

Fast track report

Group-level effects of forgiveness: Group cohesiveness and collective action in social dilemmas

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Abstract

Forgiveness research has predominately focused on individual/relational outcomes such as well-being and closeness. Less research has examined group outcomes such as cohesiveness or collective action. Forgiveness studies have also emphasized the victim's or transgressor's perspective, neglecting the effects of forgiveness on ingroup members who have neither given nor received forgiveness. We theorize that forgiveness promotes collective action among ingroup members through group cohesiveness and that transgressors' apologetic reactions impact this process. In a laboratory experiment, 229 students (175 females) were led to believe they were in a social dilemma with three others. Some participants witnessed group members forgive an apologetic, obstinate, or neutral defector, whereas others witnessed an unforgiving response. Forgiveness of apologetic and neutral defectors increased later cooperation among ingroup members. This effect was generally mediated by group cohesiveness. Our findings suggest that forgiveness can impact cooperation on a group level, providing a path to successful resolutions to collective action problems. Copyright © 2014 John Wiley & Sons, Ltd.

Interpersonal forgiveness is defined as the process of changing negative emotions following a transgression into positive emotions (McCullough, 2001). Forgiveness has been related to beneficial outcomes for individuals (Riek & Mania, 2012), relationships (Tsang, McCullough, & Fincham, 2006), and society in general (Carlisle et al., 2012). Despite the social nature of forgiveness, its effects on group dynamics have been understudied. Given the positive relationship between forgiveness and prosocial outcomes, forgiveness has the potential to affect group dynamics and collective behavior. In this study, we investigated whether forgiveness of a transgressor bolsters ingroup members' group cohesiveness and fosters subsequent cooperation in a social dilemma. We extend the forgiveness literature by looking at the effects of forgiveness on group behavior and also by examining the prosocial effects of forgiveness on ingroup observers to the forgiveness process.

Forgiveness and Group Cohesiveness

Our primary argument is that witnessing forgiveness of an ingroup transgressor can produce group cohesiveness, which refers to the qualities of the group that promote attraction between members and hold the group together (e.g., Dion, 2000; Hogg, 1993). Group cohesiveness can include feelings of trust, social unity, and positive affective regard for the group (Molm, 2010).

Previous research has suggested that friendly interactions between group members facilitate cooperation by increasing group ties and cooperative expectations (Jackson, 2011). Forgiveness may serve similar functions to friendly group interactions, thereby increasing cohesiveness. Forgiveness may signal to ingroup members that the forgiver is willing to cooperate with them in future interactions, even if they have been previously selfish (Axelrod, 1984). This assertion aligns with the anthropological concept of "benign intent": Forgiveness signals that an individual eschews conflict and pursues cooperation (Silk, 1997). If ingroup members expect forgivers to cooperate, they may view forgivers positively and value their presence.

The positive qualities attributed to forgivers may color ingroup members' feelings about the group and foster cohesiveness. Others have noted that regard for a group is often derived from feelings toward individuals. For example, Friedkin (2004:419) contended that "interpersonal interactions are likely to be reified as a positive attraction to the group as a unit." Similarly, Fararo and Doreian (1998:4) argued that positive affect toward group members builds a sense of common membership that "lifts the network of interactions to what is, for the actors, a higher-order social entity." Interpersonal attraction tends to be positively associated with attraction toward the group (e.g., Hogg & Hains, 1996, 1998).

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In sum, forgivers may be viewed more positively than non-forgivers. Such positive feelings may be abstracted to the group, resulting in increased group cohesiveness. Consequently, in instances where there is an ingroup transgressor, levels of group cohesiveness should be higher in groups with forgivers versus non-forgivers.

Hypothesis 1: Groups with forgiving members will report more group cohesiveness than groups with non-forgiving members.

Transgressor's Responses

The effect of forgiveness on group cohesiveness may depend on the transgressor's response. Relevant research on apologies indicates mixed results, with some findings pointing to a positive association (e.g., Bottom, Gibson, Daniels, & Murnighan, 2002), but others suggesting that offering no explanation for a transgression can yield even more forgiveness than an apology (Struthers, Eaton, Santelli, Uchiyama, & Shirvani, 2008). In some cases, an apology may signal that the transgression was purposeful; when no apology is given, individuals may be less certain in their judgments of intention, leading to more forgiveness.

In addition to apology and no response, we also address transgressor obstinacy. Obstinate transgressors refuse to admit their actions were harmful. Research suggests that a transgressor's perceived intentions influence forgiveness (e.g., Fehr, Gelfand, & Nag, 2010). Individuals may interpret an obstinate transgressor's offense as intentional. Group members may have negative reactions to those who forgive obstinate transgressors as it is unjustified. Consequently, group cohesiveness may be weaker when obstinate transgressors are forgiven versus not forgiven. We predict that the positive effects of forgiveness on group cohesiveness may be qualified by the transgressor's response.

Hypothesis 2: Compared with groups with non-forgiving members, groups with forgiving members will report more group cohesiveness when transgressors are apologetic or unable to offer a response and less group cohesiveness when transgressors are obstinate.

Group Cohesiveness and Cooperation

Previous research suggests a relationship between group cohesiveness and cooperation in social dilemmas. Braver (1975) found that manipulated cohesiveness increased cooperation in a prisoner's dilemma when the participant was uncertain about the partner's next move. Jackson (2011) found that friendly group interactions prevented decreases in cooperation after group failure, and this effect was moderated by increases in group ties. Other research indicates relationships between group identity (a related construct to group cohesiveness) and cooperation (e.g., Brewer & Kramer, 1986; Utz, 2004).

Given prior research, we expect group cohesiveness to increase cooperation. Our predictions for cooperation follow Hypotheses 1 and 2, and predict a main effect of forgiveness. In addition, we contend that transgressor response may influence the effect of forgiveness on group cohesiveness.

Hypothesis 3: Groups with forgiving members will cooperate more than groups with non-forgiving members.

Hypothesis 4: Compared with groups with non-forgiving members, groups with forgiving members will cooperate more when transgressors are apologetic or unable to offer a response and cooperate less when transgressors are obstinate.

Group Cohesiveness Mediates the Forgiveness–Cooperation Relationship

Taken together, the arguments suggest moderated mediation of group cohesiveness on the relationship between forgiveness and cooperation. Forgiveness promotes ingroup cohesiveness when transgressors are apologetic or offer no response, and this cohesiveness increases cooperation in subsequent interactions. Alternatively, forgiveness impedes cohesiveness when transgressors are obstinate, and this decreases subsequent cooperation.

Hypothesis 5: When transgressors are apologetic or offer no response, forgiveness increases cooperation by increasing group cohesiveness.

Hypothesis 6: When transgressors are obstinate, forgiveness decreases cooperation by decreasing group cohesiveness.

METHOD

Design and Participants

We used an experiment consisting of a 3 (apologetic message, obstinate message, no message) \times 2 (forgive, no forgive) fully crossed factorial design. A total of 229 students (175 females) from a university in the Southwestern USA participated in return for credit in introductory psychology courses and the opportunity to win a \$50 gift card. Seventeen participants (7.4%) were removed from analyses because of suspicion or confusion, leaving 212.¹ Participants ranged in age from 18 to 27 ($M = 19.41$; $SD = 1.52$ years). The racial composition of the sample was 60% White, 36% African American, 32% Hispanic, 15% Asian, and 4% self-reporting as "other."

Procedure

Participants arrived at a lab in groups of up to four and were seated in individual isolation rooms to prevent interaction with others. All decisions were made via computer. Participants learned they would be grouped with three others to work on a series of tasks. They were given letter identifiers, and all groups consisted of members U, Y, W (the transgressor), and X (the participant). Raffle tickets were earned based on their own and others' choices. They learned that their name would appear in the drawing for a \$50 gift card once for each ticket. In reality, participants interacted with simulated others (but

¹We probed suspicion with a post-study questionnaire. Suspicious participants questioned whether others were simulated. In the present study, suspicion levels are lower than in comparable studies (e.g., 11% in Carlisle et al., 2012). Results remain substantively similar when suspicious participants are included.

were led to believe that those others were the participants with whom they arrived) whose behavior was pre-programmed. The experiment lasted 35 minutes.

Public Goods Dilemma

All group members had a “personal fund” consisting of five tickets for each decision. They were to decide how much, if any, of their personal fund to contribute to a “group fund” and how much to retain in their personal fund. The total amount contributed to the group fund would be doubled and divided equally among everyone regardless of initial contributions. If all contributed maximally, participants would double their earnings. Yet, because one’s share of the group fund was not contingent on initial contribution, those giving little could benefit from others’ generosity. If all pursued self-interest, each earned only what was in his or her initial fund. This situation presented a social dilemma in which individual and collective interests were at odds (Kollock, 1998).² To ensure they understood the procedure, participants completed a brief comprehension quiz. Incorrect responses were followed by an explanation of the correct answer.

First Decision

For the first decision, group members simultaneously decided how much to contribute to the group fund. Thereafter, instructions stated that the experimenters were interested in reactions to contribution amounts. To this end, individuals would have the opportunity to type a message in reference to others’ decisions or their own. Before typing, individuals saw how much others contributed and earned as a result of their own and others’ contributions. In all conditions, out of 5 tickets, U gave 4, W gave 0, and Y gave 3.5. The screen also showed the participant’s contribution. Payoffs were contingent upon the participant’s contribution, and thus varied slightly, but in all cases, W earned the most, whereas U and Y earned the least. This indicated that W was a transgressor in that he or she gave nothing to the group yet received a high return. After viewing this information, participants typed their message.

Manipulations

Participants were randomly assigned to transgressor response and forgiveness conditions. They learned the system would randomly select between 0 and 4 messages. In the apology and obstinate response conditions, a screen indicated the system selected one message and then displayed the message. For both conditions, the message was from W (the transgressor). In the apology condition, the message read, “It was selfish of me to not contribute anything. I’m sorry for my actions. I’ll do better next time.” In the obstinate condition, it read, “It was selfish of me to not contribute anything, but I’m not sorry for my actions. I’ll do the same thing next time.”

After viewing W’s message, individuals were informed that some might have the opportunity to respond to W. The system would “randomly” select 0 to 4 “communicators” who could

write a reaction to the message. In all conditions, the system selected two communicators: U and Y, both of whom had contributed relatively large amounts to the public good (4 and 3.5, respectively). While U and Y were ostensibly typing their responses, non-communicators (i.e., participants) completed demographic information. Thereafter, they viewed the communicators’ responses. In the apology and obstinate conditions, W’s original message was displayed along with reactions by U and Y.

In the forgiveness condition, U responded, “I’m angry about how you ripped us off, but I forgive you. Please think about being more cooperative next time.” Y’s note stated, “You were mean, but I forgive you anyway. Please remember that if we all contribute, we all earn more.” Thus, in the forgiveness condition, participants believed others in the group forgave the transgressor’s behavior. In the no forgiveness condition, U wrote, “I’m angry about how you ripped us off, and I don’t forgive you. Please think about being more cooperative next time.” Y’s note said, “You were mean, so I don’t forgive you. Please remember that if we all contribute, we all earn more.” Those in the no forgiveness condition believed others were unwilling to forgive W’s selfishness.

The no response condition was similar to the apology and obstinate conditions in that, after making contributions and seeing others’ choices, individuals had the opportunity to write a message. However, unlike the other conditions, those in the no response condition learned that zero messages were randomly selected to show to group members. Participants, therefore, did not view an apology or obstinate message from W. Thereafter, they were informed that although none of the previous messages would be made public, “communicators” would be chosen who could send a specific message to another person. As in the other conditions, U and Y were selected as communicators. In both instances, these individuals’ reactions were in reference to W’s contribution. Forgiveness and no forgiveness notes were identical to those stated earlier.³

Group Cohesiveness Measure

After reading the communicator’s messages, participants completed measures tapping three dimensions of group cohesiveness (see Molm, Collett, & Schaefer, 2007). All questions included seven-point bipolar adjective scales. Four items measured affective regard by asking participants to describe their general feelings toward other group members as negative/positive ($\alpha = .91$). Four items measured perceptions of social unity by asking participants to describe their relationship with other group members (e.g., divided/united; $\alpha = .85$). Finally, items from the *General Social Survey* (Smith, Marsden, & Hout, 1972–2010) measured trust. These included whether others can be trusted, are helpful, and are fair in social interactions ($\alpha = .75$).

³Four-person groups were the smallest that would enable us to credibly carry out the manipulations. The actual participant and transgressor were necessary. If there was only one other group member who forgave, participants might think there was something special about this individual. Instead, we included two forgivers that established a forgiveness norm. Future work should address group size and impact of forgiveness on cohesiveness.

²The social dilemma situation confronts individuals with a collective problem. It is therefore reasonable to assume that participants saw themselves as a group and recognized that a solution was only possible if they worked together.

Table 1. Descriptive statistics for cohesiveness measures and cooperation

	Forgiveness			No forgiveness		
	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>
<i>Group cohesiveness</i>						
Apology	4.62	0.77	39	3.84	1.08	37
Obstinate	4.14	1.16	36	3.99	1.24	35
No response	4.55	0.80	36	3.94	0.97	29
<i>Cooperation at T2</i>						
Apology	6.03	2.91	39	5.54	2.84	37
Obstinate	4.44	2.77	36	5.54	2.99	35
No response	6.78	2.91	36	5.24	5.59	29

Note: *N* = 212.

Second Decision

A second public goods dilemma with the same (fictitious) others followed the questionnaire. Unlike the first decision, choices in the second decision were anonymous and no messages were written, creating a situation where the temptation to free-ride may be especially strong. This offered a strict test of how cooperation is affected by transgressors' reactions to their own behavior and the responses of group members. Participants were not told this decision would be their final one in order to eliminate possible end-game effects. After making the second decision, participants were thoroughly debriefed and informed that a gift card winner would be contacted later in the semester. To ensure fairness and equality across conditions, it was made clear that all participants would be given the same number of raffle tickets.

RESULTS

Manipulation Checks

Means and standard deviations are in Table 1. To check the forgiveness manipulation, we asked participants to rate how forgiving group members were. A 2 (forgiveness, no forgiveness) × 3 (apologetic transgressor, obstinate transgressor, no response) analysis of variance (ANOVA) showed a main effect of forgiveness ($F(1, 206) = 277.95, p < .001, \eta^2 = 0.57$). Those in the forgiveness condition ($M = 5.79, SD = 1.33$) reported that others were more forgiving than those in the no forgiveness condition ($M = 2.28, SD = 1.69$).

To check the success of our manipulation of W's behavior, we assessed participants' contributions in the first decision. On average, participants gave 2.67 tickets ($SD = 1.29$); this amount was significantly more than the zero that W contributed ($t(211) = 29.99, p < .001$). We also asked participants to rate the fairness of others' first contributions. As expected, W ($M = 2.60, SD = 2.06$) was viewed as less fair than U ($M = 5.91, SD = 1.36; t(211) = 20.10, p < .001$) and Y ($M = 5.67, SD = 1.21, t(211) = 21.38, p < .001$). These findings suggest that W was perceived as a transgressor.

Group Cohesiveness

The three group cohesiveness scales were highly correlated ($r > .52; p < .001$ for each combination) and were combined to form a single index ranging from 1 to 7 ($M = 4.19; SD = 1.05$).

A 2 (forgiveness, no forgiveness) × 3 (apologetic transgressor, obstinate transgressor, no response) ANOVA examined the effect of forgiveness and transgressor response on group cohesiveness. In support of Hypothesis 1, results indicated a significant main effect of forgiveness ($F(1, 211) = 13.21, p < .001, \eta^2 = 0.06$), with those participants witnessing forgiveness reporting more cohesiveness than those witnessing unforgiveness. Contrary to Hypothesis 2, the interaction between forgiveness and transgressor response was not significant.

Cooperation

To test Hypotheses 3 and 4, we performed a 2 (forgiveness, no forgiveness) × 3 (apologetic transgressor, obstinate transgressor, no response) ANOVA on participants' contribution in the anonymous second social dilemma.⁴ Contrary to Hypothesis 3, the main effect of forgiveness was non-significant. The forgiveness × transgressor response interaction was significant ($F(2, 206) = 3.70, p < .05, \eta^2 = 0.04$; Figure 1).

Consistent with Hypothesis 4, results indicated a difference between the forgiveness and no forgiveness conditions when the transgressor gave no response. Participants in the forgiveness/no response condition gave significantly more than those in the no forgiveness/no response condition ($F(1, 64) = 5.14, p < .05, \eta^2 = 0.08$). In groups with an apologetic transgressor, forgiveness and non-forgiveness produced similar cooperation levels. Participants in groups with obstinate transgressors gave no more when transgressors were not forgiven compared with when they received forgiveness. These findings suggest that forgiveness (vs. non-forgiveness) of transgressors offering no response enhanced cooperation in a subsequent interaction.

⁴Our sample is female dominated. Recent work indicates that females are more prosocial than males (Willer, Wimer, & Owens, 2013). Ancillary analyses included gender as a covariate on group cohesiveness and cooperation. Gender had no effect in either set of analyses.

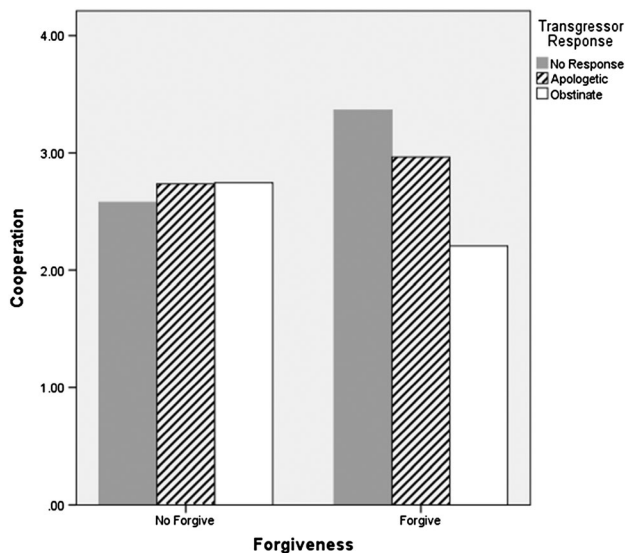


Figure 1. Interaction between forgiveness and transgressor response on cooperation

Mediation Analyses

We expected group cohesiveness to mediate the relationship between forgiveness and cooperation differently depending on transgressor response. To test Hypothesis 5, we used a structural equation model (Figure 2). We did not test Hypothesis 6 because earlier analyses (testing Hypothesis 2) failed to support a negative relationship between obstinate deviants and lower cohesiveness; thus, mediation is not possible. The final model only tested Hypothesis 5 by examining the apologetic and non-responding transgressor conditions.

We first created interaction terms between forgiveness and transgressor response (apologetic or no response), and included each of these terms as predictors of group cohesiveness.⁵ We then examined the effects of group cohesiveness as a mediator between the forgiveness \times transgressor interaction and cooperation. Results indicated that only the forgiveness condition significantly predicted the mediating variable. We thus ran a simplified model combining transgressor response. The final model included two conditions: forgiveness ($n = 75$) and no forgiveness ($n = 66$).

Overall Model Fit

Using *MPlus* (v. 6.0; Muthén & Muthén, 1998) analyses indicated good model fit, $\chi^2(4) = 7.849, p = .10$. Compensating for the effects of model complexity, root mean square error of approximation = 0.08 (90% confidence interval (CI)₉₀): 0.000, 0.168), Tucker–Lewis index = 0.935, and comparative fit index = 0.974. Figure 2 shows the beta weights of the hypothesized model.

⁵Forgiveness ($-1 =$ no forgiveness, $1 =$ forgiveness) and transgressor response ($0 =$ no response, $1 =$ apology) were coded using effect coding. The interaction terms examine if a moderator (transgressor response) influences the outcome (cooperation) and if a mediator (group cohesiveness) is present. None of the interaction terms predicted the mediator. Therefore, moderated mediation did not occur, and we only test for simple mediation.

Group-level effects of forgiveness

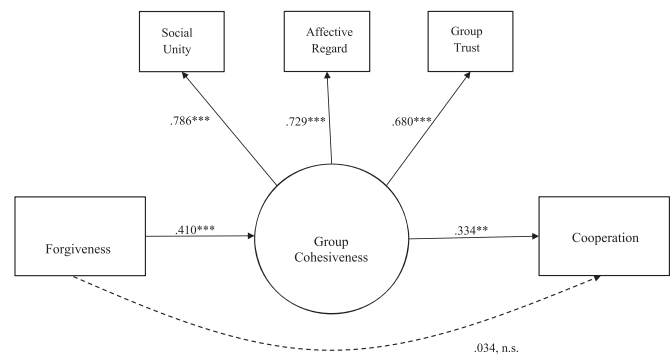


Figure 2. Model depicting mediation effects of forgiveness on group cohesiveness and cooperation. Standardized coefficients are shown. Note: Selected fit indexes: $\chi^2(4, N = 141) = 7.85, p = .10$ (comparative fit index = 0.974, Tucker–Lewis index/non-normed fit index = 0.935, root mean square error of approximation = 0.083) with a 90% confidence interval of 0.000–0.168. * $p < .05$, ** $p < .01$, *** $p < .001$

Mediation Effects

Consistent with Hypothesis 5, group cohesiveness fully mediated the effect of forgiveness in groups with an apologetic or non-responding transgressor (mediated effect = 0.137; CI: 0.045, 0.229). Because this was full mediation, as indicated by the non-significant direct path from forgiveness to cooperation, forgiveness did not have a significant main effect on cooperation once group cohesiveness was controlled. Thus, forgiveness produced an indirect increase in cooperation through an increase in group cohesiveness.

DISCUSSION

This study extends forgiveness research beyond the transgression dyad, to those who witness the forgiveness of an ingroup transgressor. It demonstrates that the benefits of forgiveness are not limited to the individual or relationship levels but can also manifest in positive group-level outcomes.

Findings were generally consistent with the predictions. Forgiveness by ingroup members promoted cooperation by increasing group cohesiveness. Results depended on the transgressor's response. When the transgressor apologized or was not allowed to explain the transgression, forgiveness led to increased cooperation, and this effect was mediated by group cohesiveness. In contrast, forgiveness of an obstinate transgressor was not linked to cooperation or cohesiveness. This lack of mediation was likely due to participants making a rational response in the face of a forgiven obstinate transgressor: When the unrepentant transgressor acted selfishly, the rational choice was to reduce contributions in subsequent interactions, rather than to cooperate despite the transgressor's likely continued defection.

Transgressor Obstinance

Transgressor obstinance did not decrease cooperation or group cohesiveness. Participant ratings of the notes written by members U and Y in response to W may explain this finding.

Consistent with our argument, cohesiveness emerged in forgiving groups with apologetic and non-responding transgressors because ingroup members viewed forgiveness as appropriate. On the other hand, the interaction was non-significant (full results are available upon request), which may suggest ingroup members believed that forgiveness of obstinate transgressors was equally justifiable as non-forgiveness. This is counter to our argument that individuals would view forgiveness of obstinate transgressors as unjustified. Negative feelings in groups where obstinate transgressors were forgiven did not emerge; thus, low levels of cohesiveness did not follow.

Why would forgiveness of obstinate transgressors be seen as fair? One possibility is that forgiveness is viewed as a positive virtue. Religious doctrine, especially within Protestant Christianity (the predominant background of our participants), is often interpreted as encouraging unconditional forgiveness among believers (Cohen, Malka, Rozin, & Cherfas, 2006). Many people espouse religiously oriented practices such as “turning the other cheek” and “doing to others as you’d have done to you.” To the extent that forgiveness norms exist, participants may have believed in the overall positivity of forgiveness, even in the face of an unrepentant offender.

Alternative Explanations

The current study did not examine if cooperation was driven by underlying emotions toward group members. Recent work has examined the effects of specific types of emotions in social dilemmas. For example, Wubben, De Cremer, and Van Dijk (2008, 2009) found that information about others’ anger or guilt affected people’s subsequent exit decisions and choice of leader. Similarly, they showed that expressions of guilt from other group members affected people’s inferences about those members’ benevolent intentions. The effects of apology and obstinacy in our study mirror some of these findings; however, we did not directly test the impact of emotions.

Further, observing others forgive someone might have led to feelings of elevation, or “a [positive] emotion response to moral exemplars,” which has been linked to prosocial behavior, even toward people unassociated with the exemplar (Algoe & Haidt, 2009: 106). Although elevation should increase cooperation, it is unclear the relationship elevation would have with group cohesiveness. Yet, it presents an additional mechanism by which forgiveness might affect behaviors in a group setting, one that might be explored in future research.

Although the laboratory provided us with control over group dynamics, the setting presents a limitation due to its artificiality. Further research can explore whether these effects generalize to more naturally occurring groups. Additionally, we were not able to ascertain whether the effects in our study were driven by the presence of forgiveness on the one hand or the lack of forgiveness on the other. Future studies where no mention of forgiveness is made could further clarify these effects.

Conclusion

Forgiveness has been shown to be an important tool for the mental and physical health of victims and transgressors, and

can be a force for relationship repair. Our study suggests that forgiveness can also benefit groups: Ingroup members who witness forgiveness increase their positive feelings toward the group, leading to beneficial behaviors on behalf of the collective. Forgiveness thus has the potential to promote group-level well-being, in addition to individual and relational well-being. Forgiveness may be one important but often neglected way of transforming self-interested motivations into collective concern. Rather than finding punitive ways to encourage people to vote, recycle, or contribute to a multitude of other real-world social dilemmas, it might be just as fruitful to increase group solidarity through the modeling of forgiveness.

REFERENCES

- Algoe, S. B., & Haidt, J. (2009). Witnessing excellence in action: The ‘other-praising’ emotions of elevation, gratitude, and admiration. *The Journal of Positive Psychology, 4*, 105–127.
- Axelrod, R. (1984). *The evolution of cooperation*. New York: Basic Books.
- Bottom, W. P., Gibson, K., Daniels, S. E., & Murnighan, J. K. (2002). When talk is not cheap: Substantive penance and expressions of intent in rebuilding cooperation. *Organization Science, 13*(5), 497–513. DOI: 10.1287/orsc.13.5.497.7816
- Braver, S. L. (1975). Reciprocity, cohesiveness and cooperation in two-person games. *Psychological Reports, 36*, 371–378.
- Brewer, M. B., & Kramer, R. M. (1986). Choice behavior in social dilemmas: Effects of social identity, group size, and decision framing. *Journal of Personality and Social Psychology, 50*, 543–549.
- Carlisle, R. D., Tsang, J., Ahmad, N. Y., Worthington, E. L., Jr., Witvliet, C. V. O., & Wade, N. G. (2012). Do actions speak louder than words? Differential effects of restitution and apology on behavioral and self-reported forgiveness. *Journal of Positive Psychology, 7*, 294–305.
- Cohen, A. B., Malka, A., Rozin, P., & Cherfas, L. (2006). Religion and unforgivable offenses. *Journal of Personality, 74*, 85–118. DOI: 10.1111/j.1467-6494.2005.00370.x
- Dion, K. L. (2000). Group cohesion: From ‘field of forces’ to multidimensional construct. *Group Dynamics: Theory, Research, and Practice, 4*, 7–26.
- Fararo, T. J., & Doreian, P. (1998). The theory of solidarity: An agenda and problems. In P. Doreian, & T. J. Fararo (Eds.), *The problem of solidarity: Theories and models* (pp. 1–32). Amsterdam: Gordon and Breach.
- Fehr, R., Gelfand, M. J., & Nag, M. (2010). The road to forgiveness: A meta-analytic synthesis of its situational and dispositional correlates. *Psychological Bulletin, 136*, 894–914. DOI: 10.1037/a0019993
- Friedkin, N. E. (2004). Social cohesion. *Annual Review of Sociology, 30*, 409–425.
- Hogg, M. A. (1993). Group cohesiveness: A critical review and some new directions. In W. Stroebe, & M. Hewstone (Eds.), *European review of social psychology* (Vol. 4, pp. 85–111). Chichester, UK: Wiley.
- Hogg, M. A., & Hains, S. C. (1996). Intergroup relations and group solidarity: Effects of group identification and social beliefs on depersonalized attraction. *Journal of Personality and Social Psychology, 70*, 295–309.
- Hogg, M. A., & Hains, S. C. (1998). Friendship and group identification: A new look at the role of cohesiveness in groupthink. *European Journal of Social Psychology, 28*, 323–341.
- Jackson, J. W. (2011). Reactions to a social dilemma as a function of intergroup interactions and group performance. *Group Processes and Intergroup Relations, 15*, 559–574.
- Kollock, P. (1998). Social dilemmas: The anatomy of cooperation. *Annual Review of Sociology, 24*, 183–214. DOI: 10.1146/annurev.soc.24.1.183
- McCullough, M. E. (2001). Forgiveness: Who does it and how do they do it? *Current Directions in Psychological Science, 10*, 194–197.
- Molm, L. D. (2010). The structure of reciprocity. *Social Psychology Quarterly, 73*, 119–131.
- Molm, L. D., Collett, J. L., & Schaefer, D. R. (2007). Building solidarity through generalized exchange: A theory of reciprocity. *American Journal of Sociology, 113*, 205–242.
- Muthén, L. K., & Muthén, B. O. (1998). *Mplus user’s guide* (6th edn.). Los Angeles, CA: Muthén & Muthén.
- Riek, B. M., & Mania, E. W. (2012). The antecedents and consequences of interpersonal forgiveness: A meta-analytic review. *Personal Relationships, 19*, 304–325.

- Silk, J. B. (1997). The function of peaceful post-conflict contacts among primates. *Primates*, 38, 265–279. DOI: 10.1007/BF02381614
- Smith, T. W., Marsden, P. V., & Hout M. General Social Survey, 1972–2010 [Cumulative File]. ICPSR31521-v1. Storrs, CT: Roper center for public opinion research, University of Connecticut/Ann Arbor, MI: Inter-university consortium for political and social research.
- Struthers, C. W., Eaton, J., Santelli, A. G., Uchiyama, M., & Shirvani, N. (2008). The effects of attributions of intent and apology on forgiveness: When saying sorry may not help the story. *Journal of Experimental Social Psychology*, 44, 983–992. DOI: 10.1016/j.jesp.2008.02.006
- Tsang, J., McCullough, M. E., & Fincham, F. D. (2006). The longitudinal association between forgiveness and relationship closeness and commitment. *Journal of Social and Clinical Psychology*, 25, 448–472.
- Utz, S. (2004). Self-construal and cooperation: Is the interdependent self more cooperative than the independent self? *Self and Identity*, 3, 177–190.
- Willer, R., Wimer, C., & Owens, L. A. 2013. Explaining the gender gap in charitable giving: Lower empathy leads men to less to poverty relief. Stanford Center on Poverty and Inequality Working Paper.
- Wubben, M. J. J., De Cremer, D., & Van Dijk, E. (2008). When emotions of others affect decisions in public good dilemmas: An instrumental view. *European Journal of Social Psychology*, 38, 823–835. DOI: 10.1002/ejsp.531
- Wubben, M. J. J., De Cremer, D., & Van Dijk, E. (2009). When and how communicated guilt affects contributions in public good dilemmas. *Journal of Experimental Social Psychology*, 45, 15–23. DOI: 10.1016/j.jesp.2008.07.015