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Kenneth T. GOH

Singapore Management University, kennethgoh@smu.edu.sg

David KRACKHARDT

Carnegie Mellon University

Laurie R. WEINGART

Carnegie Mellon University

Tat Koon KOH

Hong Kong University of Science and Technology

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The Role of Simmelian Friendship Ties on Retaliation within Triads

**Kenneth T. Goh¹, David Krackhardt²,
Laurie R. Weingart², and Tat Koon Koh³**

Abstract

We examine the effect of friendship in triads on retaliatory responses to unfair outcomes that originate from a group member. Drawing on Simmel's classic discussion of relationships in social triads versus dyads, we hypothesized that the effect of unfairness on retaliation between friends is stronger when the third party in the triad is a mutual friend, rather than a stranger. We also draw on social categorization theory to hypothesize that the effect of unfairness on retaliation between strangers is stronger when the third party is a friend of that stranger than when the triad consists of all strangers. Hypotheses were tested in an experiment where participants negotiated with one another in a three-person exchange network. The results supported our hypothesis that between friends, the increase in retaliation was stronger following an unfair deal when third parties were mutual friends, rather than strangers.

Keywords

social structure, counterproductive behaviors, negotiation, friendship, retaliation

¹University of Western Ontario, London, Canada

²Carnegie Mellon University, Pittsburgh, PA, USA

³Hong Kong University of Science and Technology, Hong Kong

Corresponding Author:

Kenneth T. Goh, Ivey Business School, University of Western Ontario, 1255 Western Road, London, Ontario N6G 0N1, Canada.

Email: kgoh@ivey.ca

Effect of Friendship Ties on Retaliatory Responses to Unfair Treatment in Triads

In the workplace, experiences of unfairness can lead to retaliatory behaviors such as lawsuits (Bies & Tyler, 1993), strikes (Leung, Chiu, & Au, 1993), theft (Greenberg, 2002), sabotage (Ambrose, Seabright, & Schminke, 2002), verbal abuse (Robinson & Bennett, 1995), and revenge (Bies & Tripp, 1996; Skarlicki & Folger, 1997). In addition to these overt attack reactions, retaliation can also occur more covertly as withdrawal reactions such as reducing prosocial behaviors (Jermier, Knights, & Nord, 1994; Moorman, 1991; Niehoff & Moorman, 1993), work performance (Lind, Kanfer, & Earley, 1990), and ostracism (Mikula, Scherer, & Athenstaedt, 1998; Sommer, Williams, Ciarocco, & Baumeister, 2001). In both cases, the goals of retaliation are to restore the victim's self-esteem or to educate the offender in response to injustices experienced (Miller, 2001). These retaliatory acts can also be considered a form of counterproductive work behaviors (Folger & Skarlicki, 2005). Not only do these acts create emotional distress in the short term, but they can also have long-lasting and adverse consequences on the targets of retaliation.

Given the consequences of retaliatory behaviors, researchers have examined antecedents of retaliation such as the type of resource loss experienced (Donnenwerth & Foa, 1974), treatment by authority figures (Smith, Tyler, Huo, Ortiz, & Lind, 1998) and the degree of psychological identification with the group (De Cremer, 2006). A related stream of research in the justice literature examines antecedents of counterproductive behaviors that go against the legitimate interests of an individual or organization (Gruys & Sackett, 2003; Sackett & DeVore, 2001). Prior research has conceptualized antecedents of these behaviors primarily in terms of the generalized tendencies of individuals to engage in such behaviors (e.g., Dalal, 2005; Fox & Spector, 2005). More recently, there have been calls for more research that examines relational antecedents of these behaviors (Aquino & Lamertz, 2004; Glomb & Liao, 2003; Hershcovis & Barling, 2010; Penner, Dovidio, Piliavin, & Schroeder, 2005) because people also behave differently depending on who they interact with (Hershcovis & Barling, 2007; Hubbard, Dodge, Cillessen, Coie, & Schwartz, 2001). Furthermore, to the extent that these behaviors are directed at another individual, the interpersonal nature of these behaviors underscores the need to look beyond individual variables to relational ones (Bowler & Brass, 2006). In response to these calls, researchers have studied how relational characteristics between actors and recipients such as power, gender, race (Fox & Spector, 2005), the degree of liking (Venkataramani & Dalal, 2007), and third-party relations (Labianca, Brass, & Gray, 1998) affect

the propensity of these behaviors, as well as the underlying social comparison process between the situational context and these behaviors (Lam, Van der Vegt, Walter, & Huang, 2011). This research extends this literature by examining how friendship and the configuration of friendship ties in the group affect counterproductive behavior expressed as retaliatory responses to unfair outcomes.

Friendship is prevalent in the social life of organizations (Berman, West, & Richter, 2002) and researchers have generally found friendship to be a positive influence on group processes, behaviors, and outcomes (e.g., Jehn & Shah, 1997; Shah & Jehn, 1993; Tortoriello & Krackhardt, 2010). Given this emphasis on the positive influence of friendship, it is not surprising that scant attention has been paid to its effects on dysfunctional behavior, such as retaliation. Addressing this question is relevant to scholarship on social relations and counterproductive behaviors because it potentially highlights some of the negative effects of friendship in organizations. Although retaliation between friends is not typically observable because it may manifest more subtly in the form of withdrawal reactions, it can have far-reaching negative consequences that extend beyond the individual, to harm the group and organization.

In this research, we consider relational characteristics between actors in terms of their direct friendship with one another, as well as their friendship with a third party. Third-party friendships are examined to account for the social context in work groups which are pervasive in organizations (Cohen & Bailey, 1997; Devine, Clayton, Philips, Dunford, & Melner, 1999; Kozlowski & Bell, 2003). In work groups, friendship ties among members are likely to vary because interdependence and interactions are imposed by workflow arrangements rather than who likes whom (Labianca et al., 1998). This is in contrast to social groups which are more likely to be comprised of all friends because they tend to be formed by people who are similar to one another (Brewer, 1979; McPherson, Smith-Lovin, & Cook, 2001; Tajfel & Turner, 1986; Williams & O'Reilly, 1998) and people can leave the group if they feel "different." In light of this heterogeneity, it is important to explicitly account for characteristics of the social context in the group rather than treat it as a factor to be controlled away (Bamberger, 2008; Hegtvedt, 2005; Johns, 2006).

In addition to extending research on the relational antecedents of counterproductive behaviors, this research also makes a contribution to the justice and group literatures. Examining how the configuration of friendship ties in groups affects retaliation to unfair outcomes addresses calls for more research into the role of the group in the justice literature (Hegtvedt, 2005). Moreover, it extends the social network perspective of justice research (Shapiro, Brass, & Labianca, 2008) by examining how network configurations affect people's response to unfair treatment. The findings from this research can also

contribute to research on small groups by developing and testing theory about how the relational composition can affect group behavior. Group composition is of keen interest to group researchers, and prior research has examined composition in terms of member attributes such as gender (Wittenbaum, Shulman, & Braz, 2010), ethnicity (Paletz, Peng, Erez, & Maslach, 2004), personality (Halfhill, Sundstrom, Lahner, Calderone, & Nielsen, 2005), and cognitive abilities (Woolley, Gerbasi, Chabris, Kosslyn, & Hackman, 2008). However, research on the effect of relational composition on group behavior is limited and this present work fills a gap that is considered to be important and practically relevant given the prevalence of work teams and the pervasiveness of existing relationships in these teams.

Theoretical Framework

In this section, we present our hypotheses about how different configurations of friendship ties in groups affect a victim's retaliation in response to unfairness. First, we explain the effect of the dyadic relationship between ego and alter¹ on ego's perception of and response to unfair outcomes from alter. We refer to this dyadic ego–alter relationship in the group as the primary tie in the triad. We then shift the focus from dyads to triads, and consider how the third party in the triad affects ego's response to unfair outcomes from alters. This relationship between alters is referred to as the secondary tie in the triad. Triads are used as a starting point to study the social structures found in groups because they are the minimal size for group phenomena to manifest. Prior research suggests that the shift in how some group phenomena unfold is greatest between dyads and triads, and less so between triads and larger groups (Mills, 1958; Moreland, 2010; Moreland, Hogg, & Hains, 1994).

We develop our arguments for how the third party in the triad affects ego's responses to unfair outcomes from alters by first considering the case when ego and alter are friends, then considering the case when both are strangers. In the first case where ego and alter are friends, we draw on Simmel's (1950) treatise comparing social dyads with triads to explain how friendship in the secondary tie (i.e., between alters) affects differences in ego's retaliation in response to unfair outcomes from alter. In the second case where ego and alter are strangers, we draw on social categorization theory to explain how friendship in the secondary tie affects differences in ego's retaliation in response to unfair outcomes from alter.

These hypotheses are presented in the context of an experimental exchange paradigm where actors are connected to a network where they bargain with another for valued resources (Cook & Emerson, 1978; Molm & Cook, 1995). This paradigm was adopted because it provides a context within which

recurring instances of unfair treatment (in the form of agreements that benefit alter disproportionately more than ego) and retaliation (in the form of punitive offers from ego to alter) between friends and strangers can occur.

Friendship and Retaliation

We define friendship as being characterized by three components: (a) frequent interaction, (b) affection, and (c) history (Krackhardt, 1992). According to Krackhardt, friendship ties may be considered to be a type of “strong” tie (Granovetter, 1973), but the reverse is not true—a tie may be considered to be strong on any one of these dimensions, but friendship is a particular type of relationship that encompasses all three components. Although there can be qualitatively different kinds of friendships that vary on other dimensions (e.g., Ingram & Zou, 2008; Wright, 1984), we do not distinguish between types of friendship in this present research because of our broader emphasis on differences between friends and strangers.

Configuration of friendship ties in groups. In this research, we discuss four distinct social structures that can be distinguished along two dimensions: the *primary tie* between ego and alter, and the *secondary tie* between alters. The configuration of these friendship ties yields four different configurations of group social structure.

As shown in Figure 1, ego is assigned to Position A and the two alters to Positions B and C. Although additional configurations can be included by varying a third dimension—the relationship between ego and the third party—we do not do so because balance theory (Heider, 1958) suggests that these configurations are less common than the four configurations that we consider here.²

Because the primary focal point is the ego–alter tie, ego–alter ties in each structure are labeled to represent distinct configurations of friendship ties in a triad. In triads where both primary ego–alter ties and secondary alter–alter ties consist of strangers, ego–alter ties are labeled *SILOS* ties. SILOS is an acronym for the phrase “strangers in a land of strangers,” inspired by the novel *Stranger in a Strange Land* (Heinlein, 1961). In triads where ego and alter are friends (i.e., the tie is symmetric³), but both are not friends with the third party, ego–alter ties are labeled as *Sole-Symmetric* ties (see Krackhardt, 1998, 1999). The use of the label *sole* here highlights the fact that there is only one symmetric friendship tie in the triad. Conversely, ego–alter ties in triads where both alters are friends and neither are friends with ego are labeled *Outcast* ties because ego is an outsider in the triad. Finally, ego–alter ties in triads consisting of mutual friends are labeled *Simmelian* ties, in

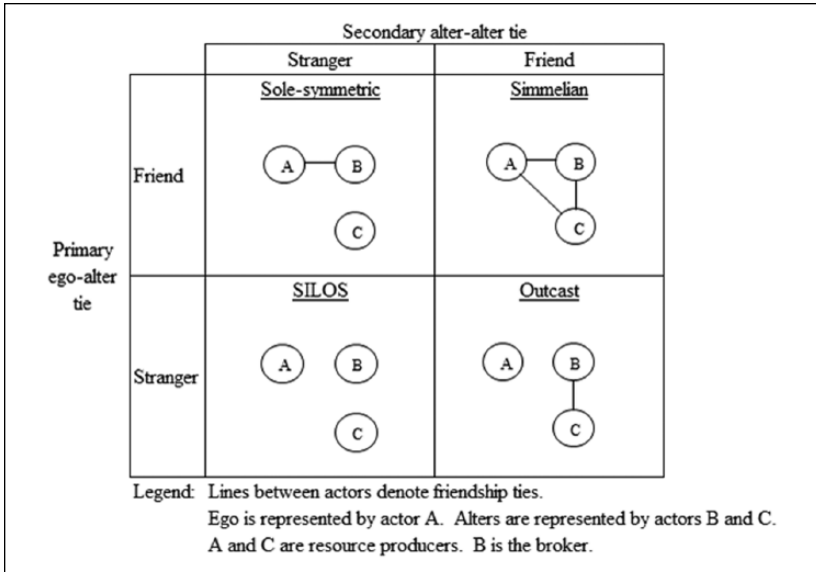


Figure 1. Social structural configuration of friendship ties in triads.

acknowledgment of Simmel's (1950) distinction between dyadic ties that are embedded in social cliques and those that are isolated. These configurations are shown in Figure 1, where lines between actors denote friendship ties.

Effect of friendships in primary ties on retaliation. People value exchange outcomes at both an instrumental and symbolic level (Ekeh, 1974; Haas & Deseran, 1981; Kelley, 1986; Polzer, Neale, & Glenn, 1993). The instrumental level refers to the utilitarian benefit that people receive from the exchange, whereas the symbolic level refers to the information conveyed about the other party's relational intent and orientation. The symbolic value of exchange outcomes is evident from the indignant responses of people who experience unfavorable outcomes (e.g., lower than expected salary offers) because it threatens their prestige or status more so than their purchasing power (Berger, Zelditch, Anderson, & Cohen, 1972; Homans, 1976). Prior studies have also consistently found that people distribute resources equally when the other party is a friend, even when it is costly for them to do so. By the actors showing their willingness to sacrifice personal short-term monetary gain, this *politeness ritual* (Mikula & Schwinger, 1978) is symbolic in that it conveys trustworthiness and the intention to maintain a nonexploitative, long-term relationship with the partner. In

addition, symbolism attached to voluntary acts of reciprocity can lead recipients to develop sentiments of trust, affective regard and relational solidarity toward their exchange partners (Molm, Schaefer, & Collett, 2007).

Because the symbolic value of exchange outcomes pertains to relational information, exchanges between friends are likely to contain symbolic content that reflect the existing relationship between them; exchanges between strangers, however, are not likely to contain the same symbolic content. Consequently, unfair outcomes will be experienced more negatively by ego when alter is a friend rather than a stranger, because ego will experience a loss in value at both the instrumental and symbolic levels. In contrast, unfair outcomes will be experienced less negatively if alter is a stranger, because ego only experiences a loss in value at the instrumental level. Hence, in both cases, an unfair outcome will increase the likelihood that ego will retaliate in response, but this increased likelihood will be stronger when alter is a friend rather than a stranger.

Hypothesis 1: There is a positive relationship between an unfair outcome to ego and retaliation by ego.

Hypothesis 2: The relationship between an unfair outcome to ego and retaliation by ego is moderated by friendship, such that the increased likelihood of retaliation by ego following an unfair outcome is higher when alter is a friend rather than a stranger.

Effect of friendship in secondary ties on retaliation between friends. We next broaden our focus from the dyadic relationship to consider the broader social structure in which the dyad is embedded, and how this may affect responses to unfair treatment. The basis of our argument draws on Simmel's (1950) idea that friendships that are embedded within a social clique (i.e., a pair of friends who share common friends) are qualitatively different from those that exist in isolation. According to Krackhardt (1998), the difference between Simmelian and non-Simmelian ties is not one of strength or intensity (i.e., they are not better friends) but rather, one of "quality, dynamics, and of stability" (Krackhardt, 1998, p. 23). In isolated dyads, actors retain a greater sense of individuality because each actor can sever the tie by withdrawing from the relationship. Individuals in Simmelian ties, however, have less leverage in disrupting the group because the group can persist with two other members even if one actor chooses to leave. With lower leverage, Simmelian-tied individuals would subordinate their individual interests to collective interests. Evidence of this was found by Krackhardt (1998) who showed that Simmelian friendship ties were more stable than non-Simmelian ties in a college living group composed of 17 undergraduates over a 15-week period.

The subordination of individual interests to the collective interests among Simmelian-tied individuals increases the salience of the group's identity. With the increased salience of group identity, Simmelian-tied actors become more sensitive to information about their standing in the group (Lind & Tyler, 1988). This sensitivity stems from people's predisposition to belong to social groups (Baumeister & Leary, 1995) as a way to reduce subjective uncertainty about their place in the social world (Hogg, Abrams, Otten, & Hinkle, 2004) and maintain self-esteem (Sedikides & Strube, 1997). Thus, in comparison with an actor who is Sole-Symmetrically tied, one who is Simmelian-tied will be more sensitive to information about his or her standing in the group, and is also more likely to interpret exchange outcomes as suggestive of his or her standing with respect to the friend *and* to the group. In other words, the symbolic value of exchange outcomes perceived by ego will be greater if they are Simmelian-tied than if they are Sole-Symmetrically tied. Compared with receiving a fair outcome, the negative experience of receiving an unfair outcome will therefore be experienced more negatively by Simmelian-tied actors than actors in Sole-Symmetric ties. Consequently, the positive relationship between retaliation by ego following the receipt of an unfair outcome from alter will be stronger when ego's tie to alter is Simmelian rather than Sole-Symmetric.

Effect of friendship in secondary ties on retaliation between strangers. We next consider differences in retaliation across social structural configurations in which ego and alter are strangers. This occurs in SILOS ties (where group members are strangers) and in Outcast ties (where both alters are friends, but strangers to ego). We proposed earlier that ego is more likely to retaliate in response to unfair outcomes when the perpetrator is a friend rather than a stranger because ego experiences a loss in both instrumental *and* symbolic value when unfair outcomes are perpetrated by a friend. Thus, in comparing the interactions between ego and alter in SILOS and Outcast ties, where there are no differences in the symbolic value of exchange outcomes (because alters are strangers in both cases), a different framework needs to be applied. Specifically, we draw on social categorization theory to explain the effect of third-party ties on retaliation by ego because the friendship ties between alters in Outcast ties make social categorical differences between ego and alter more salient.

The salient social categorical differences between ego and alter in Outcast compared with SILOS ties contributes to ego's perception of being in a numerical minority position. Being a numerical minority contributes to feelings of insecurity and vulnerability (Ellemers, Doosje, Van Knippenberg, & Wilke, 1992; Sachdev & Bourhis, 1984; Simon & Brown, 1987) which heighten ego's

sensitivity to the evaluations and potential constraints imposed by others (Fiske, 1993; Steele & Aronson, 1995). Furthermore, being the outsider in the group also increases the salience of ego's self-concept when they are in Outcast ties, which raises ego's concerns about justice (Sedikides, Hart, & De Cremer, 2008). This is supported by prior research that has found that people think about justice when they imagine that an unfair outcome has happened to them rather than to someone else (Ham & van den Bos, 2008). In addition, Brebels, De Cremer, and Sedikides (2008) found that heightened accessibility of the self produced stronger retaliation against the source of unfair treatment because people are averse to the loss of self-esteem (Baumeister, 1993; Baumeister, Smart, & Boden, 1996), which can cause "a depressing revision of self-appraisal" (Baumeister et al., 1996, p. 13). These findings suggest that ego will feel more insecure and be more sensitive to justice concerns in Outcast ties than in SILOS ties. Ego will therefore experience unfair outcomes from alter more negatively in Outcast ties compared with SILOS ties. The greater negativity experienced by ego in Outcast ties results in a stronger desire to retaliate as a way to protect their self-esteem. We thus predict that the positive relationship between ego's retaliation in response to an unfair outcome will be stronger in Outcast ties compared with SILOS ties.

Hypothesis 3: The relationship between an unfair outcome to ego and retaliation by ego is moderated by the configuration of friendship ties in the group. Specifically,

Hypothesis 3a: The increased likelihood of retaliation by ego following an unfair outcome is higher when the tie between ego and alter is Simmelian rather than Sole-Symmetric.

Hypothesis 3b: The increased likelihood of retaliation by ego following an unfair outcome is higher when the tie between ego and alter are Outcast rather than SILOS.

Method

Simulating Exchange in Triads

To simulate recurring opportunities for unfair treatment and retaliation, an experimental exchange paradigm was adopted. In this paradigm, participants in the experiment are connected to one another in a network where they engage in multiple rounds of bargaining with their partner(s) for valued resources (Cook & Emerson, 1978; Molm & Cook, 1995).

Triads were organized as a three-person exchange network consisting of two producers of complementary resources (i.e., bread or butter), and a

broker who profits by linking exchanges between both producers (Burt, 1992; Simmel, 1950). In this study, ego is a resource producer who exchanges directly with alter, the broker in the network. The third party, the secondary alter, produces the complementary resource. The actors in this network were positively connected, in the sense that a transaction between the broker and one producer *enables* the broker to transact with the other producer (Yamagishi, Gillmore, & Cook, 1988). A negatively connected network, in contrast, is one where a transaction between the broker and one producer *precludes* the broker from transacting with the other producer (e.g., Cook & Emerson, 1978).

Exchanges in these triads were structured in this manner for three reasons. First, such exchanges simulated key features of work groups. Scholars (e.g., Hackman, 1987; Kozlowski & Bell, 2003; Kozlowski & Ilgen, 2006; Salas, Stagl, Burke, & Goodwin, 2007) acknowledge these features to include (a) differentiated roles and responsibilities, (b) shared goals, and (c) task interdependence. Although these features do not exhaustively define work groups in organizations, they adequately distinguish these triads from groups of individuals acting independently of one another in an experimental setting.

In this exchange network, participants adopted clearly differentiated roles as either a producer or a broker. Although participants were required to bargain with one another, they also shared a common goal of reaching an agreement because the reward system was structured such that no points were gained by the group if anyone reached an impasse with his or her partner. The final characteristic of work groups, interdependence, was engendered by structuring the rules of exchange such that the potential terms of exchange that the broker could make with one producer was contingent on the deal reached with the other producer.

The second reason for structuring the triad in this form was that brokerage relations are common in work groups. Consider the example of cross-functional product development teams. In these teams, members with differentiated functional skills collaborate on projects with idiosyncratic requirements and ambiguous outcomes. On these tasks, prior routines for coordination and task accomplishment can become obsolete quickly, requiring team members to regularly negotiate coordination procedures, roles and responsibilities, task specifications, project resources and deadlines. These negotiations are likely to be mediated by a project manager who, acting as a broker, maintains harmonious relations among team members and increases the odds of arriving at outcomes that are optimal for the project team.

The third reason was that friends typically treat one another fairly in an experimental setting (Loewenstein, Thompson, & Bazerman, 1989; Polzer et al., 1993). As we were interested in how they responded to unfair

treatment, it was crucial that the unfair treatment was seen as legitimate by the perpetrator to induce them to treat a friend unfairly. This was achieved in the study by creating an imbalanced power structure in favor of the broker (Burt, 1992, 2004; Fernandez-Mateo, 2007; Fernandez & Gould, 1994; Padgett & Ansell, 1993; Podolny & Baron, 1997), so that brokers could dictate exchange terms that were to their benefit at the expense of their partner's.

Task

This broker-mediated exchange network is a variation of the exchange networks implemented by other scholars to study such phenomena as power (e.g., Cook, Emerson, Gillmore, & Yamagishi, 1983), trust (e.g., Molm, Takahashi, & Peterson, 2000), reciprocity (e.g., Molm, Quist, & Wiseley, 1993), and procedural justice (e.g., Molm, Peterson, & Takahashi, 2003). The exchange task involved a multiple-round negotiation through a computer network between producers and the broker over the terms of exchange. In each round, each producer was endowed with four units of a given resource (either bread or butter). Producers earned points based on the number of bread and butter pairs they had at the end of each round. Brokers earned points by extracting a commission from the units of bread or butter that passed between the two producers.

In each triad, producers could only negotiate with the broker, and not with one another. Within each round, producers could make multiple offers to the broker at any time, and vice versa, as long as an offer had not been accepted by their partner. An offer represented the number of units of resource one was willing to *give to* his or her partner, and the number of units of the complementary resource the person wanted to *receive from* his or her partner.

The range of offers that resource producers could make (to either give or receive units) varied between one and three. The most advantageous offer from the bread producer's perspective would be one where that producer offered to give one unit of bread in exchange for three units of butter. The same can be said for the butter's producer for units of bread.

For brokers, the units of resources that they could exchange with one party were limited by the units of that same resource they had received from the other party for that round. Thus, if a broker received two units of bread from A, he or she would only be able to give a maximum of two units of bread to C. Brokers were thus motivated to ensure that they received enough resources from both producers so that they had enough to exchange with the other party and still retain a residual amount for themselves to earn points. In the event that this rule was violated (e.g., if the broker agreed to give three units of

Table 1. Payoff to Producers If Offer Is Accepted.

Offers by producer	Payoff
1. OFFER _{1,1}	1
2. OFFER _{1,2}	2
3. OFFER _{1,3}	3
4. OFFER _{2,1}	1
5. OFFER _{2,2}	2
6. OFFER _{2,3}	2
7. OFFER _{3,1}	1
8. OFFER _{3,2}	1
9. OFFER _{3,3}	2

bread to the butter producer after receiving only one unit of bread from the bread producer), the deal was negated. Untraded units of bread and butter expired at the end of each round and were not carried forward to future rounds.

The rules of exchange thus meant that an impasse with one producer would prohibit the broker from transacting with the other producer, because no resources could then be exchanged. Hence, outcome interdependence between actors was high because the broker had to reach an agreement with both producers for any exchange to occur.

Excluding impasses, there were a total of nine possible offers that resource producers could make. We use the label *OFFER*_{*x,y*}, where *x* and *y* are between 1 and 3, to denote offers in which the producer offered to give *x* units of resource produced in exchange for *y* units of the complementary resource. These possible offers and the potential payoff to producers and brokers are shown in Tables 1 and 2, respectively. Table 1 shows that a producer would earn 1 point if OFFER_{1,1} was accepted by his or her partner, the broker. In Table 2, the left column shows offers made by one producer; offers made by the other producer are shown in the top row. Table 2 shows that if the broker accepted OFFER_{1,1} from the first producer, then he or she will only have the option of accepting three possible offers from the second producer—OFFER_{1,1}, OFFER_{2,1}, and OFFER_{3,1}. Accepting each of these offers from the second producer, having accepted OFFER_{1,1} from the first, will yield zero, one and two points, respectively.

Participants bargained with their partners through networked computers. The user interface enabled participants to make and accept offers from their exchange partners in real-time. In addition, the interface also provided information about their partner's counter-offers, the history of past deals made,

Table 2. Matrix of Payoff to Broker as a Function of Offers by Producers If Offer Is Accepted.

Offers by producer (bread)	Offers by producer (butter)								
	1	2	3	4	5	6	7	8	9
1. OFFER _{1,1}	0			1			2		
2. OFFER _{1,2}				0			1		
3. OFFER _{1,3}							0		
4. OFFER _{2,1}	1	0		2	1		3	2	
5. OFFER _{2,2}				1	0		2	1	
6. OFFER _{2,3}							1	0	
7. OFFER _{3,1}	2	1	0	3	2	1	4	3	2
8. OFFER _{3,2}				2	1	0	3	2	1
9. OFFER _{3,3}							2	1	0

cumulative points, and the points scored in the prior round. Participants thus had information about their own scores, but not their partners’ scores, although they could make estimates based on the amount that they exchanged with their partner.

Participants

A total of 99 participants in 33 same-sex triads were recruited from the general population surrounding a mid-Atlantic university in the United States. Of these 33 triads, 16 were all-male groups and 17 were all-female groups. 31.3% of the participants described themselves as Caucasian, 54.6% as Asian, and the remaining 14.1% as belonging to another ethnic group. In the recruitment materials, participants were invited to attend the study either alone, or with one or two other friends, for pay. A total of 44, 22, and 33 participants completed the experiment individually, in dyads, and in triads, respectively.⁴ The pay included a base amount of US\$10 and an additional amount based on their performance during the study.

Procedure

Participants were recruited through three separate ads—one recruiting individual participants, another recruiting pairs of friends, and a third recruiting trios of friends. For each session, there were no more than two groups running concurrently. In sessions where two groups were run concurrently, participants who attended the session individually and as a pair of friends were

randomly assigned to a group. Participants who attended as a trio of friends were kept as an intact group. In all conditions, participants were randomly assigned roles in their groups.

Upon arrival, participants were briefed about the task and then led to different rooms, depending on the roles to which they were randomly assigned. To limit communication between exchange partners, producers were situated in different rooms from brokers. In each room, participants sat at a computer terminal with their backs to one another so that monitors could not be seen by other participants and verbal communication was prohibited.

Once all participants had arrived, participants received a set of generic task instructions and role-specific instructions for the exchange task. The generic instructions provided information about the exchange network; the role-specific instructions provided information about using the computer interface and earning points on the task.

After participants read the instructions, groups began a guided-practice phase, where each person could use the interface to bargain with their partner in real-time. The identities of exchange partners were not revealed on the interface, so partners remained anonymous during this phase. The objective of the guided-practice phase was to ensure that participants were familiar with the scoring system, as well as with using the interface to bargain with their partners. These sessions were actively monitored by experimenters to ensure that familiarity with the interface was attained. The duration of the practice phase was typically 30 min.

In the actual bargaining phase, the names of exchange partners were revealed on the interface. Groups completed at least 40 rounds of bargaining and were given a time limit of 50 s per round. The round ended when the broker reached an agreement with both producers or after 50 s had passed. Participants were not told how many rounds they had to complete.

At the end of the exchange task, participants were asked to complete a survey about their relationships with their exchange partner, their perceived power in the task, and demographic information. Once this survey was completed, participants were paid, debriefed, and thanked for their participation.

Measures

Retaliatory offer. The dependent variable in our model is a binary variable that captures the occurrence of OFFER_{1,3} made by ego across each dyadic tie at time t . We consider such offers to be indicative of retaliation because OFFER_{1,3} were highly disadvantageous to brokers as they only received a single unit of resource, which had to be exchanged with their second producers, leaving them with no units. Consequently, brokers' expected earnings

from accepting $OFFER_{1,3}$ were zero (see Table 2), and producers were aware that their partner had no incentive to accept such offers. In light of its punitive nature, an $OFFER_{1,3}$ can therefore be considered as retaliation, especially when it was preceded by an unfair outcome to the producer in the previous round (see the following sections).

Deal outcomes. We coded the outcomes of deals in round $t - 1$ as $DEAL_{x,y}$, where x is the units of resource that producers agreed to give to their brokers, and y is the complementary resource that producers agreed to receive in return.

Amongst all the possible deal outcomes, $DEAL_{3,1}$ was the most unfair one to producers because it involved the most number of units producers could give and the least they could receive. Such deals resulted in the worst possible payoff to producers, while giving their partner (the broker) the best payoff. The highly unequal payoff from accepting $DEAL_{3,1}$ therefore contributes to ego's overall sense of unfair treatment by their partner (Ambrose & Arnaud, 2005; Cropanzano & Ambrose, 2001) because people do not always worry about whether there are multiple types of injustice (e.g., distributive or procedural justice), but instead react to their general experience of injustice (Greenberg, 2001; Hauenstein, McGonigle, & Flinder, 2001; Leventhal, 1980; Lind, 2001; Shapiro, 2001; Törblom & Vermunt, 1999). Occurrences of $DEAL_{3,1}$ were therefore considered as unfair treatment perpetrated by brokers on producers.

Type of tie. The four types of ties were dummy-coded. An additional code was used to identify whether the ties consisted of friends or strangers at the dyadic level.

Control Variables

Experimental phase. To account for the possibility that producer's responses to unfair outcomes with the broker would vary depending on how far the experiment had proceeded, the round number for each observation was recorded. The first 10 rounds were assigned to Phase 1, the next 10 rounds to Phase 2, and so on. Phase 1 was removed from the analysis because pilot tests suggested that participants took several rounds of real-time bargaining to get used to the conditions and the interface. The remaining phases were entered into the regression as Phase 2, Phase 3, and Phase 4.

Deal history. Deal history was accounted for by creating variables that accounted for the proportion of prior unfair ($DEAL_{3,1}$), fair ($DEAL_{3,3}$, $DEAL_{2,2}$, $DEAL_{1,1}$), and favorable deals ($DEAL_{1,3}$) for each round.

Relative power. Because perceived power may affect numerical minorities' biases toward outgroup members (Sachdev & Bourhis, 1991), we controlled for this effect by measuring the producer's perceived power relative to the exchange partner's (RELPOWER). RELPOWER was derived by aggregating the items that measured the producer's perception of his or her power in the task at the end of the experimental session ("Please rate the power you had during the exercise," "Please rate the control you had during the exercise") and the producer's perception of his partner's power in the task ("Please rate the power of your partner during the exercise," "Please rate the control your partner had during the exercise"). We applied a log transformation to the ratio of these scores to normalize their distribution. The items measuring power showed high internal consistency (self-ratings $\alpha = .85$, partner-ratings $\alpha = .97$).

Sex. We included a variable to control for the sex of the group members, which was coded with a dummy variable (MALE; 0 = female, 1 = male).

Analysis

Since the bargaining rounds (Level 1) were nested within individual dyadic ties (Level 2), we used a multilevel logistic regression model to analyze the data using Stata (version 10). Logistic regression is appropriate because the dependent variable (OFFER_{1,3}) is dichotomous (0 = absent, 1 = present). In our model specifications, RELPOWER and MALE are Level 2 variables, while the others are Level 1 variables. We removed disallowed deals—agreements where the broker agreed to give more of a particular resource to one party than he or she received from the other (e.g., receiving one unit of bread, but agreeing to give three units of bread)—from the data so as not to create confound with impasses.

Our preliminary analysis showed that the inclusion of experimental phase and deal history did not improve model fit significantly more than the parsimonious model that excluded these variables, so these were removed from our final model.

Manipulation Check

Participants' perception of the configuration of friendship ties in their group was assessed by measuring the strength of their relationship with their exchange partner (i.e., the primary tie), and a separate measure of their perception of their partner's relationship with the third party (i.e., the secondary tie).

Table 3. Relational Strength of Primary Ties and Perceived Relationship of Secondary Ties by Ego.

	Relational strength (primary tie)	Perceived relationship (secondary tie)
SILOS	3.31	3.67
Outcast	3.68	4.73
Sole-Symmetric	4.70	2.73
Simmelian	5.22	5.05

Note. Relational strength is the average relational strength score reported by ego and alter. Perceived relationship is based on ego's perception of the secondary tie. For both scores, higher numbers reflect a stronger relationship.

The relational strength between ego and alter was measured using a 20-item scale adapted from Greenhalgh and Chapman (1998) that both parties completed. This measure included subscales for Scope, Common Interests, Trust, Affection, Alliance, Lack of Competitive Strain, Relationship Continuity Focus, Positive Exchange, Romantic Interest, and Relational Strength. Internal consistency for the scale was high ($\alpha = .93$). The relational strength for each dyad was computed by aggregating responses to these items and averaging these scores between dyads. Aggregation was justified on the basis of satisfactory intraclass coefficients, $ICC(1) = 0.93$.

The first column in Table 3 shows the average relational strength in the ego–alter tie, reported by ego and alter. The results of the manipulation check show that the relational strength between ego and alter was lower for strangers ($M = 3.43$) than for friends ($M = 5.03$), $t(64) = -9.56, p < .01$.

Ego's perception of alter's tie to the third party was measured with the item "They have a very close relationship" on a 7-point scale, 1 = *strongly disagree* and 7 = *strongly agree* (see Table 3, column 2). The results show that participants accurately perceived the composition of friends and strangers in the network, consistent with our manipulation. Ties in which alters were strangers (i.e., SILOS and Sole-Symmetric ties) were scored lower ($M = 3.37$) than ties in which alters were friends (i.e., Outcast and Simmelian ties), $M = 4.94, t(64) = -4.26, p < .01$.

Results

Relative frequencies and means of the variables are presented in Table 4, while intercorrelations are presented in Table 5. At the round level of analysis, there were 694 SILOS ties, 333 Outcast ties, 333 Sole-Symmetric ties,

Table 4. Proportions of Deal Type by Ego–Alter Tie.

	Total (<i>N</i> = 1,922)	SILOS (<i>n</i> = 694)	Outcast (<i>n</i> = 333)	Sole-Symmetric (<i>n</i> = 333)	Simmelian (<i>n</i> = 562)
OFFER _{1,3}	0.11	0.09	0.08	0.19	0.10
DEAL _{3,1}	0.22	0.14	0.31	0.18	0.29
DEAL _{2,1}	0.11	0.17	0.08	0.10	0.07
DEAL _{3,2}	0.10	0.08	0.04	0.08	0.15
DEAL _{1,1}	0.02	0.03	0.01	0.02	0.03
DEAL _{2,2}	0.25	0.27	0.28	0.31	0.18
DEAL _{3,3}	0.00	0.00	0.00	0.00	0.01
DEAL _{2,3}	0.00	0.00	0.00	0.01	0.01
DEAL _{1,2}	0.01	0.01	0.00	0.01	0.00
DEAL _{1,3}	0.01	0.00	0.00	0.00	0.02
Impasse	0.28	0.29	0.28	0.30	0.25

and 562 Simmelian ties. Across dyads, the deals that occurred most frequently were impasses (28.1%), followed by DEAL_{2,2} (25.4%), and DEAL_{3,1} (21.5%).

We present the six models that test our hypotheses in Table 6. Models 1 and 2 tested the likelihood of retaliatory responses by ego as a function of their primary tie to alter (the broker). Models 3, 4, 5, and 6 tested the same dependent variable as a function of the social context, which takes into account both the primary tie between ego and alter, and the secondary tie between alters. Models 1, 3, and 5 include only the main effects of the independent variables, with Sole-Symmetric ties as the referent factor in Model 3 and SILOS ties as the referent factor in Model 5. Models 2, 4, and 6 include the DEAL_{3,1} × Tie interaction terms to test our hypotheses about the increased likelihood of retaliatory offers following an unfair outcome to ego in the previous round, with Sole-Symmetric ties as the referent factor in Model 4 and SILOS ties as the referent factor in Model 6.

Across all six models, the independent effect of DEAL_{1,3} on OFFER_{1,3} was significant. This was expected because producers gained the most from DEAL_{1,3}, and would naturally respond with OFFER_{1,3} in the hopes that their partner would repeat the same deal as before.

In support of Hypothesis 1, which predicted a higher likelihood of retaliation from ego following an unfair outcome, DEAL_{3,1} was found to increase the likelihood of OFFER_{1,3} in Models 1, 3, and 5, $\beta = .60, p < .05$. The significance of DEAL_{3,1} as a predictor of OFFER_{1,3} suggests that ego generally reacted negatively to DEAL_{3,1}—these were unfair allocations where they earned the least points, but gave the most points to their partners. The results

Table 5. Correlation Matrix of Predictor Variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. OFFER _{1,3}	—																
2. RELPOWER	-.06*	—															
3. MALE	.08***	-.05*	—														
4. DEAL _{3,1}	-.03	-.26***	.03	—													
5. DEAL _{2,1}	.01	.04	.06***	-.19***	—												
6. DEAL _{3,2}	-.04	-.04	-.08***	-.17***	-.11***	—											
7. DEAL _{1,1}	-.01	.06**	-.06*	-.08***	-.06*	-.05*	—										
8. DEAL _{2,2}	-.01	.23***	.00	-.31***	-.21***	-.19***	-.09***	—									
9. DEAL _{3,3}	.03	.00	-.03	-.03	-.02	-.02	-.01	-.04	—								
10. DEAL _{2,3}	.03	.02	-.02	-.03	-.02	-.02	-.01	-.04	.00	—							
11. DEAL _{1,2}	.02	.02	-.04	-.04	-.03	-.02	-.01	-.04	.00	.00	—						
12. DEAL _{1,3}	.10***	-.04	.03	-.04	-.03	-.03	-.01	-.05*	-.01	.00	-.01	—					
13. Impasse	.03	-.01	.01	-.33***	-.22***	-.20***	-.10***	-.36***	-.04	-.04	-.05*	-.05*	—				
14. Tie (friend)	.07**	-.17***	-.07***	.07***	-.10***	.09***	.01	-.05*	.02	.05*	.01	.06	-.03	—			
15. Tie (SILOS)	-.04	.16***	-.11***	-.15***	.14***	-.03	.02	.04	.00	-.03	.02	-.03	.03	-.70***	—		
16. Tie (Outcast)	-.04	.02	.22***	.10***	-.04	-.08***	-.04	.03	-.03	-.03	-.03	-.04	.00	-.43***	-.34***	—	
17. Tie (Sole-Symmetric)	.12***	-.01	.22***	-.04	-.02	-.03	-.01	.06*	-.01	.02	.02	-.02	.02	.49***	-.34***	-.21***	—
18. Tie (Simmelian)	-.02	-.18***	-.26***	.11***	-.09***	.12***	.02	-.11***	.03	.04	-.01	.08***	-.04	.69***	-.48***	-.29***	-.29***

*p < .05. **p < .01. ***p < .001.

Table 6. Logistic Regression Coefficients for the Independent and Interactive Effects of Deal Type and Tie Type on OFFER_{1,3}.

Parameters	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Log(RELPOWER)	-1.42 (1.03)	-1.50 (1.03)	-1.53 (1.03)	-1.68 (1.03)	-1.53 (1.03)	-1.68 (1.03)
Gender (male)	0.67 (0.59)	0.75 (0.59)	0.47 (0.63)	0.50 (0.63)	0.47 (0.63)	0.50 (0.63)
DEAL _{3,1}	0.60* (0.29)	-0.19 (0.45)	0.60* (0.29)	0.22 (0.58)	0.60* (0.29)	-0.38 (0.63)
DEAL _{2,1}	0.35 (0.31)	0.30 (0.31)	0.35 (0.31)	0.31 (0.31)	0.35 (0.31)	0.31 (0.31)
DEAL _{3,2}	0.12 (0.37)	0.21 (0.37)	0.14 (0.37)	0.25 (0.37)	0.14 (0.37)	0.25 (0.37)
DEAL _{1,1}	-0.59 (0.63)	-0.64 (0.64)	-0.59 (0.63)	-0.64 (0.64)	-0.59 (0.63)	-0.65 (0.64)
DEAL _{2,2}	-0.23 (0.25)	-0.26 (0.25)	-0.23 (0.25)	-0.27 (0.25)	-0.23 (0.25)	-0.27 (0.25)
DEAL _{3,3}	0.33 (1.20)	0.38 (1.22)	0.34 (1.20)	0.41 (1.22)	0.34 (1.20)	0.41 (1.22)
DEAL _{2,3}	0.81 (1.04)	0.86 (1.04)	0.81 (1.04)	0.89 (1.05)	0.81 (1.04)	0.89 (1.05)
DEAL _{1,2}	1.01 (0.96)	1.03 (0.96)	1.00 (0.96)	1.00 (0.96)	1.00 (0.96)	1.00 (0.96)
DEAL _{3,3}	1.56* (0.70)	1.71* (0.71)	1.58* (0.70)	1.88** (0.72)	1.58* (0.70)	1.87** (0.72)
Friend	0.84 (0.60)	0.53 (0.61)				
DEAL _{3,1} × Friend ^a		1.25** (0.52)				
SILOS			-1.42 (0.88)	-1.34 (0.89)		
Outcast			-1.22 (0.98)	-1.10 (1.00)	0.20 (0.91)	0.25 (0.93)
Sole-Symmetric					1.42 (0.88)	1.34 (0.89)
Simmelian			-0.85 (0.90)	-1.25 (0.91)	0.57 (0.75)	0.10 (0.77)
DEAL _{3,1} × SILOS ^a				-0.60 (0.83)		
DEAL _{3,1} × Outcast ^a				-0.25 (0.81)		0.35 (0.84)
DEAL _{3,1} × Sole-Symmetric ^a						0.60 (0.83)
DEAL _{3,1} × Simmelian ^a				1.22* (0.68)		1.82** (0.71)
Intercept	-4.47**	-4.36**	-3.01**	-2.98**	-4.44**	-4.33** (0.66)
Log likelihood	-524.67	-521.74	-524.22	-519.47	-524.22	-519.47

Note. Numbers in parentheses are standard errors. Simmelian ties were the referent category in Models 3 and 4; SILOS ties were the referent category in Models 5 and 6.

^a*p* values are one-tailed tests.

p* < .05. *p* < .01.

also indicate that the occurrence of OFFER_{1,3} was not sensitive to the main effect of the configuration of friendship ties (see Models 3-6).

Hypothesis 2 predicted that friendship would moderate the relationship between the likelihood of retaliation from ego following an unfair outcome, such that the increased likelihood of retaliation by ego following an unfair outcome is higher when alter is a friend rather than a stranger. As shown in Table 6, Model 2, the coefficient associated with the DEAL_{3,1} × Friend interaction was positive and significant, $\beta = 1.25$, one-tailed $p = .01$. Simple slopes for the relationship between DEAL_{3,1} and the likelihood of retaliation were tested for friends and strangers. The tests revealed that the likelihood of retaliation was significantly higher following DEAL_{3,1} for friends, $\beta = 1.44$, $t(1905) = 4.20$, $p < .001$, but not for strangers (Figure 2). Hypothesis 2 was thus supported.

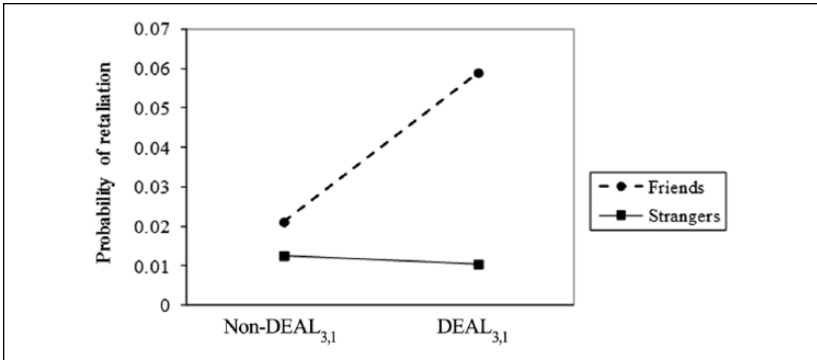


Figure 2. Interaction effects of an unfair deal and friendship on retaliation by ego.

Hypothesis 3 predicted that the relationship between the increased likelihood of retaliation from ego following an unfair outcome is moderated by the configuration of friendship ties in the group. According to Hypothesis 3a, the increased likelihood of retaliation by ego following an unfair outcome will be higher when the tie between ego and alter is Simmelian rather than Sole-Symmetric. As shown in Model 4 in Table 6, the coefficient associated with $DEAL_{3,1} \times$ Simmelian ties, $\beta = 1.22$, one-tailed $p < .05$, with $DEAL_{3,1} \times$ Sole-Symmetric ties as the referent, was significant and positive. Simple slopes for the relationship between $DEAL_{3,1}$ and the likelihood of retaliation were tested for ties that were Simmelian and Sole-Symmetric. The tests revealed that the likelihood of retaliation was significantly higher following $DEAL_{3,1}$ for Simmelian-tied friends, $\beta = 1.44$, $t(1901) = 3.61$, $p < .001$, but not for Sole-Symmetric ties (Figure 3). Hypothesis 3a was thus supported.

Hypothesis 3b predicted that the increased likelihood of retaliation by ego following an unfair outcome will be higher when ego and alter are Outcast-tied rather than SILOS-tied. Model 6 in Table 6 shows that the coefficient for the $DEAL_{3,1} \times$ Outcast interaction was in the expected direction but not statistically significant ($\beta = 0.35$, *ns*). Hypothesis 3b was thus not supported.

Discussion

Our findings contribute to theoretical development in the literatures on counterproductive behavior, justice, and groups in the following ways. First, by examining retaliatory responses to unfair outcomes as a function of the configuration of friendship ties in triads, this research adds to the growing body of work that has examined relational antecedents of counterproductive

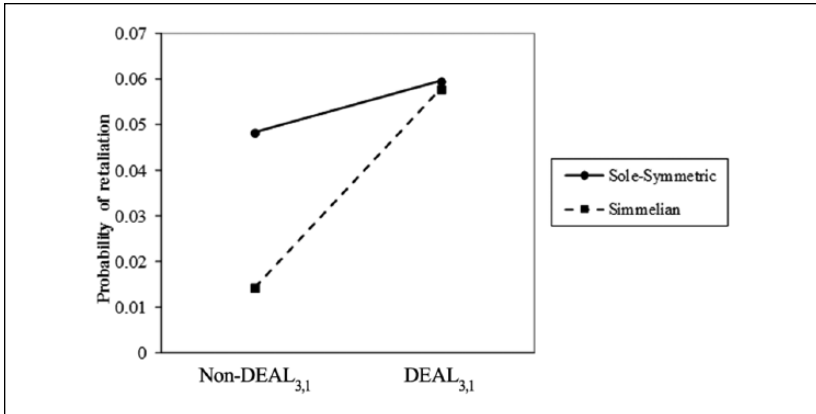


Figure 3. Interaction effects of an unfair deal and tie-type on retaliation by ego.

behaviors (e.g., Lam et al., 2011; Venkataramani & Dalal, 2007). Prior research has largely focused on relational characteristics at the dyadic level, whereas our research accounts for the group social context that dyads are embedded in by examining how different configurations of friendship ties in the group affect retaliatory responses to unfair outcomes. Specifically, our results show that the increased likelihood of retaliation following an unfair outcome was stronger when the perpetrator was a friend rather than a stranger. When the tie of a third party was taken into consideration, the increased likelihood of retaliation following an unfair outcome was stronger between friends when the third party was a mutual friend compared with when the third party was a stranger. This latter finding suggests that research into the relational antecedents of counterproductive behaviors should not be solely focused on dyadic relationships but should also include the broader social context that dyads are embedded in.

Second, support for the hypothesized mechanism by which social structure affects people's propensity to retaliate to unfair outcomes extends the social network perspective of justice research (Shapiro et al., 2008) by introducing the idea of network configurations as a trigger of a group identity. Drawing on the group-value model (Lind & Tyler, 1988), we argued that individual interests are suppressed in favor of group interests when ego is Simmelian-tied (i.e., embedded within a clique of friends). The increased salience of the group identity causes ego to experience unfair outcomes more negatively, which leads to an increased likelihood of retaliation by ego in response to unfair outcomes. While network scholars are familiar with the

idea of social cliques, the social-psychological effects of being a member in these cliques and the corresponding effect on justice and counterproductive behaviors have rarely been integrated. Integrating these perspectives adds another dimension to how justice can be examined from a social networks perspective aside from the effect of networks configuration on social influence of justice perceptions (Shapiro et al., 2008; Umphress, Labianca, Brass, Kass, & Scholten, 2003).

Third, this research also contributes to the groups' literature by highlighting the effects that patterns of friendship have on group behavior. Although prior research has examined group composition in terms of the composition of individual attributes (Halfhill et al., 2005; Paletz et al., 2004; Wittenbaum et al., 2010; Woolley et al., 2008), research on the relational configuration of the group is lacking. It is reasonable to believe that tightly knit groups composed of friends may have a performance advantage over other groups because of higher levels of prosocial behaviors, cooperation, and learning among other functional benefits (Jehn & Shah, 1997; Shah & Jehn, 1993; Tortoriello & Krackhardt, 2010). Our research finding raises a caveat by showing how the propensity for retaliatory, counterproductive behaviors can also be amplified in groups where members share close relational ties with one another if justice concerns are violated.

Our findings also have implications for practice. Because organizations have become dependent on groups as their primary work units (Cohen & Bailey, 1997; Devine et al., 1999; Kozlowski & Bell, 2003), this research also has organizational implications. Findings from prior research generally encourage the development of workplace friendships (e.g., Tse, Dasborough, & Ashkanasy, 2008), which is a view shared by managers (Berman et al., 2002). Our findings highlight the risk inherent in this approach—people embedded in a dense network of friends are more sensitive to unfair treatment. In the event that differential treatment of group members is required, those who feel that they have been unfairly treated may experience this more adversely and have a higher propensity to react negatively. The key implication of this research for practice is that as managers seek to develop friendships among employees, particularly in the teams they manage, they should also be sensitive to the configuration of friendship ties in these teams because that can also affect people's reactions to unfair treatment.

We did not find support for our hypothesis that among dyads consisting of strangers, the increased likelihood of retaliation by ego following an unfair outcome would be higher when the third party was a friend of alter (i.e., an Outcast tie), rather than a stranger (i.e., a SILOS tie). We hypothesized that this would occur because the perception of being a minority outgroup member would be made salient in the Outcast condition (i.e., when both alters

were friends with one another, but not with ego). We consider two possible explanations for this lack of support. The first possibility is that social categories were not sufficiently salient in Outcast ties to make the “self” sufficiently accessible to motivate ego to engage in retaliatory actions toward alter following an unfair outcome. One finding that works against this explanation is that the manipulation check indicates that ego was more aware of the closer friendship between alters than between himself and alters. However, even if social categories were salient, it is also possible that the psychological effects of these differences were weakened by the high levels of interdependence between ego and alter. Interdependence has been found to increase prosocial behaviors, such as people’s willingness to cooperate, help, and share information (Saavedra, Earley, & Van Dyne, 1993; Wageman, 1995). There is also evidence to show that task interdependence can moderate the harmful effects of faultlines on creativity (Nishii & Goncalo, 2008). Future research could examine this idea by decomposing the effects of interdependence from the psychological effects of social categorization.

The second possibility is that in spite of perceiving unfair outcomes as self-esteem threats, ego might have instead chosen to respond through alternative means such as social creativity (Tajfel & Turner, 1979; Turner, 1985). Social creativity refers to the tendency to change the basis of comparison so that alter is perceived less favorably. If this is the case, we would then expect negative stereotypes of alter to be more salient to ego, and also for ego to demonstrate stronger evidence of psychological and behavioral withdrawal from the task. Future research could shed light on these possibilities by examining the effect of third-party relations on ego’s attitude toward alters and on ego’s level of task engagement.

A boundary condition of our findings is that these effects were found to be salient when contrasting ties between friends and strangers. As relationships are multifaceted, these effects may be altered when different dimensions of relationships are compared and contrasted. While a discussion of how the configuration of different dimensions of relationships in the group context can alter some of these behaviors is beyond the scope of this research, these questions should be examined in future research.

Limitations

A limitation of this study is that participants in the Simmelian condition were not randomly assigned to that condition. To do so, we would have needed to recruit at least three trios of friends for each session who were then randomly assigned to conditions. Unfortunately, we were unable to conduct the experiment with three concurrent groups because of constraints in space and

Internet bandwidth for implementing the trading network. Randomly creating “friendship” among participants was also not an option because these artificially created bonds would have been conceptually different from the friendship ties described by Krackhardt (1992) which are characterized by frequent interaction, affection, and history. Therefore, systematic individual differences between those who participated as trios of friends and the rest of the sample population could not be ruled out. Despite this limitation in our design, we believe that the interpretation of our findings is still valid as we explain below.

The sample of participants who attended as trios of friends are likely to be biased toward higher levels of extraversion compared with the rest of the sample (Kalish & Robins, 2006). However, a higher level of extraversion among those in the Simmelian tie condition is an unlikely alternative explanation for our findings. Extraversion has been found to be associated with positive mood (Rusting & Larsen, 1997), which suggests that Simmelian friends will be *less* prone to retaliate following the receipt of an unfair outcome. This is contrary to our findings. Thus, even though we were unable to eliminate individual differences through randomization, this effect is likely to attenuate the predicted effect. We are therefore confident of our findings in spite of this limitation in our experimentation design. That being said, this issue could also be addressed in future research by measuring participants’ extraversion and other theoretically relevant individual differences.

Another limitation of this study is that we assumed OFFER_{1,3} to be retaliatory, but it is possible for participants to make OFFER_{1,3} for reasons that are different from this interpretation. An alternative interpretation is that instances where OFFER_{1,3} is made following DEAL_{3,1} represent attempts at reciprocity. We believe that although OFFER_{1,3} is an exact reversal of DEAL_{3,1}, there was a punitive intent on the part of the producer making OFFER_{1,3}, because there is an intentional withholding of resources from his or her partner. As Table 2 shows, the broker’s acceptance of OFFER_{1,3} by either party reduces his or her expected earnings to zero. Because acceptance of OFFER_{1,3} is punitive to the broker, we believe that it is more likely that these offers are acts of retaliation by producers, rather than acts of reciprocity.

The generalizability of our findings to larger groups may also be limited. Not only may the strength of the proposed mechanisms vary in larger groups but intergroup effects from the formation of coalitions and subgroups could also enhance or interfere with these mechanisms. In addition, power and status dynamics were controlled for in this study. But power and status are part and parcel of real-life groups, especially those in organizations. Research findings also indicate that power and status influence people’s perceptions of justice and revenge behaviors (Aquino & Thau, 2009; Aquino, Tripp, & Bies,

2006). While controlling for these effects allowed us to isolate the effect of social structure in this study, future work could explicitly examine how power and status relations interact with social structure to extend the generalizability of our findings to real world groups.

Conclusion

Even considering the above limitations, our findings suggest that the configuration of friendship ties in a group, above and beyond the effects of friendship at the dyadic level, can influence behavior. We found that the increased likelihood of retaliation following an unfair outcome against friends was stronger when third parties are mutual friends, rather than strangers. A broader implication of our findings is that future research on the relational antecedents of behaviors and attitudes, especially in the context of groups, should go beyond the dyad to also account for the configuration of ties that the dyad is embedded in.

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Notes

1. In this article, we refer to ego as the focal person and alter as the other members in the group.
2. The other possible configurations of friendship ties are where B and C are friends with A, but not with one another; where A and C are friends with B but not friends with one another; where A and B are friends with C but not friends with one another; and finally where A and C are friends but not friends with B.
3. In contrast, an asymmetric tie is one where the friendship tie is not reciprocated by the other party—that is, ego considers alter a friend but alter does not consider ego to be a friend.

- Note that participants who attended with a friend were not automatically assigned to the Sole-Symmetric condition, but could have also been assigned to the SILOS and Outcast conditions.

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Author Biographies

Kenneth T. Goh is an assistant professor of organizational behavior at the Richard Ivey School of Business, Canada. He is interested in dynamic group phenomena and conducts research on learning, innovation, and conflict in teams.

David Krackhardt is a professor of organizations at Carnegie Mellon University, United States. His primary research interest is in the development of methods and applications of social network analysis. He has published in the fields of psychology, sociology, anthropology, management, medicine, and statistics, as well as specialized network analysis outlets.

Laurie R. Weingart is the Carnegie Bosch professor of organizational behavior at the Tepper School of Business, Carnegie Mellon University, United States. Her research examines negotiation, conflict, and innovation in teams. She has served in leadership positions in several professional associations and is coeditor of the *Academy of Management Annals*.

Tat Koon Koh is an assistant professor of information systems at the Hong Kong University of Science and Technology, China. He holds a PhD in industrial administration from Carnegie Mellon University, and his current research focuses on social and market dynamics on online platforms.