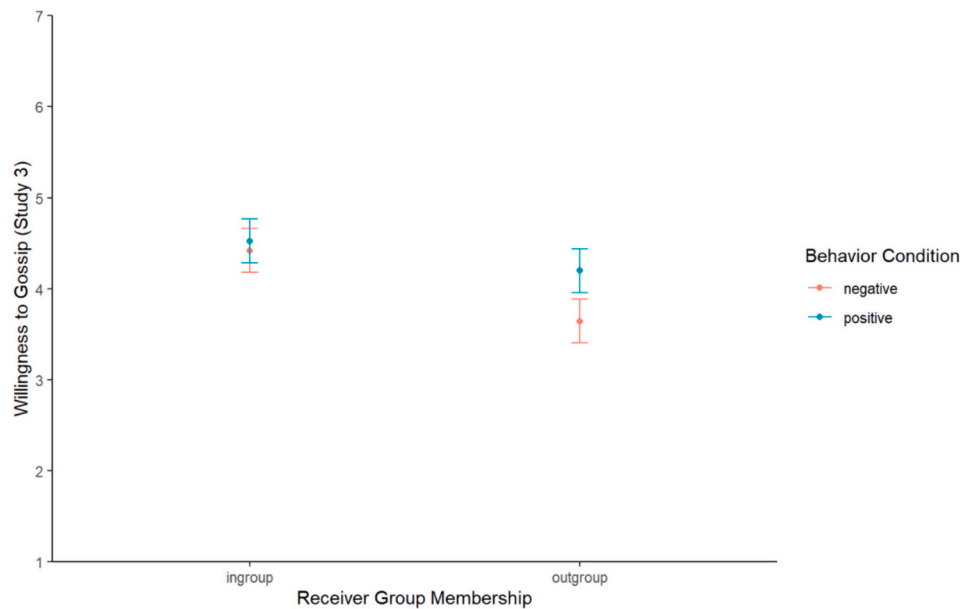


Fig. 4. Estimated marginal means and standard errors of the expected willingness to gossip by receiver group membership and target behavior (Study 3).

negative behavior of an in-group or an out-group member towards in-group and out-group members. Their study followed the same experimental design as that of Study 3.² The experimental vignette that we used in Study 2 was based on the vignette used Imada et al.'s (2022) study and Study 2 and Study 4 only differ in the following points³: (1) instead of asking participants to imagine they positively or negatively behaved at the bar in the scenario, Imada et al. (2022) asked participants to imagine they observed an in-group or an out-group member positively or negatively behaving at the bar, (2) participants were asked about how willing they themselves were to gossip about the target behavior rather than how willing others were to gossip, and (3) six gossip motivations were each measured with three items rather than one.

² Imada et al. (2022) had three behavior conditions: positive, negative, and normative conditions and their total sample size was 1153. For compatibility, we excluded the data from the normative condition from our analyses. The sample size for our analyses was thus 690.

³ Imada et al. (2022) was conducted before we planned our studies (Studies 1–3). We based these studies on the study design of Imada et al. (2022).

$p < .001$. The results therefore suggest that participants were overall more willing to engage in between-group gossip than within-group gossip.

We then followed up the significant interaction between behavior condition and gossip receiver group membership (Fig. 6). In the positive behavior condition, the effect of gossip receiver group membership was not significant, $b = 0.07 [-0.01, 0.15]$, $t(341) = 1.83$, $p = .07$. In the negative behavior condition, participants were more willing to gossip towards in-group gossip receivers than out-group gossip receivers, $b = 0.21 [0.13, 0.29]$, $t(347) = 5.09$, $p < .001$. The results suggest that the increased willingness for within-group gossip is limited to the situation when a gossip target displays a negative behavior.

While the expectation about intergroup gossip was largely consistent between the minimal (Study 1) and actual (Study 2) intergroup contexts, the willingness to gossip was not. Since our study and Imada et al. (2022) both measured gossip motivations, we explored whether gossip motivations underlying within- and between-group gossip differed across the two intergroup contexts (see Table 4).

The driver(s) of gossip in the minimal and university contexts substantially varied. For instance, while the protection motive promoted negative gossip about in-group members towards out-group members in

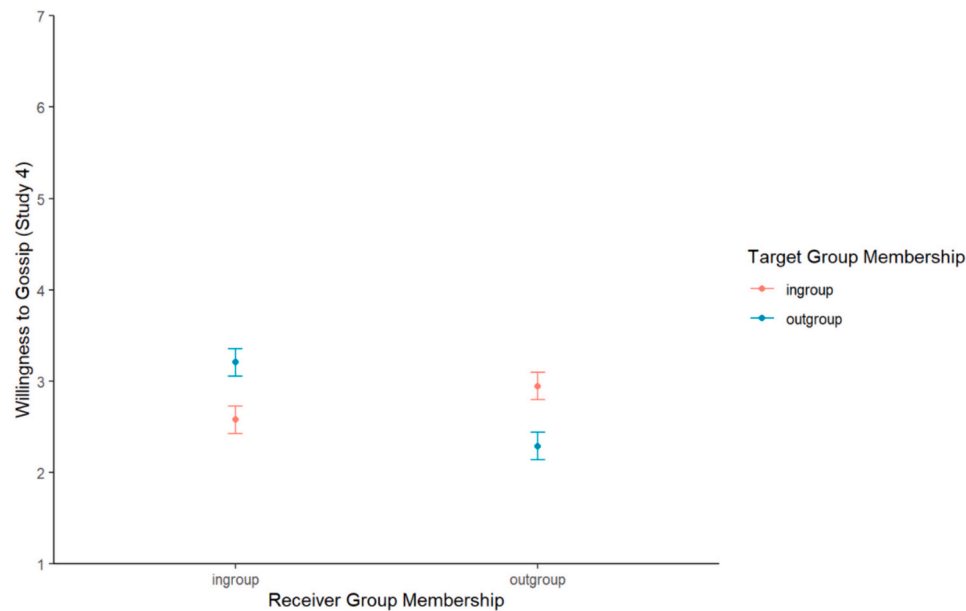


Fig. 5. Estimated marginal means and standard errors of the expected willingness to gossip by sender and receiver group membership (Study 4).

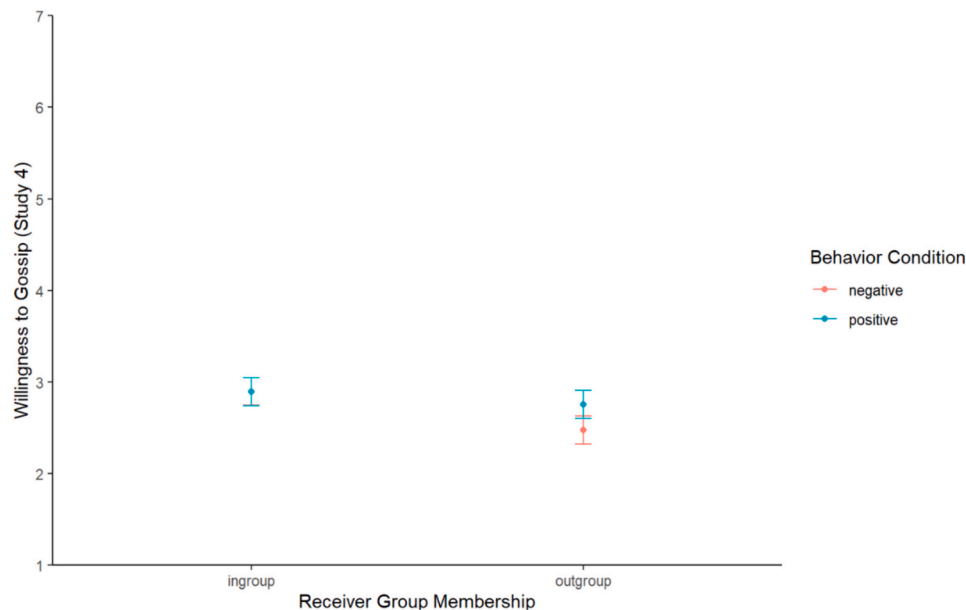


Fig. 6. Estimated marginal means and standard errors of the expected willingness to gossip by receiver group membership and target behavior (Study 4).

Study 4, group image concern discouraged it in Study 3. This can be interpreted as suggesting that negative between-group gossip, by default, is hindered by the concern that it would damage group reputation. However, in the actual group context, people rather think about protecting out-group gossip receivers from a bad in-group gossip target. Likewise, when people observe negative out-group behavior, the protection motive drive gossip towards in-group members, in the minimal group context, but it does not in the university context.

In addition, when people observe positive in-group behavior, gossip towards out-group members is driven by the relationship building motive in the minimal group context, but it is by the group image concern that drove the gossip in the university context. Similarly, when people observe positive out-group behavior, the relationship building motive was the only significant predictor of gossip towards in-group members in the minimal group context. Contrastingly, however, the information gathering/validation and social enjoyment motives

significantly predicted it in the university context.

Given that minimal group and university contexts differ in diverse aspects (i.e., perceived competition, the perceived potential future interaction opportunities, the actual commitment to the in-group, etc.), we cannot explain the observed differences in the findings between the two studies. However, our studies provide evidence suggesting that intergroup gossip motivations substantially change when we shift from minimal groups to actual groups.

7. General discussion

In the present research, we explored expectations about how willing people are to engage in within- and between-group gossip (Studies 1 and 2) as well as how willing people themselves are to engage in within- and between-group gossip (Studies 3 and 4). According to the group-bounded indirect reciprocity, we predicted that individuals expect that

Table 4
Gossip motivations by conditions (Studies 3 and 4).

| Behavior | Target | Recipient | Study | Regression Coefficients <i>B</i> (semi-partial correlation, <i>p</i> value) | | | | | |
|----------|--------|-----------|---------|---|---------------------|-----------------------|----------------------|------------------------|----------------------|
| | | | | NI | SE | RB | P | GI | IG/IV |
| Negative | In | In | Study 3 | 0.10(0.08, 0.393) | 0.37(0.23, 0.019)* | −0.16(−0.11, 0.259) | 0.13(0.11, 0.265) | −0.20(−0.16, 0.099) | 0.44(0.33, 0.001)* |
| | | | Study 4 | 0.27(0.18, 0.005)* | 0.07(0.05, 0.443) | 0.13(0.08, 0.204) | 0.19(0.16, 0.014)* | −0.02(−0.01, 0.819) | 0.13(0.09, 0.155) |
| | | Out | Study 3 | −0.02(−0.02, 0.859) | 0.09(0.06, 0.531) | 0.18(0.13, 0.174) | 0.18(0.15, 0.107) | −0.49(−0.34, < 0.001)* | 0.50(0.34, < 0.001)* |
| | | | Study 4 | 0.18(0.12, 0.045) | 0.03(0.02, 0.760) | 0.05(0.03, 0.598) | 0.21(0.18, 0.003)* | 0.11(0.11, 0.080) | 0.26(0.17, 0.004)* |
| | | In | Study 3 | 0.32(0.30, < 0.001)* | −0.06(−0.04, 0.517) | 0.18(0.12, 0.075) | 0.42(0.35, < 0.001)* | −0.10(−0.08, 0.254) | 0.20(0.17, 0.017)* |
| | | | Study 4 | 0.38(0.25, < 0.001)* | 0.02(0.01, 0.827) | −0.03(−0.02, 0.767) | 0.09(0.07, 0.259) | −0.07(−0.07, 0.291) | 0.35(0.26, < 0.001)* |
| | Out | Out | Study 3 | 0.35(0.31, < 0.001)* | −0.07(−0.05, 0.479) | 0.08(0.06, 0.420) | 0.31(0.27, < 0.001)* | −0.25(−0.23, 0.002)* | 0.39(0.34, < 0.001)* |
| | | | Study 4 | 0.25(0.20, 0.003)* | 0.06(0.05, 0.482) | 0.08(0.06, 0.403) | 0.13(0.12, 0.077) | −0.09(−0.10, 0.151) | 0.11(0.08, 0.253) |
| | | In | Study 3 | −0.18(−0.12, 0.147) | −0.10(−0.07, 0.347) | 0.54(0.36, < 0.001)* | −0.10(−0.09, 0.248) | 0.13(0.09, 0.255) | 0.21(0.17, 0.034)* |
| | | | Study 4 | −0.18(−0.07, 0.315) | 0.17(0.12, 0.117) | −0.14(−0.09, 0.205) | 0.07(0.04, 0.600) | 0.24(0.20, 0.007)* | 0.19(0.14, 0.061) |
| | | Out | Study 3 | 0.10(0.06, 0.543) | −0.05(−0.03, 0.266) | 0.52(0.28, 0.003)* | −0.14(1.10, 0.266) | 0.20(0.15, 0.102) | 0.11(0.08, 0.389) |
| | | | Study 4 | −0.04(0.01, 0.846) | 0.18(0.11, 0.111) | −0.04(−0.02, 0.721) | −0.06(−0.03, 0.694) | 0.24(0.18, 0.007)* | 0.36(0.23, 0.001)* |
| Positive | In | In | Study 3 | −0.24(−0.16, 0.152) | −0.17(−0.05, 0.673) | 0.35(0.23, 0.035)* | 0.22(0.17, 0.131) | −0.001(−0.001, 0.994) | 0.06(0.05, 0.648) |
| | | | Study 4 | −0.07(−0.04, 0.604) | 0.27(0.17, 0.011)* | 0.002(0.001, 0.983) | 0.23(0.13, 0.049) | 0.04(0.03, 0.616) | 0.28(0.19, 0.005)* |
| | | Out | Study 3 | −0.01(−0.01, 0.960) | −0.15(−0.11, 0.287) | 0.31(0.21, 0.049)* | 0.06(0.05, 0.654) | −0.18(−0.12, 0.272) | 0.34(0.27, 0.013)* |
| | | | Study 4 | −0.02(−0.002, 0.922) | 0.17(0.11, 0.118) | −0.004(−0.002, 0.972) | 0.21(0.12, 0.101) | 0.12(0.13, 0.071) | 0.10(0.06, 0.374) |

Note: NI: negative influence; SE: social enjoyment; RB: relationship building; P: protection; GI: group image; IG: information gathering; IV: information validation. Numbers for Study 4 were extracted from Table 2 in Imada et al. (2022).

within-group gossip would be more likely than between-group gossip. Supporting this, Studies 1 and 2 overall suggested that people expect in-group and out-group gossip senders to be more willing to gossip about them towards out-group and in-group receivers, respectively. The results are in line with the previous findings that people are less concerned about their reputation when interacting with out-group members compared to when interacting with in-group members (Mifune et al., 2010; Yamagishi & Mifune, 2008). Yet, we note that in the university context (Study 2), people expect that out-group gossip senders would not be more willing to talk about their good deed towards out-group gossip receivers. The lack of the expectation that within-group gossip is more likely in the natural group context suggests that the group-bounded indirect reciprocity account does not fully account for expectations about gossip in natural group contexts, consistently with the previous studies that people expect indirect reciprocity to be unbounded in some contexts (Imada et al., 2023; Romano et al., 2017).

In Study 1, we unexpectedly found that individuals expected out-group gossip senders to be generally more willing to gossip about them than in-group gossip senders (i.e., the significant main effect of sender group membership). This suggests that individuals should be concerned about their reputation regardless of the group membership of gossip senders. We argue that the assumption of group-bounded indirect reciprocity may also lead people to believing that intergroup interactions are rare in the first place. If people by default expect that intergroup interactions are rare, the relatively high willingness of out-group gossip senders to gossip about their behavior does not influence the way they behave in the eyes of out-group members. In other words, participants in Study 1 might have assumed that the scenario in which out-group gossip senders get to talk to in-group gossip receivers would be unlikely or unrealistic. It is therefore sensible for future work to further elucidate the role of a priori expectations about how likely

individuals have an opportunity to engage in intergroup contact in shaping expectations about gossip and the way individuals engage in intergroup interactions.

Regarding the willingness to gossip, we found conflicting findings between Studies 3 and 4. More specifically, in Study 3 in which we focused on the minimal group contexts and examined the impact of group membership per se on intergroup gossip, individuals were generally more willing to gossip towards their own group members compared to out-group members, regardless of the contents (e.g., the valence of target behavior and the group membership of gossip targets). This was in line with their expectation about others' behavior and the group-bounded indirect reciprocity perspective; people expect within-group gossip to be more likely than between-group gossip. Contrastingly, however, in the university affiliation context, individuals are more willing to gossip about in-group and out-group targets towards out-group and in-group receivers, respectively. Taken together, the two studies suggest that there might be unique drivers of between-group gossip and/or impediments of within-group gossip in the university affiliation context. In addition, the finding further suggests that consistently with some previous studies (Imada et al., 2023; Romano et al., 2022), while the group-bounded indirect reciprocity well explains default expectations and behaviors (Imada et al., 2023; Imada et al., 2024), it has rather a limited role in natural intergroup contexts where individuals can base their decision-making on a wide array of information. We would like to note, however, that we used an experimental vignette that simulates day-to-day norm deviations in Studies 2 and 4, whereas we relied on more stylized and abstract target behavior, dictator giving, in Studies 1 and 3. As such, we cannot fully attribute the observed differences between the minimal and university contexts to the varying nature of intergroup contexts. It is thus desirable to conduct a more comprehensive set of studies systematically varying in intergroup

contexts and target behaviors.

While our studies do not allow us to identify systematic explanations of the observed difference between the two contexts, our exploratory analyses of gossip motivations offer some hints and leaves promising future directions. As discussed in Imada et al. (2022), individuals may strategically utilize between-group gossip in the actual group contexts. For instance, they may share positive gossip about in-group members with out-group members in order to boast about their group and clarify the positive distinction between the groups. For the same reason, they may be unwilling to share negative gossip about in-group members with out-group members. This speculation is partly supported by our analyses on gossip motivations, as Imada et al. (2022) found that group image concern promoted positive gossip about in-group members towards out-group members.

As discussed earlier, the minimal and university contexts differ in diverse aspects. Yamagishi et al. (1999) argued that individuals, by default (i.e., in minimal group contexts), do not expect intergroup interactions, but people do interact with and expect interactions with out-group members when they think of an out-group that is located in the same geographical area. In addition, previous studies reported that people do not actively harm and derogate out-group members in minimal group contexts (Balliet et al., 2014; Simunovic et al., 2013; for a review, see Imada & Mifune, 2024). Yet, the tendency to harm out-group members emerges in some actual intergroup contexts (Jing et al., 2017; Weisel & Böhm, 2015). Because of an array of disparities between the two contexts, our studies cannot disentangle when and why these differences emerge. Particularly, it is yet unclear what encourages between-group gossip while people expect that others are more willing to engage in within-group gossip than between-group gossip. It is therefore an important avenue for future research to advance our understanding of how people use intergroup gossip in everyday life.

Furthermore, our research makes theoretical contributions to the literature on group-bounded indirect reciprocity. Previously, the literature predominantly focused on how group membership and the assumption of group-bounded indirect reciprocity shaped reputation management strategies such as cooperation (Balliet et al., 2014; Imada et al., 2023; Yamagishi et al., 1999). Despite gossip being firmly embedded in the network of indirect reciprocity, the previous literature understudied how gossip is expected to be utilized and, in fact, used. We filled in this gap and demonstrated that the expectation about intergroup gossip is in line with group-bounded indirect reciprocity; people believe that in-group members gossip towards in-group members and out-group members gossip towards out-group members. At least in the minimal group context, we also found supporting evidence of the group-bounded indirect reciprocity regarding the willingness to gossip. Namely, people are willing to gossip towards in-group members rather than out-group members, whether or not it is about in-group members. Overall, our findings buttress the group-bounded indirect reciprocity perspective from a new angle, intergroup gossip. Our research may inspire future work that incorporates intergroup gossip dynamics into intergroup cooperation.

Open practices

Within these studies, we report all measures, manipulations and exclusions. Study materials, data, analysis code, and supplementary results can be found at <https://osf.io/4g2tq/>.

CRediT authorship contribution statement

Hirotaka Imada: Writing – original draft, Visualization, Project administration, Methodology, Investigation, Formal analysis, Conceptualization. **Nobuhiro Mifune:** Writing – review & editing, Visualization, Conceptualization. **Hannah Zibell:** Writing – review & editing, Validation, Investigation, Data curation.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

We have links to study materials, data, analysis code, and supplementary material on the manuscript.

References

- Balliet, D., Wu, J., & De Dreu, C. K. W. (2014). Ingroup favoritism in cooperation: A meta-analysis. *Psychological Bulletin*, 140(6), 1556–1581. <https://doi.org/10.1037/a0037737>
- Beersma, B., & Van Kleef, G. A. (2012). Why people gossip: An empirical analysis of social motives, antecedents, and consequences. *Journal of Applied Social Psychology*, 42(11), 2640–2670. <https://doi.org/10.1111/j.1559-1816.2012.00956.x>
- Bozoyan, C., & Vogt, S. (2016). The impact of third-party information on trust: Valence, source, and reliability. *PLoS One*, 11(2), Article e0149542. <https://doi.org/10.1371/journal.pone.0149542>
- Dores Cruz, T. D., Balliet, D., Sleebos, E., Beersma, B., Van Kleef, G. A., & Gallucci, M. (2019). Getting a grip on the grapevine: Extension and factor structure of the motives to gossip questionnaire. *Frontiers in Psychology*, 10(MAY), 1190. <https://doi.org/10.3389/fpsyg.2019.01190>
- Dores Cruz, T. D., Nieper, A. S., Testori, M., Martinescu, E., & Beersma, B. (2021). An integrative definition and framework to study gossip. *Group & Organization Management*, 46(2), 252–285. <https://doi.org/10.1177/1059601121992887>
- Dores Cruz, T. D., Thielmann, I., Columbus, S., Molho, C., Wu, J., Righetti, F., ... Balliet, D. (2021). Gossip and reputation in everyday life. *Philosophical Transactions of the Royal Society, B: Biological Sciences*, 376(1838), 20200301. <https://doi.org/10.1098/rstb.2020.0301>
- Dores Cruz, T. D., van der Lee, R., Bechtoldt, M. N., & Beersma, B. (2023). Nasty and Noble notes: Interdependence structures drive self-serving gossip. *Personality and Social Psychology Bulletin*, 01461672231171054. <https://doi.org/10.1177/01461672231171054>
- Duncan, C., Tölch, U., Walter, H., & Dziobek, I. (2023). Ethnic discrimination unlearned: Experience in the repeated trust game reduces trust bias. *Frontiers in Psychology*, 14. <https://www.frontiersin.org/articles/10.3389/fpsyg.2023.1139128>
- Engel, C. (2011). Dictator games: A meta study. *Experimental Economics*, 14(4), 583–610. <https://doi.org/10.1007/s10683-011-9283-7>
- Eriksson, K., Strimling, P., Gelfand, M., Wu, J., Abernathy, J., Akotia, C. S., ... Van Lange, P. A. M. (2021). Perceptions of the appropriate response to norm violation in 57 societies. *Nature Communications*, 12(1), 1481. <https://doi.org/10.1038/s41467-021-21602-9>
- Estévez, J. L., & Takács, K. (2022). Brokering or sitting between two chairs? A group perspective on workplace gossip. *Frontiers in Psychology*, 13. <https://www.frontiersin.org/articles/10.3389/fpsyg.2022.815383>
- Feinberg, M., Willer, R., & Schultz, M. (2014). Gossip and ostracism promote cooperation in groups. *Psychological Science*, 25(3), 656–664. <https://doi.org/10.1177/0956797613510184>
- Fonseca, M. A., & Peters, K. (2018). Will any gossip do? Gossip does not need to be perfectly accurate to promote trust. *Games and Economic Behavior*, 107, 253–281.
- Foster, E. K. (2004). Research on gossip: Taxonomy, methods, and future directions. *Review of General Psychology*, 8(2), 78–99. <https://doi.org/10.1037/1089-2680.8.2.78>
- Güth, W., Ploner, M., & Regner, T. (2009). Determinants of in-group bias: Is group affiliation mediated by guilt-aversion? *Journal of Economic Psychology*, 30(5), 814–827. <https://doi.org/10.1016/j.joep.2009.07.001>
- Hackel, L. M., Zaki, J., & Van Bavel, J. J. (2017). Social identity shapes social valuation: Evidence from prosocial behavior and vicarious reward. *Social Cognitive and Affective Neuroscience*, 12(8), 1219–1228. <https://doi.org/10.1093/scan/nsx045>
- Hardy, C. L., & Van Vugt, M. (2006). Nice guys finish first: The competitive altruism hypothesis. *Personality and Social Psychology Bulletin*, 32(10), 1402–1413. <https://doi.org/10.1177/0146167206291006>
- Hartung, F.-M. M., Krohn, C., & Pirschat, M. (2019). Better than its reputation? Gossip and the reasons why we and individuals with “dark” personalities talk about others. *Frontiers in Psychology*, 10(MAY), 1162. <https://doi.org/10.3389/fpsyg.2019.01162>
- Hess, N. H., & Hagen, E. H. (2006). Psychological adaptations for assessing gossip veracity. *Human Nature*, 17(3), 337–354. <https://doi.org/10.1007/s12110-006-1013-z>
- Imada, H. (2023). The relative effectiveness of positive and negative gossip in promoting prosocial giving: The examination of the valence of gossip content and reputational consequences. *Japanese Psychological Research*. <https://doi.org/10.1111/jpr.12473>. online early view.
- Imada, H., Hopthrow, T., & Abrams, D. (2021). The role of positive and negative gossip in promoting prosocial behavior. *Evolutionary Behavioral Sciences*, 15(3), 285–291. <https://doi.org/10.1037/EBS0000218>
- Imada, H., & Mifune, N. (2024). Experimental evidence suggests intergroup relations are, by default, neutral rather than aggressive. *Behavioral and Brain Sciences*, 47, Article e13. <https://doi.org/10.1017/S0140525X23002728>

- Imada, H., Mifune, N., & Shimizu, H. (2024). Psychological mechanisms underlying in-group favoritism in cooperation: Revisiting the reputation management and expectation hypotheses. *Group Processes & Intergroup Relations*. <https://doi.org/10.1177/13684302241239860>. In press.
- Imada, H., Romano, A., & Mifune, N. (2023). Dynamic indirect reciprocity: When is indirect reciprocity bounded by group membership? *Evolution and Human Behavior*, 44(4), 373–383. <https://doi.org/10.1016/j.evolhumbehav.2023.05.002>
- Imada, H., Rullo, M., Hopthrow, T., Van de Vyver, J., & Zagefka, H. (2022). Gossip about in-group and out-group norm deviations. *Comprehensive Results in Social Psychology*, 6 (1–3), 113–133. <https://doi.org/10.1080/23743603.2022.2090327>
- Jing, Y., Gries, P. H., Li, Y., Stivers, A. W., Mifune, N., Kuhlman, D. M., & Bai, L. (2017). War or peace? How the subjective perception of great power interdependence shapes preemptive defensive aggression. *Frontiers in Psychology*, 8. <https://www.frontiersin.org/articles/10.3389/fpsyg.2017.00864>.
- Kajiura, T., Myowa, M., & Mifune, N. (2022). Trait negative reputational concerns among in-group members and in-group favoritism in minimal groups. *Letters on Evolutionary Behavioral Science*, 13(1), 6–9. <https://doi.org/10.5178/LEBS.2022.91>
- Mifune, N., Hashimoto, H., & Yamagishi, T. (2010). Altruism toward in-group members as a reputation mechanism. *Evolution and Human Behavior*, 31(2), 109–117. <https://doi.org/10.1016/j.evolhumbehav.2009.09.004>
- Mifune, N., & Yamagishi, T. (2015). A test of the correlation between ingroup favoritism and fear of negative evaluation. *Research in Social Psychology*, 31(2), 128–134. <https://doi.org/10.14966/jssp.31.2.128>
- Molho, C., Tybur, J. M., Van Lange, P. A. M., & Balliet, D. (2020). Direct and indirect punishment of norm violations in daily life. *Nature Communications*, 11(1). <https://doi.org/10.1038/s41467-020-17286-2>. Article 1.
- Nowak, M. A., & Sigmund, K. (1998). Evolution of indirect reciprocity by image scoring. *Nature*, 393(6685), 573–577. <https://doi.org/10.1038/31225>
- Nowak, M. A., & Sigmund, K. (2005). Evolution of indirect reciprocity. *Nature*, 437 (7063), 1291–1298. <https://doi.org/10.1038/nature04131>
- Ockenfels, A., & Werner, P. (2014). Beliefs and ingroup favoritism. *Journal of Economic Behavior and Organization*, 108, 453–462. <https://doi.org/10.1016/j.jebo.2013.12.003>
- Peters, K., & Fonseca, M. A. (2020). Truth, lies, and gossip. *Psychological Science*, 31(6), 702–714. <https://doi.org/10.1177/0956797620916708>
- Peters, K., Jetten, J., Radova, D., & Austin, K. (2017). Gossiping about deviance: Evidence that deviance spurs the gossip that builds bonds. *Psychological Science*, 28 (11), 1610–1619. <https://doi.org/10.1177/0956797617716918>
- Piazza, J., & Bering, J. M. (2008). Concerns about reputation via gossip promote generous allocations in an economic game. *Evolution and Human Behavior*, 29(3), 172–178. <https://doi.org/10.1016/j.evolhumbehav.2007.12.002>
- Rabbie, J. M., & Horwitz, M. (1969). Arousal of ingroup-outgroup bias by a chance win or loss. *Journal of Personality and Social Psychology*, 13, 269–277. <https://doi.org/10.1037/h0028284>
- Romano, A., Balliet, D., & Wu, J. (2017). Unbounded indirect reciprocity: Is reputation-based cooperation bounded by group membership? *Journal of Experimental Social Psychology*, 71, 59–67. <https://doi.org/10.1016/j.jesp.2017.02.008>
- Romano, A., Saral, A. S., & Wu, J. (2022). Direct and indirect reciprocity among individuals and groups. *Current Opinion in Psychology*, 43, 254–259. <https://doi.org/10.1016/j.copsyc.2021.08.003>
- Romano, A., Sutter, M., Liu, J. H., Yamagishi, T., & Balliet, D. (2021). National parochialism is ubiquitous across 42 nations around the world. *Nature Communications*, 12(1), 1–8. <https://doi.org/10.1038/s41467-021-24787-1>
- Simunovic, D., Mifune, N., & Yamagishi, T. (2013). Preemptive strike: An experimental study of fear-based aggression. *Journal of Experimental Social Psychology*, 49(6), 1120–1123. <https://doi.org/10.1016/j.jesp.2013.08.003>
- Sommerfeld, R. D., Krambeck, H. J., & Milinski, M. (2008). Multiple gossip statements and their effect on reputation and trustworthiness. *Proceedings of the Royal Society B: Biological Sciences*, 275(1650), 2529–2536. <https://doi.org/10.1098/rspb.2008.0762>
- Sommerfeld, R. D., Krambeck, H. J., Semmann, D., & Milinski, M. (2007). Gossip as an alternative for direct observation in games of indirect reciprocity. *Proceedings of the National Academy of Sciences of the United States of America*, 104(44), 17435–17440. <https://doi.org/10.1073/pnas.0704598104>
- Sylwester, K., & Roberts, G. (2010). Cooperators benefit through reputation-based partner choice in economic games. *Biology Letters*, 6(5), 659–662. <https://doi.org/10.1098/rsbl.2010.0209>
- Tajfel, H., Billig, M. G., Bundy, R. P., & Flament, C. (1971). Social categorization and intergroup behaviour. *European Journal of Social Psychology*, 1(2), 149–178. <https://doi.org/10.1002/ejsp.2420010202>
- Wax, A., Rodriguez, W. A., & Asencio, R. (2022). Spilling tea at the water cooler: A meta-analysis of the literature on workplace gossip. *Organizational Psychology Review*, 12 (4), 453–506. <https://doi.org/10.1177/20413866221112383>
- Wedekind, C., & Milinski, M. (2000). Cooperation through image scoring in humans. *Science*, 288(5467), 850–852. <https://doi.org/10.1126/science.288.5467.850>
- Weisel, O., & Böhm, R. (2015). “Ingroup love” and “outgroup hate” in intergroup conflict between natural groups. *Journal of Experimental Social Psychology*, 60, 110–120. <https://doi.org/10.1016/j.jesp.2015.04.008>
- Wu, J., Balliet, D., & Van Lange, P. A. M. (2015). When does gossip promote generosity? Indirect reciprocity under the shadow of the future. *Social Psychological and Personality Science*, 6(8), 923–930. <https://doi.org/10.1177/1948550615595272>
- Wu, J., Balliet, D., & Van Lange, P. A. M. (2016a). Gossip versus punishment: The efficiency of reputation to promote and maintain cooperation. *Scientific Reports*, 6 (December 2015), 1–8. <https://doi.org/10.1038/srep23919>
- Wu, J., Balliet, D., & Van Lange, P. A. M. (2016b). Reputation, gossip, and human cooperation. *Social and Personality Psychology Compass*, 10(6), 350–364. <https://doi.org/10.1111/spc3.12255>
- Yamagishi, T., Jin, N., & Kiyonari, T. (1999). Bounded generalized reciprocity: Ingroup boasting and ingroup favoritism. *Advances in Group Processes*, 16, 161–197.
- Yamagishi, T., & Kiyonari, T. (2000). The group as the container of generalized reciprocity. *Social Psychology Quarterly*, 63(2), 116–132. <https://doi.org/10.2307/2695887>
- Yamagishi, T., & Mifune, N. (2008). Does shared group membership promote altruism?: Fear, greed, and reputation. *Rationality and Society*, 20(1), 5–30. <https://doi.org/10.1177/1043463107085442>