Relationship Value Promotes Costly Apology-Making:Testing the Valuable Relationships Hypothesis from the Perpetrator's Perspective

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Abstract

The valuable relationships hypothesis posits that people are inclined to reconcile with their valuable-relationship partners. Focusing on a particular type of credible conciliatory signal (i.e., costly apology), the present study tested this hypothesis from the perpetrator's perspective. In Studies 1 and 2, after imagining that they had committed an interpersonal transgression against one of their real friends, participants ($N = 529$ and 311 in Studies 1 and 2, respectively) rated their willingness to incur a cost in order to apologize to the victim. Apology cost was operationalized as "canceling plans to make an apology as soon as possible" in Study 1, and as "offering compensation" in Study 2. The results showed that the instrumentality of the partner to achieving the participants' goals would increase their willingness to make a costly apology, after controlling for the participants' sex, version of the transgression scenario, closeness to the victim, and expected forgiveness of the victim. To ensure the external validity of this finding, Studies 3 and 4 asked participants to recall one of their interpersonal transgression experiences, and to report whether they had offered compensation for it ($N = 190$ and 224 in Studies 3 and 4, respectively). Study 3 confirmed the hypothesis, while Study 4 did not directly support it. However, Study 4 did show that participants were more willing to reconcile with their valuable partners. Taken together, these results indicate that the valuable relationships hypothesis applies not only to victims, but also their perpetrators as well.

Keywords: valuable relationships hypothesis, costly signaling theory, reconciliation, costly apology, compensation

1. Introduction

Occasional interpersonal conflicts are inevitable even between intimate partners. Fortunately, many such conflicts are peacefully resolved. Having observed conflict resolution among primates, de Waal (2000) proposed the *valuable relationships hypothesis* that posits that primates are inclined to reconcile with their valuable partners. Most of the evidence for this hypothesis was based on the systematic observations of the post-conflict approach tendency of individuals involved in a conflict (see de Waal and Pokorny, 2005, for a review). After sporadic conflicts, valuable partners tend to reconcile with each other more quickly than less valuable ones. The valuable relationships hypothesis was recently extended to human beings (McCullough, 2008), and has received empirical support (Burnette et al., 2012; McCullough et al., 2010; Verbeek and de Waal, 2001). However, most of the evidence for humans has been centered on forgiveness: Victims are more prone to forgive their perpetrator when the perpetrator is a valuable partner (see McCullough et al., 2013, for a review). The present study approaches the valuable relationships hypothesis from the perpetrator's perspective and tests whether those who value the relationship with their victim are more likely to deploy effective reconciliation tactics, such as costly apology-making (Ohtsubo and Watanabe, 2009).

1.1. Relationship value, exploitation risk, and costly apology

Testing the valuable relationships hypothesis from the victim's perspective, Burnette et al. (2012) found that victims tended to forgive perpetrators who were not only valuable (high relationship value) but also unlikely to harm them again (low exploitation risk). This decision rule is adaptive because, no matter how (potentially) valuable the partner is, the forgiver cannot reap benefits from preserving a relationship with an exploitative partner (McCullough et al., 2013). It is noteworthy that this decision rule requires the forgiver to read the perpetrator's

intention accurately. As accurate intention-reading is facilitated by signals, Burnette et al.'s (2012) finding is also consistent with another evolutionary hypothesis regarding reconciliation, the *benign intent signal hypothesis* that posits that the primary function of reconciliatory tactics is to signal benign intent to resume a friendly interaction with a former opponent (Silk, 2002).

Perhaps the most common form of such reconciliatory signals among humans is an apology. Research has shown that apologies are generally effective in inducing forgiveness from the recipient (e.g., Darby and Schlenker, 1982; Ohbuchi et al., 1989; see also Fehr et al., 2010, for a meta-analytic review). However, if they are perceived as insincere, apologies can add fuel to the fire (Skarlicki et al., 2004; Zechmeister et al., 2004). Sincerity matters because an apology can be "cheap talk" (Bottom et al., 2002); in other words, if forgiveness can be earned by simply saying, "I am sorry," not only benign perpetrators but also exploitative perpetrators would adopt this approach. Although recent research (Leunissen et al., 2013) has shown that many apologies are offered out of sincere intention, it does not preclude the possibility that there are some perfunctory apologies. Therefore, people need to be cautious when assessing the credibility of their perpetrator's apology.

Drawing on *costly signaling theory* (Bliege Bird and Smith, 2005; Henrich, 2009; Zahavi and Zahavi, 1997), Ohtsubo and Watanabe (2009) maintained that apologies are credible if truly remorseful perpetrators deliver them in a costly fashion. The common form of such costly reparative acts is compensation, which is known to be effective in inducing the victim's forgiveness (e.g., De Cremer, 2010; Desmet et al., 2010, 2011; Fehr and Gelfand, 2010; Schweitzer et al., 2006). If the cost of compensation is sufficiently great, it will nullify the benefits of exploitation. Accordingly, those who only pursue the benefits of exploitation would not make such costly apologies (see Exline et al., 2007, for a supportive result). Therefore, the

costly signaling model ascribes the effectiveness of compensation to its ability to communicate

the perpetrator's benign intent. However, there is an alternative explanation: Compensation is

effective because it allows the victim to recoup his/her losses, and equity is restored (Darley and

Pittman, 2003). Nonetheless, Ohtsubo and Watanabe (2009, Studies 2 and 3) showed that

apology cost that was unilaterally incurred by the perpetrator and would not be transferred to the

victim (e.g., the perpetrator cancelling an important meeting) was also effective (see Ohtsubo et

al., 2012, for replications in seven countries). Thus, without taking their signaling function into

account, the effectiveness of costly forms of reparative acts cannot be fully understood.

1.2. Hypothesis and covariates

It is noteworthy that the costly apology model shares a core assumption with the

valuable relationships hypothesis. The model assumes that only the perpetrators who highly

value their relationship with the victim are motivated to incur the cost of apologizing. Therefore,

it is predicted that relationship value also fosters the perpetrator's motivation to reconcile with

his/her victim by making a costly apology. Although previous research revealed that recipients

use the costliness of the apology to determine the sincerity of the apologizer (i.e., exploitation

risk), it did not test this prediction. Accordingly, the present study tested the following

hypothesis: *Relationship value will promote the perpetrator's willingness to make a costly*

apology.

In order to examine the effect of relationship value, the present study operationally

defined relationship value as the *instrumentality* of the relationship, that is, the extent to which

the presence of the partner enhances the likelihood that an active goal will be achieved (see

Fitzsimons and Shah, 2008). Recent studies have shown that the goal related instrumentality of a

particular partner increases the sense of *closeness* to that partner (Fitzsimons and Shah, 2008),

which, in turn, facilitates the willingness to make an apology (Exline et al., 2007). Although both instrumentality and closeness may be considered to be related to relationship value, instrumentality is more directly relevant to one's fitness than closeness. Therefore, the present study focused on instrumentality as the primary independent variable, while controlling for the effect of closeness. In addition, a measure of *expected forgiveness* was included in the study, since Hodgins and Liebeskind (2003) showed that closeness fostered the perpetrators' expectation of being forgiven by their victims. However, the correlations between expected forgiveness and closeness were low or non-significant throughout the four studies. Therefore, these variables were simultaneously entered in the multiple regression analyses.

1.3. Overview of the research

This research consisted of four studies. Studies 1 and 2 asked participants to imagine that they had committed a particular interpersonal transgression against one of their actual friends, and to rate the instrumentality of the friend. Participants then indicated their willingness to undergo some inconvenience (e.g., cancelling an important meeting) to apologize to the friend (Study 1) or to offer some compensation (Study 2). Studies 3 and 4 were conducted to ensure the external validity of the findings from the first two studies. In Studies 3 and 4, participants reported their real transgression experiences, and then reported instrumentality of the victim and whether they had made an apology and provided compensation. As many participants recalled events involving less intimate others in Study 3, the victim was restricted to their friend or romantic partner in Study 4.

2. Study 1

2.1. Method

2.1.1. Participants and design

Participants were 546 undergraduate students (296 males, 249 females, and 1 unreported, $M_{AGE} \pm SD$ = 20.22±2.07) from five Japanese universities. The majority of the participants (n = 398) filled out the questionnaire in a large class setting, while the remaining 148 participants completed the questionnaire in small group sessions. As 17 participants were excluded from the data analyses due to missing values, the effective sample size was 529.

Study 1 employed a 2 (victim type: best friend vs. casual friend) × 2 (scenario) between-participants factorial design. The victim type condition (i.e., closeness to the victim) was included in order to have a sufficient level of variance in instrumentality. Participants were asked to assume that they had inflicted harm on one of their best friends or on one of their casual friends. In addition, we developed two transgression scenarios to increase the generalizability of the results. One scenario described a situation in which participants unwittingly failed to arrive at a meeting place (no-show scenario). The other scenario described a situation in which participants unwittingly breached the friend's confidence (confidence-breaking scenario).

2.1.2. Composition of the questionnaire

Participants were first asked to identify one of their best or casual friends as a target by writing down that friend's initials Then participants were asked several questions regarding the nature of their friendship with that target, including the target's instrumentality. Participants rated how useful or hindering the target was for them in achieving their goals in six domains (i.e., academic achievement, club activities, job searching activities, social relations, part-time job, and any other goal that they were pursuing) on a 7-point scale ranging from –3 (*very hindering*) to +3 (*very facilitating*). Although we expected the internal consistency of this measure to be low, since it aimed to cover a wide range of mutually independent goals (cf. John and Benet-Martinez, 2000), the internal consistency of the six items was reasonably high (Cronbach's α = .71). These

six items were aggregated to obtain the relationship instrumentality score.

Participants were then asked to imagine that they had committed one of the two types of interpersonal transgression. The transgression scenario was followed by the State Shame and Guilt Scale (SSGS), which was designed to assess feelings of guilt, shame, and pride (Tangney and Dearing, 2002). The SSGS was included to measure participants' feelings of guilt because a recent study demonstrated that perpetrator feels a stronger sense of guilt toward valuable partners than less valuable partners (Nelissen, 2014).

In Study 1, costly apology was operationally defined as "cancelling other plans to make an apology as soon as possible." Participants were asked to assume that they had plans to engage in each of the following six activities: (i) go to a concert featuring their favorite musician, (ii) have dinner with a family member who lives in a distant place, (iii) visit a university's health center for a medical checkup, (iv) meet another friend to listen to his/her problem, (v) work a part-time job, and (vi) go to a movie with their boyfriend/girlfriend. Using a 4-point scale (1 = *not at all willing* to 4 = *very willing*), participants rated their willingness to cancel each of these plans to go to the friend's home as soon as possible in order to apologize. These six cost items were aggregated as the *apology cost* score (Cronbach's α = .80).

The last section of the questionnaire included an item assessing expected forgiveness: *How likely do you think it is that the friend will forgive you anyway even if you do not apologize for it?* This item was accompanied by a 4-point scale ranging from 1 (*not at all*) to 4 (*very much*). At the end of the questionnaire, an open-ended section asked participants to write down any thoughts they had had while reading the scenario and completing the questionnaire.

2.2. Results and discussion

The correlation coefficients between apology cost and the independent variables are

presented in Table 1. Although the correlation between instrumentality and closeness of the victim (casual friend = 0 and best friend = 1) was significant ($r_{527} = .34$, $p < .001$), it was not so high as to cause a multicollinearity problem. A multiple regression analysis involving the following independent variables was conducted: sex (male = 0, female = 1), scenario (confidence-breaking = 0, no-show = 1), instrumentality, expected forgiveness, and closeness, $F_{5, 523} = 12.51$, $p < .001$, adjusted $R^2 = .10$ (see Table 2). In support of the hypothesis, the effect of instrumentality on apology cost was significant. In other words, participants were more eager to reconcile with a more valuable friend than with a less valuable friend.

In addition, the effect of sex was significant. The significant sex difference was consistent with the previous finding that females were more prone than males to making an apology (e.g., Gonzales et al., 1990). The effect of scenario was also significant. The responses to the open-ended section of the questionnaire provided a clue for interpreting the significant scenario effect: Some participants in the confidence-breaking scenario condition spontaneously wrote that before making an apology, they would wait until the friend found out that they had breached his/her confidence. The prevalence of this wait-and-see tactic might have had an unintended effect and lowered the apology cost score in the confidence-breaking condition. Therefore, in Study 2, we replaced this scenario with a different scenario in which the wait-and-see tactic was not applicable.

As shown in Table 1, instrumentality was significantly correlated with the state guilt score (measured by SSGS; Tangney and Dearing, 2002). This result confirmed the recent finding by Nelissen (2014). Interestingly, despite the common understanding that guilt is an interpersonal emotion (e.g., Baumeister et al., 1994), closeness was not significantly correlated with guilt (see Table S1 for the results of the multiple regression analysis). We then tested whether guilt would

mediate the effect of instrumentality on costly apology. The mediation effect was significant (the estimated 95% confidence interval of the indirect effects was .0006 to .08), but guilt only partially mediated the effect of instrumentality (see Figure S1a).

Although Study 1 provided initial support for the hypothesized instrumentality–costly apology link, the costly apology was operationally defined as the cancellation of some plans. A more common form of costly apology would be compensation. To exclude the possibility that the supportive result was peculiar to an unnatural form of costly apology, Study 2 assessed participants' willingness to offer compensation.

3. Study 2

3.1. Methods

Participants were 329 undergraduate students (197 males, 123 females, and 9 unreported, $M_{AGE} \pm SD = 18.72 \pm 2.62$) from a Japanese university. Eighteen participants were excluded from the subsequent data analyses due to missing values. Therefore, the effective sample size was 311. All participants in Study 2 filled out the questionnaire in a large class setting.

Study 2 also employed a 2 (victim type: best friend vs. casual friend) × 2 (scenario) between-participants factorial design. One scenario was similar to the no-show scenario in Study 1. The other scenario described a situation in which participants unwittingly stained a book that they had borrowed from the target (stained book scenario).

The composition of the questionnaire was similar to that used in Study 1, except for the following two changes. Before the instrumentality measure, the Inclusion of the Other in the Self scale (IOS scale; Aron et al., 1992) was included to assess participants' subjective *closeness* to the target. Participants were shown images of seven sets of two circles, each of which corresponded to "self" and "other" (i.e., the victim in the present study). The degree of

overlapping between the two circles gradually varied from no overlap (coded as 1) to substantial

overlap (7). Participants indicated the set of circles that best represented their relationship.

Participants' willingness to incur a cost to make an apology was operationally defined as their

willingness to offer compensation. There were two apology cost items: (i) *I will treat my friend*

to lunch as an apology, and (ii) *I will buy my friend some gift later as an apology*. In addition,

Study 2 included an item aimed at assessing participants' willingness to make a non-costly

apology: *I will say "I am sorry" to my friend*. The willingness to take these actions was

measured on a 4-point scale ranging from 1 (*definitely not*) to 4 (*definitely*).

3.2. Results and discussion

The six instrumentality items were aggregated as the instrumentality score (Cronbach's

$\alpha = .72$). The two apology cost scores were significantly correlated, $r_{309} = .37$, $p < .001$. However,

since this correlation was relatively low, these two items were analyzed separately as well as in

an aggregated form. The separate analyses did not change the general patterns (see Table S2),

and thus we report the results based on the aggregated score. Table 3 shows the correlation

coefficients between apology cost and the independent variables.

A multiple regression analysis involving the following independent variables was

conducted: sex, scenario (stained book = 0, no-show = 1), instrumentality, expected forgiveness,

and closeness (i.e., the IOS score), $F_{5, 305} = 15.41$, $p < .001$, adjusted $R^2 = .19$ (see Table 2). In

support of the hypothesis, the effect of instrumentality on apology cost was significant. Again,

participants were more eager to reconcile with a valuable friend than with a less valuable friend.

In addition, the effects of expected forgiveness and scenario were significant. Those who

expected a higher level of forgiveness tended not to incur a cost. Participants were more willing

to incur some cost in the stained-book scenario condition than in the no-show scenario condition,

presumably because offering compensation was a more natural reaction to damaging a friend's property than having made a friend wait for a long time. The effect of sex was only marginally significant (the direction of the effect was consistent with Study 1).

Interestingly, when participants' willingness to make a non-costly apology was submitted to the comparable multiple regression analysis ($F_{5, 305} = 3.59$, $p = .004$, adjusted $R^2 = .04$), only sex and closeness reached the statistically significant level: $\beta = .13$, $p = .019$, for sex and $\beta = .14$, $p = .021$, for closeness.

As shown in Table 3, instrumentality was significantly correlated with the state guilt score, but closeness was not. The effect of instrumentality remained significant even after controlling for the effects of other independent variables (Table S1). The mediation effect was significant (the estimated 95% confidence intervals of the indirect effects ranged from .02 to .09), and guilt partially mediated the effect of instrumentality (see Figure S1b).

4. Study 3

The purpose of Study 3 was to test the external validity of the instrumentality–costly apology relationship. We have confirmed the effect of instrumentality only in hypothetical situations. In order to test whether instrumentality would, in fact, facilitate costly apology-making in real interpersonal transgressions, in Study 3, we asked participants to recall one of their real transgression experiences, rate the instrumentality of their victim, and report whether or not they made a costly apology.

4.1. Methods

Participants were 192 undergraduate students (84 males, 108 females; $M_{AGE} \pm SD = 19.43 \pm 2.06$) from a Japanese university. They were asked to describe briefly a recent transgression experience in which they had made someone angry. Participants were asked not to

include a transgression against their family members. Two participants left the remaining parts of the questionnaire blank, explicitly stating that they had not had such an experience. Therefore, the effective sample size was 190. The study was conducted in small group settings, and participants were paid a small amount of money for taking part in the study.

After describing the transgression event, participants indicated the type of relationship with the victim (i.e., best friend, romantic partner, casual friend, other), closeness with the victim (IOS), instrumentality of the victim, and their expectation of receiving the victim's forgiveness. They also rated their feeling of guilt after making the transgression (SSGS). Participants were subsequently asked to indicate (i) whether they explicitly said "I am sorry" or any other verbal apology, (ii) whether they bought the victim lunch or a snack as an apology, (iii) whether they explained to the victim why they had committed the transgression, (iv) whether they bought the victim some gift or provided compensation for the damage, and (v) whether they restored (or tried to restore) the victim's damage. We expanded the costly apology items by consulting with Tabak et al.'s (2012) Transgressor Appeasement and Reconciliation Checklist, to cover a wide range of reconciliatory tactics that the participants might have employed in their real interpersonal interactions. Items 1 and 3 were the non-costly apology items and the other three items (2, 4, and 5) were the costly apology items. (Although one might consider the fifth item ambiguous in terms of the cost involved, informal inquiries among five hypothesis-blind undergraduates confirmed that the Japanese version of this item connotes the involvement of some cost, such as time and effort, as well as a financial cost.) The response categories were "no," "would have done so, if necessary," and "yes" (each response was assigned 0, 0.5, and 1, respectively). Participants were then asked about changes in their relationship with the victim after the transgression event. We do not report the results of this last section because they are not

directly relevant to the present purpose.

4.2. Results

4.2.1. Relationship with the victim

Although we expected that most participants would describe a transgression against their friend or romantic partner, most participants (57%) reported a transgression against someone other than a friend or romantic partner. The vast majority of this "other" category (75%) consisted of a manager or superordinate at the participant's part-time job, a schoolteacher, or a university professor. It is reasonable to assume that participants' relationships with the victims in this "other" category differ qualitatively from their relationships with friends or romantic partners. Using Clark and Mills's (1979) terminology, an *exchange relationship* applies to the relationship with the victim in the "other" category, while a *communal relationship* applies to a friend or romantic partner. Therefore, instead of using the IOS score, we created a closeness measure to reflect the above qualitative differences: "best friend" and "romantic partner" were assigned 3, "casual friend" was assigned 2, and "other" was assigned 1.

4.2.2. Hypothesis testing

The six items of instrumentality were aggregated and used as the instrumentality score (Cronbach's α = .69). As we stated, the costly apology score was measured by the three items. However, two of the reparative measures were rarely used by participants in this study: only seven bought lunch and eight gave a gift as an apology. On the other hand, 56 participants reported that they had restored the victim's damage, and another 32 responded that they would have done so if necessary. Accordingly, we decided to use this item as the costly apology score. However, aggregating the three items did not change the main conclusion.

The correlation between instrumentality and costly apology was only marginally

significant, $r_{188} = .13$, $p = .080$ (Table 4). However, when costly apology was regressed on sex, instrumentality, expected forgiveness, and closeness ($F_{4, 185} = 3.58$, $p = .008$, adjusted $R^2 = .05$), the effect of instrumentality became significant (Table 2). In addition, expected forgiveness was marginally significant, and closeness was significant.

4.2.3. Other analyses

As shown in Table 4, state guilt was significantly correlated with instrumentality, but not with closeness (see also Table S1). As the costly apology–instrumentality correlation was only marginally significant, we did not run a mediation analysis. However, when costly apology was simultaneously regressed on instrumentality and guilt, the effect of instrumentality became non-significant ($\beta = .08$, *ns*), while the effect of guilt was significant ($\beta = .28$, $p < .001$).

The non-costly apology score was computed from the two items, which were significantly correlated ($r_{188} = .19$, $p = .009$). When the aggregated non-costly apology score was regressed on the same set of independent variables ($F_{4, 185} = 3.71$, $p = .006$, adjusted $R^2 = .05$), the effects of expected forgiveness ($\beta = -.23$, $p = .002$) and closeness ($\beta = .18$, $p = .011$) were significant. The effect of instrumentality was not significant ($\beta = .08$). As the two-item correlation was low, we also analyzed the two items separately. The effect of instrumentality became marginally significant when item 1 was used as the dependent variable ($\beta = .13$, $p = .088$). It is interesting to note that 82% of participants reported that they had made a verbal apology (item 1). Moreover, only two participants had made a costly apology without making a non-costly apology, while 77 had made a non-costly apology without making a costly apology. These results are consistent with the notion that at least some of the verbal apologies were perfunctory apologies.

5. Study 4

In Study 3, participants reported their transgression against an exchange relationship partner, rather than a communal relationship partner. Study 4 aimed to follow up Study 3 by explicitly asking the participants to recall a transgression against their friend or romantic partner.

5.1. Methods

Participants were 339 undergraduate students enrolled in a psychology class at three Japanese universities. Many participants did not follow the instructions (e.g., they described a transgression against an exchange relationship partner or a family member) or left some questions unanswered. Consequently, 224 participants (100 males, 124 females; $M_{AGE} \pm SD =$ 20.34±1.68) were retained for the analyses. This large attrition rate may have been due to the procedural changes: Participants in Study 3 were paid for their participation and completed the questionnaire in small group sessions, while participants in Study 4 completed the questionnaire in large-class settings.

There were several changes in this study from Study 3. The instructions explicitly asked participants to think about an event in which they had offended their friend or romantic partner. The questionnaire was truncated to accommodate an in-class demonstration. The open-ended event description section was followed by measures of closeness (IOS), instrumentality, expected forgiveness, and the apology items. The other sections were dropped.

5.2. Results and discussion

The six items of instrumentality were aggregated and used as the instrumentality score (Cronbach's α = .69). As shown in Table 5, instrumentality was not significantly correlated with costly apology (i.e., whether the participant restored the victim's damage) but it was correlated with non-costly apology (the two items were aggregated based on reasonably high correlation, $r_{222} = .40$, $p < .001$). Consistent with these simple correlation analyses, the multiple regression

analyses indicated that instrumentality predicted non-costly apology, but not costly apology (see Table 2).

Because Studies 1 and 2 exclusively focused on same-sex friendships, for exploratory purposes, we reanalyzed the data of 129 participants who had reported a transgression against their same-sex friend (one participant whose instrumentality score was extremely low ($z = –2.90$) was omitted). The correlation between instrumentality and costly apology was marginally significant, $r = .15$, $df = 127$, $p = .096$ (cf. this correlation was $–.04$ among the remaining participants who reported transgressions against their opposite-sex friend or romantic partner). The comparable multiple regression showed that the effect of instrumentality was marginally significant ($\beta = .17$, $p = .066$), while the other variables were not significant even at the .10-level. (We are grateful to the anonymous reviewer who suggested this re-analysis.) The comparable multiple regression with non-costly apology as the dependent variable also showed that only instrumentality was significant ($\beta = .27$, $p = .003$).

Retrospectively, directly compensating the victim's loss in a costly manner might violate the norms governing communal relationships, and especially the norms of romantic relationships (Lydon et al., 1997). Because the support for the costly apology model in the same-sex friendship context was relatively weak and ad hoc, this effect should be replicated in future research. Nonetheless, the results of Study 4 (including the stronger effect on non-costly apology) were at least consistent with the notion that instrumentality would enhance the motivation to reconcile with the partner.

6. General Discussion

The first three studies supported the hypothesis that people would be more likely to make a costly apology to valuable partners than to less valuable ones. The underlying assumption

of this particular hypothesis was that people would be more eager to reconcile with a valuable

partner. The result of Study 4 supported this hypothesis when we focused on the same-sex

friendship context, but not when we included romantic relationships. One possible explanation

for this finding in Study 4 is that norms of romantic relationships inhibited costly

apology-making, such as compensation, because this would signify psychological distance

between the transgressor and the victim.

It is noteworthy that this research replicated a recent finding that instrumentality

exacerbates guilt (Nelissen, 2014). In Studies 1 and 2, instrumentality was significantly

correlated with the intensity of guilt toward the victim, while the correlation was only marginally

significant in Study 3. These findings also suggest that relationship value promotes the

transgressor's motivation to reconcile with the victim. Therefore, the present study demonstrated

that whether to apologize to a partner after a transgression follows the adaptive,

fitness-enhancing logic of social exchange.

6.1. Limitations of the study

The present study focused on costly forms of apology, such as compensation, and relied

exclusively on a particular measure of relationship value (i.e., instrumentality). It is possible to

expand the scope of the research in several directions. First, there are many other reconciliatory

signals and tactics (Tabak et al., 2012), and it seems important to investigate other reparative acts

simultaneously, because whether or not a particular reparative act is employed may depend on

various factors, such as relational norms. It is interesting to note that incurring a cost is only one

way of enhancing the credibility of reparative acts. For example, perpetrators' expressions of

guilt, remorse, and interpersonal regret also facilitate the victim's forgiveness (Davis and Gold,

2011; Gold and Weiner, 2000). The credibility of emotional expressions may be mediated by

their uncontrollability (i.e., the involvement of involuntary muscles). If costly apologies violate the norms of romantic relationships, guilt-based expressions may be better tactics for reconciling with a romantic partner. This is a testable explanation of why the participants in Study 4 (especially those who reported transgressions in the romantic context) did not use costly apologies. Including multiple reparative acts as dependent variables may enable a more accurate assessment of perpetrators' motivation behind their reconciliatory behavioral manifestations across different relational contexts.

The second possible direction is to expand the predictor variables. The present study chose instrumentality as the primary independent variable. Nonetheless, in Studies 1 to 3, closeness also predicted costly apology-making after controlling for the effect of instrumentality (although the effect was only marginally significant in Study 2). In Study 4, closeness predicted a non-costly apology. Ohtsubo et al. (2014) recently showed that a sense of intimacy (i.e., closeness) is associated with one's intention to engage in social exchange with the partner, which is the presumed activity to be resumed via costly apologies. In future research, it seems necessary to disentangle the intertwined effects of closeness and relationship value.

Third, future studies should examine the emotional underpinnings that mediate the causal link between relationship value and reconciliation. As shown in Nelissen's (2014) research and the present study, the instrumentality of the partner seems to induce a sense of guilt. Given guilt's sensitivity to one's own cost/benefit rather than the victim's damage, it may be more appropriately labeled as "interpersonal regret" (Zeelenberg and Breugelmans, 2008), because scholars tend to conceive guilt as a prosocial emotion rather than as an opportunistic, calculative emotion. Such definitional issues aside, the existence of an emotional mechanism that closely calibrates relationship value seems to have some implication for peaceful conflict

resolution. Recall the result of a classic field experiment on intergroup conflict, the Robbers

Cave experiment (Sherif et al., 1961). In the study, the introduction of interdependence fostered a

genuine reconciliation, instead of compulsory and reluctant cooperation, between the two

mutually hostile groups. Therefore, the presence of interdependence may trigger some

reconciliatory emotional mechanisms. Nonetheless, such cost/benefit-sensitive emotional

mechanisms have not been well studied. Noticing that interdependent relationships (or

involvement in gentle commerce) have been one of the crucial pacifying forces throughout

human history, Pinker (2011) commented, "The mindset behind gentle commerce... has not been

directly tested in the psychology lab" and "we don't know whether exchange itself reduces

hostile tensions" (p. 684).

6.2. Conclusion

The present study complements previous research on the evolution of reconciliation,

which showed that people are more prone to forgive valuable relationship partners (e.g., Burnette

et al., 2012). Given that reconciliation processes are necessarily dyadic processes (e.g.,

Leunissen et al., 2013; Shnabel and Nadler, 2008), the contribution of the present study is that it

sheds light on the other side of the valuable relationships hypothesis by revealing proximate

causes of costly apologies. As we noted, this result is also consistent with the benign-intent

signal hypothesis. Therefore, the present study may help reconcile two apparently contradictory

hypotheses regarding the evolution of reconciliation. Such a theoretical contribution aside, since

costly apologies have been considered as effective in resolving intergroup conflict (Blatz and

Philpot, 2010; Long and Brecke, 2003), we hope that this line of research will ultimately

contribute to conflict resolution not only in the interpersonal sphere but also in the intergroup and

international realms.

Supplementary Materials

Supplementary data to this article and supplementary results of additional statistical analyses can

be found online at [URL inserted here].

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Table 1

Means, Standard Deviations, and Correlation Coefficients of Apology Cost and Independent Variables (Study 1, N = 529)

	Mean (% of 1)	SD	1	2	3	4	5	6
1. Apology Cost (1 to 4)	1.86	0.68	—					
2. Sex (0 = male, 1 = female)	(55%)		.17***	—				
3. Scenario (0 = confidence-breaking, 1 = no-show)	(51%)		.19***	.04	—			
4. Instrumentality (−3 to +3)	0.8	0.72	.20***	.09*	.06	—		
5. Expected Forgiveness (1 to 4)	2.55	0.68	−.08+	−.10*	−.18***	.05	—	
6. Closeness (0 = casual friend, 1 = best friend)	(50%)		.15***	−.02	.01	.34***	.19***	—
7. Guilt (1 to 5)	3.95	0.93	.40***	.28***	.20***	.10*	−.23***	.05

+ < .10, * < .05, ** < .01, *** < .001.

Table 2

Multiple Regression Analyses Predicting Apology Cos from Sex, Scenario, Instrumentality, Expected Forgiveness, and Closeness

Predictor Variables	Study 1		Study 2		Study 3		Study 4 (Costly)		Study 4 (Non-costly)	
	β	SE	β	SE	β	SE	β	SE	β	SE
Sex (0 = male, 1 = female)	.15***	.042	.10$^+$	.052	−.05	.070	−.05	.067	−.05	.064
Scenario	.16***	.042	−.33***	.052						
Instrumentality	.15**	.044	.16**	.056	.16*	.072	.05	.068	.21**	.066
Expected Forgiveness	−.06	.043	−.11*	.052	−.16*	.073	−.10	.068	−.19**	.065
Closeness	.11*	.045	.10$^+$	.056	.27***	.070	.03	.068	.13*	.065

$^+ < .10$, $* < .05$, $** < .01$, $*** < .001$

Table 3

Means, Standard Deviations, and Correlation Coefficients of Apology Cost and Independent Variables (Study 2, N = 311)

	Mean (% of 1)	*SD*	1	2	3	4	5	6	7
1. Apology Cost (1 to 4)	2.60	0.73	—						
2. Non-costly Apology (1 to 4)	3.83	0.46	.18**	—					
3. Sex (0 = male, 1 = female)	(61%)		.13*	.15**	—				
4. Scenario (0 = stained book, 1 = no-show)	(50%)		−.35***	−.02	.01	—			
5. Instrumentality (−3 to +3)	0.66	0.80	.21***	−.13*	.12*	.00	—		
6. Expected Forgiveness (1 to 4)	2.62	0.70	−.18**	.03	−.02	.20***	−.02	—	
7. Closeness (1 to 7)	3.35	1.68	.16**	−.18**	.10+	.02	.41***	.08	—
8. Guilt (1 to 5)	3.77	0.92	.34***	−.26***	.22***	−.35***	.17**	−.25***	.08

+ < .10, * < .05, ** < .01, *** < .001.

Table 4

Means, Standard Deviations, and Correlation Coefficients of Apology Cost and Independent Variables (Study 3, N = 190)

	Mean (% of 1)	SD	1	2	3	4	5	6
1. Apology Cost (0 to 1)	0.38	0.44	—					
2. Non-costly Apology (0 to 1)	0.71	0.32	.24***	—				
3. Sex (0 = male, 1 = female)	(44%)		−.03	.01	—			
4. Instrumentality (−3 to +3)	0.33	0.81	.13$^+$	.02	.03	—		
5. Expected Forgiveness (1 to 4)	2.36	0.80	−.08	−.19*	.09	.29***	—	
6. Closeness (1 to 3)	1.62	0.77	.20**	.16*	.04	.07	.12	—
7. Guilt (1 to 5)	2.91	1.09	.30***	.23**	.07	.16*	−.17*	.07

$^+ < .10$, $* < .05$, $** < .01$, $*** < .001$.

Table 5

Means, Standard Deviations, and Correlation Coefficients of Apology Cost and Independent Variables (Study 4, N = 224)

	Mean (% of 1)	SD	1	2	3	4	5
1. Apology Cost (0 to 1)	0.58	0.47	—				
2. Non-costly Apology (0 to 1)	0.74	0.34	.24***	—			
3. Sex (0 = male, 1 = female)	(45%)		−.04	−.05	—		
4. Instrumentality (−3 to +3)	0.67	0.99	.04	.20**	−.01	—	
5. Expected Forgiveness (1 to 4)	2.63	0.83	−.10	−.15*	−.03	.15*	—
6. Closeness (1 to 7)	4.29	1.71	.03	.16*	−.00	.17**	.07

+ < .10, * < .05, ** < .01, *** < .001.

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Table S1

Multiple Regression Analyses Predicting Guilt Form Sex, Scenario (for Studies 1 and 2), Instrumentality, Expected Forgiveness, and Closeness

Predictor Variables	Study 1		Study 2		Study 3	
	β	SE	β	SE	β	SE
Sex	.25***	.041	.20***	.051	−.08	.070
Scenario	.16***	.041	−.31***	.052		
Instrumentality	.06	.043	.13*	.056	.22**	.073
Expected Forgiveness	−.19***	.042	−.19***	.052	−.25***	.074
Closeness	.06	.043	.03	.056	.08	.071

Study 1: $F_{5, 523} = 19.39$, $p < .001$, $R^2 = .15$

Study 2: $F_{5, 305} = 17.27$, $p < .001$, $R^2 = .21$

Study 3: $F_{4, 185} = 4.52$, $p = .002$, $R^2 = .07$

$^+ < .10$, $* < .05$, $** < .01$, $*** < .001$

Table S2

Multiple Regression Analyses Predicting Two Apology Cost Items Separately from Sex, Scenario, Instrumentality, Expected Forgiveness, and Closeness (Study 2)

	(1) Treat the Friend		(2) Buy Some Gift	
Predictor Variables	β	SE	β	SE
Sex (0 = male, 1 = female)	−.02	.057	−.14**	.048
Scenario	−.10[+]	.057	−.43***	.049
Instrumentality	.15*	.062	.11**	.053
Expected Forgiveness	−.01	.057	−.17***	.049
Closeness	.05	.062	.12*	.053

[+] < .10, * < .05, ** < .01, *** < .001
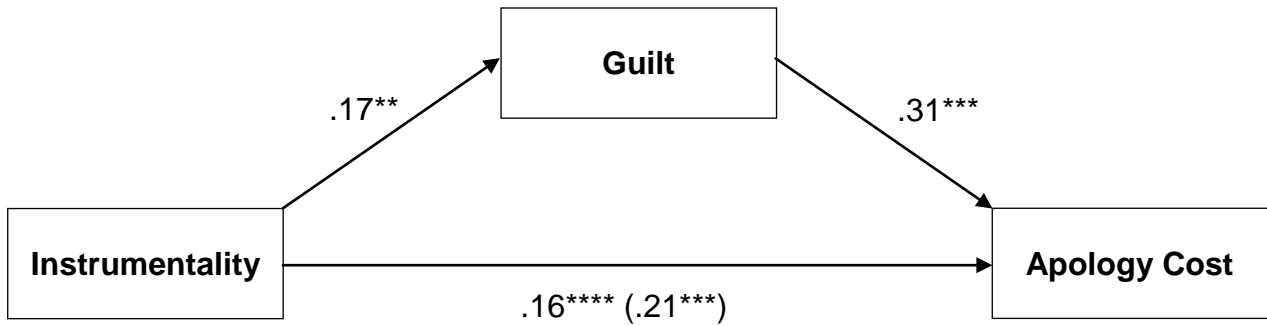
(a) Study 1
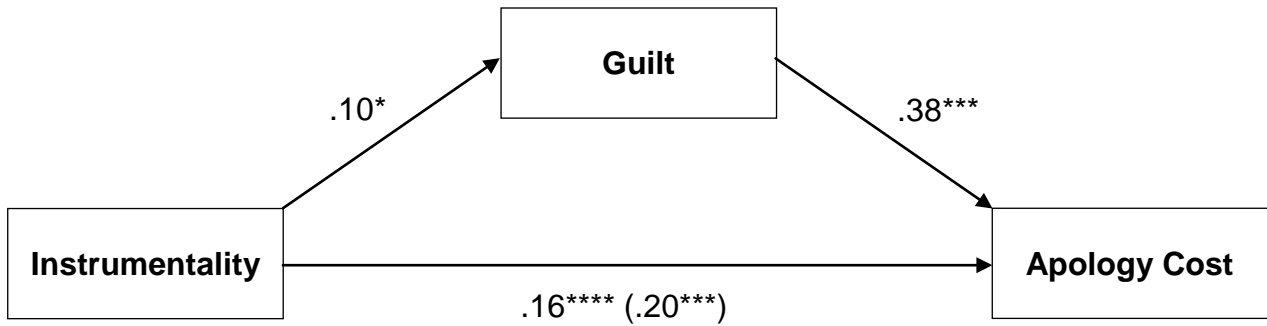
(b) Study 2

Figure S1. Mediation effects of guilt between instrumentality and costly apology. Coefficients in parentheses are the standardized regression coefficients associated with simple regression analyses, predicting apology cost from instrumentality.