Negotiation in Triads: Communication Constraints and Tradeoff Structure

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Researchers examined the impact of communication constraints and tradeoff structures on negotiations within 3-member groups in a simulated architectural firm. Groups were faced with the task of designing a house to meet a client's needs and budget constraints. Groups restricted to *dyadic-only* communication (between 2 members at any given time) perceived other group members and themselves to be more competitive than groups that engaged in full-group communication (3 members present). When groups were allowed to communicate in full, they were more likely to discover circular tradeoffs than reciprocal tradeoffs; however, when communication was restricted to dyadic interactions, reciprocal tradeoffs were more likely than circular tradeoffs. Joint profit was greater for tasks requiring reciprocal rather than circular tradeoffs. Furthermore, reciprocal tradeoff structures led to a more equal division of profits among group members than did circular tradeoffs.

Negotiation is a joint decision-making process in which individuals attempt to coordinate their interests to achieve mutual agreement while competing with each other to maximize individual gain (Neale & Bazerman, 1991; Pruitt & Carnevale, 1993; Raiffa, 1982). We use the term *group negotiation* to refer to groups composed of three or more individuals who perceive themselves to have opposing interests regarding scarce resources (Bazerman, Mannix, & Thompson, 1988). Our study was built on research in the area of triadic negotiation and acknowledged that complexities increase as group size increases (cf. Bazerman et al., 1988; Mannix, Thompson, & Bazerman, 1989); Thompson, Man-

nix, & Bazerman, 1988; Weingart, Bennett, & Brett, 1993).

Group negotiations are pervasive and important in both personal and professional life. For example, members of committees in organizations must reach consensus in the face of differing interests, and work groups and individuals involved in joint projects must negotiate responsibilities and rewards (Kramer, 1991; Neale & Bazerman, 1991; Northcraft & Neale, 1993). Negotiations among small task groups in organizations are complex because individual members possess different types of expertise and task specialization but must coordinate this body of knowledge and expertise to produce a viable outcome or product (Ancona, 1987; Galegher, 1990). In this regard, individuals within organizations are increasingly interdependent; they do not unilaterally control their own outcomes. Rather, their outcomes are jointly determined. Thus, the effectiveness of groups and organizations depends at least in part on the ability of members to coordinate their knowledge and behaviors (Ancona, 1987; Silver, Cohen, & Rainwater, 1988).

Consider an architectural firm that employs specialists in structure, finish work, and landscape. Because of the complex nature of building construction, each specialist has little knowledge and exper-

tise in other areas. For example, a landscape expert may not know about various structural options for a house. Furthermore, attention must be paid to the coherence and viability of the project plan as a whole and whether the plan meets the needs of the client. Members enhance both group and organization interests by developing successful building contracts with clients, and specialists within the group have an incentive to promote contracts that serve their own interests (Bazerman et al., 1988). Because there are budget constraints, this leads to competition among group members.

Certain organizational task constraints may seriously affect the ability of triads to devise effective solutions in negotiation. For example, to the extent that communication among group members is restricted, the ability of members to exchange information about interests and available alternatives may be hindered. In addition to communication constraints, the task itself may impose constraints on effective negotiation by requiring complex patterns of tradeoffs of resources among group members.

We examined how communication constraints and task demands influence the effectiveness of negotiated contracts developed by small groups within organizations. Specifically, we examined three-member groups composed of individuals with different areas of specialization who coordinated their knowledge and interests to develop a project plan that suited the needs of a client. Our thesis was that communication constraints and the underlying structure of members' preferences would be important determinants of the success of negotiated outcomes in such groups. We discuss these factors below.

Group Communication

Organizations may be conceptualized as social networks, a group of actors and the relational ties that exist among them (Burt, 1990). Networks affect the behaviors of individuals embedded in the social structure, as well as the outcomes of their behavior. In the present investigation, we examined one component of networks in organizations: communication constraints among members of a triad and the effect on perceptions and outcomes in negotiations.[1]

Increasingly, decentralized structures character-

ize decision making in organizations (Sundstrom, DeMeuse, & Futrell, 1990). We focused on two types of decentralized structures, full-group networks and dyadic-restricted networks. Full-group networks allow all group members to communicate with each other; they are the least restrictive type of communication network. In contrast, dyadic-restricted networks permit only two persons within the group to communicate at a given time; full group communication is not permitted. Organizations in which individuals occupy boundary or gate-keeping roles are examples of restricted communication. For example, in many academic departments, the chairperson receives and controls the dissemination of communications from the dean and other university officials. Similar processes may also occur in smaller groups and triads, such as when one member of a flight crew receives information from air traffic control (Foushee, 1984).

Both full-group and dyadic-restricted communication allow group members to communicate with other group members, but in the dyadic-restricted network, members never communicate with all present. That is, pairs of individuals communicate and the remaining member is a temporary isolate. Because any two members may communicate, all members of the group have an opportunity to occupy dyadic and isolate roles. Individuals' experiences in these roles are likely to affect their perceptions of the group. The experience of being an isolate may threaten an individual's sense of well-being within the group and lower group morale, leading to feelings of competition in the group (Kramer, 1991; Thibaut & Kelley, 1959). Even if the isolate role is temporary, individuals may nevertheless feel suspicious and concerned. In general, people who occupy centralized positions in small groups are more satisfied than those who occupy peripheral positions with limited communication (Cohen, 1961; Lawson, 1965; Leavitt, 1951). Furthermore, group morale is greater when communication is unrestricted (Greenwood, 1974; Rice, 1984). Although it is not always the case that

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[1] Several researchers have examined communication within triads in which one party is an agent or broker (cf. Gould & Fernandez, 1989; Marsden, 1982; Valley, White, & Iacobucci, 1992). In our analysis, parties had equal communication opportunity and did not assume fixed roles of communication as in agent–broker negotiations.

member communication declines in decentralized structures,[2] we expect when the isolate role is occupied at one time or another by all group members, perceptions of competition will increase. Thus, we predicted that dyadic-restricted networks would produce greater perceptions of group competition than when groups communicated in full (Hypothesis 1).

Task Structure

Most negotiations are not pure win-or-lose situations in which individuals' interests are completely opposed (Neale & Bazerman, 1991). Instead, negotiations contain potential for mutually beneficial, integrative agreement, which often results from problem solving and coordination among group members (Pruitt & Rubin, 1986). Integrative agreements are often reached by trading off issues, whereby individuals make concessions on relatively unimportant issues in exchange for large gains on more important issues (Froman & Cohen, 1970). Raiffa (1982) gave an example of a mutually beneficial tradeoff between a city government and its police officers' association: the city administration was more concerned about minimizing vacation time than with starting salaries, but the police officers were more concerned with higher salaries than vacation days. An integrative agreement was reached where the parties traded higher starting salaries for fewer vacation days.

Efficient tradeoffs are more complex in group negotiation than in dyadic negotiation (Kramer, 1991; Thompson et al., 1988; Weingart et al., 1993) because within groups, several types of tradeoffs are possible and involve a variety of configurations of issues and individuals (Morley, 1982; Winham, 1977). We investigated two key types of tradeoffs in our examination of triads: reciprocal tradeoffs and circular tradeoffs. In *reciprocal tradeoffs,* pairs of negotiators trade off issues within a dyad subset of the group. For example, consider a negotiation among a sales manager, a marketing manager, and a research manager. The marketing manager may offer the sales manager hardware in exchange for a database. This represents a profitable tradeoff for both parties because the marketing manager greatly values the database; the sales manager highly values the hardware. In this example, the research manager is not involved in the tradeoff between sales and marketing. Such reciprocal tradeoffs may

be possible among all dyadic combinations in the group (i.e., between marketing and research or between research and sales). In contrast, in *circular tradeoffs,* each group member makes a concession to another party on an issue of lesser importance in exchange for large gains on an issue of greater importance from a different group member. For example, the marketing manager provides the sales manager with staffing; the sales manager provides the research manager with hardware; and the research manager provides the marketing manager with a database.

There seem to be at least two reasons why full communication structures should enhance circular tradeoffs, whereas restricted communication should enhance reciprocal tradeoffs. The first is related to congruence between the communication structure and task structure. Because circular tradeoffs require coordination among all members of the group, full communication would seem to promote effective tradeoffs because all members may simultaneously consider the issues necessary to construct a tradeoff. In contrast, restricted communication seems to hinder the ability of the triad to arrange a complete sequence of tradeoffs. When groups are restricted to dyadic communication, pairs of negotiators may be able to focus more readily on reciprocal tradeoffs than on circular tradeoffs, which is advantageous if the most profitable tradeoffs involve dyads, and not the full group. In the earlier example, imagine that the marketing manager may communicate with the sales or research manager, but not both simultaneously. The ability of the managers to arrange a mutually profitable circular trade (i.e., marketing receives a database from research; sales receives staffing from marketing; and research receives hardware from sales) may be more difficult than when managers communicate with all present.

The second reason is related to the concept of reciprocity in social exchange (Gouldner, 1960). Reciprocity includes both material and nonmaterial aspects and has been formulated as a mechanism that affects group cohesion (Sahlins, 1974).

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[2] Consider a network in which an agent communicates with two principals who may never communicate. In the absence of communication restrictions, we might expect the agent's overall level of communication to decrease rather than increase. We are grateful to an anonymous reviewer for pointing out this example.

Sahlins's concept of generalized reciprocity is an altruistic form of giving whereby an individual makes a concession without expectation of direct, immediate return. Sahlins posited, however, that the unbalanced nature of the transaction fosters group cohesion in that members become bound by unresolved obligations. In contrast, *balanced* reciprocity, whereby a concession is reciprocated immediately in kind, permits individuals to exit the relationship with the feeling that transactions are balanced. The concepts of *direct* and *indirect* reciprocity (Alexander, 1992) are similar to the distinction between balanced and generalized reciprocity. When an individual receives a resource or favor from another individual and then offers something to that individual, reciprocation is *direct;* when an individual receives a resource or favor from another and offers something to yet a different individual, reciprocation is *indirect.*

Circular trades in the dyadic-restricted condition may be difficult to enact because effective tradeoffs require a violation of the norm of direct reciprocity. Instead, effective circular tradeoffs require indirect reciprocity, wherein an individual offers something to one party without receiving anything in kind but expects to receive something else from another person. Effective circular tradeoffs may be hampered if the triad is not cohesive. Effective circular tradeoffs require generalized reciprocity if members cannot complete a transaction during a meeting, such as when communication is restricted to dyadic meetings. In this sense, circular tradeoffs require greater trust than do reciprocal tradeoffs, and the issue of trust is more salient in the dyad-restricted case when one member of the group is not present. Thus, when one member of the triad promises to give something to another member of the group, the third group member is not present to assert that he or she will be forthcoming in offering something. We predicted that groups restricted to dyadic-only communication should be better able to capitalize on reciprocal tradeoffs than circular tradeoffs; in contrast, groups permitted to communicate in full should perform better on tasks that require circular tradeoffs than reciprocal tradeoffs (Hypothesis 2).

Distribution of Resources

As we have noted, concessions and demands made by negotiators evoke norms of reciprocity (Putnam & Jones, 1982), such that when a negotia-

tor offers a concession, the other party is obligated to return the favor by making a concession (cf. Lindskold, 1978). Because circular tradeoffs require indirect or generalized reciprocation wherein group members offer resources to individuals who are not present to reciprocate in kind, unequal outcomes may be more likely for two reasons. First, if individuals in a circular tradeoff structure attempt to reciprocate directly to the person who offered the concession, this may lead to greater inequity among negotiators because the concessions offered in kind by negotiators are not of the same magnitude of those received. For example, consider the circular tradeoff discussed earlier among sales, marketing, and research managers. If the research manager offers the marketing manager an extremely valuable database, the marketing manager may feel obligated to reciprocate by offering something to the research manager who has lower utility for the staff support than the sales manager who greatly values and needs staffing. Marketing makes a valuable gain, research makes a less valuable gain, but sales receives nothing. In this situation, joint profit is diminished and resource allocation is unequal. Second, unequal outcomes may result in tasks with circular tradeoff structures if one member of the group does not offer a concession. The same situation can occur for tasks with reciprocal structures, but individuals in circular tradeoff structures may not feel as obligated to offer concessions because they are not directly reciprocated. This suggests that norms of direct reciprocity are more strongly felt and acted on than are norms of indirect reciprocity. Thus, we predicted that circular tradeoffs would result in a less equal division of profits among group members than would reciprocal tradeoff structures (Hypothesis 3).

Method

Participants

A total of 114 students enrolled in undergraduate courses in psychology at a large university participated for extra credit in a course. Participants did not have any formal training in negotiation nor were they enrolled in negotiation courses.

Procedure

Six participants took part in each experimental session. On arrival, each participant was randomly

assigned to a three-member group. The experimenter gave each participant an information packet that randomly assigned a role to the participant (structure, finish, or land expert in an architectural firm). Participants were told that they would negotiate with 2 other participants concerning the design for a house in which a client would specify required features and a budget. Participants were given confidential information about pricing information for various options they could include in the design plan, a confidential profit schedule indicating how much profit they would make if their option was included in the design, and special bonus information. Participants were not told anything about the options and profits available to the other experts. The instructions indicated that the list of options from the price sheet could be shared among groups members, but not personal profits. The experimenter then distributed a questionnaire to each individual to assess their understanding of task, roles, and instructions. Participants were asked what role they were going to play and were presented with practice scenarios for which they calculated price and profit for various design specifications. The questionnaire also asked how much profit they would receive if the group could not reach an agreement. (The correct response was zero profit.) The experimenter checked individual answers to each question, and if they were incorrect, individuals were instructed to refer to the materials and answer the question again. Most were correct on the first attempt; all answered correctly the second time.

Next, participants engaged in two negotiation tasks. They remained in the same role and group for both tasks. Participants were not given a time limit for each group task, nor were they told how many tasks they would perform. They continued until they completed the tasks (i.e., settled on a client contract) or until 2 hr had passed. In all conditions, the consent of all group members was necessary for a contract to be binding. For each negotiation, the experimenter gave each group a final contract (placed in the middle of the table in the full-group communication condition and in the hallway between negotiators in the dyadic-restricted communication condition). The experimenter instructed individuals to indicate their agreement on the design list and to sign it when they had finished. The experimenter then left the area. Following the first task, the experimenter

distributed new profit sheets and final contracts. Negotiators then began the second task.

Tasks

Each task was an integrative negotiation task similar in form to design negotiation that takes place within corporations. Each group was provided with a written description of the buyer's requirements such as the following:

> The buyer, Pat Smith, is interested in a house with at least three bedrooms and at least a basic set of finish options, near a playground and shopping. The lot should be at least a quarter-acre in size. The buyer would like a laundry room and custom closets. The buyer would like to spend at least $195,000 and cannot spend more than $200,000.

The group members were required to reach agreement on a set of options that satisfied the budget and option requirements.

The competitive aspect of the task derived from the client's limited budget; if there were no budget, every option could be included in the design plan—which would have an astronomical price tag for the client. The fixed budget produced conflict because the three experts had to agree on a subset of all possible options to include in the house plan.

Each group member had 17 unique options that could be included in the design of the house and were unknown to the other members. Each option included a price to be charged to the buyer and a profit for the specialist who included the option (see Table 1). Therefore, negotiators each had an incentive to include as many of the options from their areas of specialization as possible in the design for the house. The client's limited budget meant that only a subset of all possible options could be included. Hence, the competitive aspect of the task required negotiation among the group members.

The integrative tradeoffs were built into the *bonuses* experts could receive. *Bonuses* were additional profits paid to individuals, contingent on a set of particular features included in the final contract. The tradeoffs were structured so that each expert needed an option from one of the other group members to gain the bonus. In the reciprocal tradeoff condition, each pair of negotiators could trade off options for mutual gain. For example, one bonus for the structural expert was that building a master suite with a jacuzzi tub would result in an additional $1,500 over the usual

Table 1

Negotiation Options According to 3-Member Group Setup

Feature	Cost	Profit	Feature	Cost	Profit	Feature	Cost	Profit
Structural			Finish			Land		
Basic package (3 bedroom, 2 bath)	$30,000	$10,000	Basic package (appliances, fixtures, trim)	$30,000	$10,000	Basic package (¼ acre lot with utilities)	$30,000	$10,000
Soffits	$1,660	$660	Etched glass entry	$1,660	$660	Near playground	$1,660	$660
Curbs	$5,000	$1,000	Tinted windows	$5,000	$1,000	Sunny lot	$5,000	$1,000
Family room	$5,000	$1,000	Circular stair	$5,000	$1,000	Sloping lot	$5,000	$1,000
Formal dining	$5,000	$1,000	Hardwood dining	$5,000	$1,000	Quiet street	$5,000	$1,000
Master suite	$5,000	$1,000	Jacuzzi tub	$5,000	$1,000	View	$5,000	$1,000
Sport court	$5,000	$1,000	Energy efficient	$5,000	$1,000	South exposure	$5,000	$1,000
Pool	$5,000	$1,000	European cabinets	$5,000	$1,000	½ acre	$5,000	$1,000
Brick sidewalk	$5,000	$1,500	Italian tile entry	$5,000	$1,500	Extra wide lot	$5,000	$1,500
Fence	$5,000	$1,500	20-year paint	$5,000	$1,500	Near bus	$5,000	$1,500
3-car garage	$5,000	$2,000	Stone fireplace	$5,000	$2,000	Near shopping	$5,000	$2,000
Arch in entry	$5,000	$3,000	Oak trim	$5,000	$3,000	Near park	$5,000	$3,000
Cathedral ceilings	$10,000	$2,000	Oak closet doors	$10,000	$2,000	Near downtown	$10,000	$2,000
Double insulation	$10,000	$3,000	Deluxe carpet	$10,000	$3,000	Established shrubs	$10,000	$3,000
Fourth bedroom	$10,000	$3,000	Hardwood in halls	$10,000	$3,000	Good schools	$10,000	$3,000
Fifth bedroom	$10,000	$3,000	Industrial appliances	$10,000	$3,000	Established lawn	$10,000	$3,000
Laundry room	$10,000	$3,000	Custom closets	$10,000	$3,000	Large trees	$10,000	$3,000
Reciprocal Sloping lot (Land expert)		$1,500 (bonus)	Reciprocal Formal dining (Structural expert)		$1,500 (bonus)	Reciprocal Energy efficient (Finish expert)		$1,500 (bonus)
Jacuzzi tub (Finish expert)		$1,500 (bonus)	Sunny lot (Land expert)		$1,500 (bonus)	Family room (Structural expert)		$1,500 (bonus)
Circular Sloping lot (Land expert)		$1,500 (bonus)	Circular Formal dining (Structural expert)		$1,500 (bonus)	Circular Energy efficient (Finish expert)		$1,500 (bonus)

profit. The master suite was a structural option; the jacuzzi tub had to be provided by the finish expert. Similarly, the finish expert could gain a bonus by including hardwood floors (a finish option) and a formal dining room (a structural option). In the circular tradeoff condition, we restricted negotiators' bonus options to create a circular tradeoff situation. Specifically, the bonuses were constructed such that the structural expert could gain a bonus by inducing the land expert to include a particular option. The land expert had to induce the finish expert to make a tradeoff to gain a bonus. Correspondingly, the finish expert had to convince the structural expert

to include an option so that the finish expert would get a bonus, thus giving each negotiator a bonus in a circular manner.

The main task of the group, then, was to determine the set of options, beyond those required by the client, to be included in the design contract for the house. The task imposed two constraints on final contracts: (a) a maximum budget for the house and (b) a minimum set of requirements specified by the buyer. Once the group met the minimum requirements, they could add additional options with the constraint being that the total price had to be within the client's budget. If the group were unable to reach a mutual

agreement, the contract would be terminated; no one would receive any profit. Individual profit could range from nothing (no agreement) to $38,000; joint profit could range from nothing (no agreement) to $73,480, including options required by the client.

Experimental Design

The experimental design was a 2 × 2 factorial, with communication structure (full group or dyadic-restricted) as a between-subjects variable and task structure (reciprocal or circular tradeoff) as a within-subjects variable. Order was counterbalanced. Specifically, all participants engaged in both a reciprocal and circular tradeoff condition; half had the reciprocal condition followed by the circular condition, randomly determined. The order was reversed for the other half of the participants. A total of 38 triads were created; 26 triads were included in the final data set, 14 assigned to the full-group communication condition; 12 assigned to the dyadic-restricted communication condition.[3]

In the full-group communication condition, participants sat at one large table and remained in the same room throughout the negotiation. In the dyadic-restricted condition, participants were assigned to small tables in separate rooms. Their rooms were within 3 ft. (2.7 m) of each other. The doors remained open until two of the three group members privately met, at which time the experimenter closed the door of the room so that the 3rd participant could not hear the interaction. In both the full-group and the dyadic-restricted communication conditions, the consent of all group members was necessary for a contract to be binding.

Dependent Measures

There were three key dependent measures: perceptions of group members' competitiveness, joint profit (and integrative tradeoffs), and equality of resource distribution.

Perceived competitiveness of the group. Before the task, each group member rated how competitive they thought the task would be on an 11-point Likert scale with endpoints labeled 0, *not at all,* and 10, *very competitive.* Following the task, members were asked about their perceptions of their own and other members' competitiveness. For both measures, members' ratings were summed to form an overall measure of perceived competitiveness, with higher scores indicating more competitiveness.

Joint profit. Joint profit was the sum of all negotiators' profits (as dictated by the client contract, signed by all parties), ranging from $16,500 to $25,900 ($M = 20,880$, $SD = 2,683$) out of a possible range of $0 to $27,160. To calculate joint profit for each triad, we removed profit accrued for required options (non-negotiable features). Then, because there were more possible bonus agreements in the reciprocal tradeoff condition, we multiplied the dyadic joint profit by a factor of .78 for equivalence with the circular condition.

Integrative tradeoffs. In addition to measuring joint profit, we measured the actual number of tradeoffs made among group members as the sum of complete circular or reciprocal tradeoffs, depending on the task structure condition. The total number of possible circular tradeoffs was 3; the total number of possible reciprocal tradeoffs was 6. For the standardization procedure, the circular tradeoffs were multiplied by a factor of 2 to create

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[3] A total of 12 groups were excluded from the final analysis for one of two reasons: (a) Eight groups (four restricted communication; four full communication) either failed to include one or more of the basic options required by the client in their solution or exceeded their allowed budget. These groups were excluded because their profits were incomparable to those groups within budget requirements. (As an illustration, each of the client's requirements cost $30,000. The omission of each requirement released $30,000 for additional negotiation toward the bid. Groups that made this error worked with a much larger budget than did groups that included all of the basic requirements. For example, this type of error in the reciprocal tradeoff condition gave groups a budget of $135,000 or $165,000, depending on whether they omitted one or two basic requirements, respectively, when they should have been negotiating with a budget of $105,000. For groups that exceeded the allowable budget, excess amounts ranged from $4,000 to $10,000.) We did not include these groups because their overall joint profits were artificially inflated. (b) Four groups (three restricted/one full-group communication) did not reach an agreement within 2 hr. Thus, their profit was zero. To conclude that such groups were at an impasse is not warranted because groups were not given a time constraint at the outset of their negotiations. In summary, there appears to be no systematic attrition of groups across our experimental conditions.

a standardized measure comparable to the reciprocal measure.

As expected, joint profit was highly correlated with circular tradeoffs, $r(26) = .4, p < .05$; and reciprocal tradeoffs, $r(26) = .7, p < .001$. The correlation between joint profit and tradeoffs was not perfect because there was a budget range unrelated to tradeoffs; to the extent the agreement reached by the group used lower profit options, group members' profits were not as high as they would be if the design included options that had higher profits but identical costs to the client. Group members' profits for the options were not directly proportional to the price, making some options more attractive than others for each expert. For example, the structural expert could propose a pool. If the final contract included a swimming pool, the pool would cost the buyer $5,000 and the structural expert would gain $1,000 in profit. In contrast, an arch in the entry would cost the buyer $5,000, but the structural expert would gain $3,000 in profit.

Equality of resource distribution. Equality of resource distribution was measured by examining the absolute deviation among group members' profits. Specifically, we took the absolute value of differences among the payoffs received among each of the three pairs of negotiators in the group and summed these to create a group-level score of equality (cf. Thompson et al., 1988). A low score on this measure indicates that all three negotiators' payoffs were roughly equal; higher scores indicate that some individuals earned substantially higher or lower profits than others.

Results

Analyses of variance indicated no differences in profits among the three roles ($F = 1.2$, *ns*). We also examined whether the order in which groups engaged in the tasks (circular followed by reciprocal or reciprocal followed by circular) affected task performance and found no significant effects ($Fs < 1, ns$). We also examined whether task order affected perceived competition and also found no significant effects ($Fs < 1, ns$).

Perceived Competitiveness

Hypothesis 1 predicted that negotiators restricted to dyadic communication would perceive the other group members to be more competitive compared with negotiators who communicated with all members present. Before the task, there were no significant differences in perceptions of competitiveness ($Fs < 1.3$). After the task, however, participants restricted to dyadic communication judged the other group members to be significantly more competitive ($M = 22.42, SD = 2.26$) than did individuals who communicated with all members present ($M = 17.65, SD = 5.45$), $F(1, 22) = 7.21, p < .02$. This finding supports Hypothesis 1. In addition, there was a significant effect for self-ratings, such that individuals in groups restricted to dyadic communication judged themselves to be significantly more competitive ($M = 21.5, SD = 2.20$) than did individuals who communicated with all members present ($M = 18.75, SD = 5.05$), $F(1, 24) = 5.84, p < .03$.

Integrative Tradeoffs

Hypothesis 2 predicted that groups restricted to dyadic communication would achieve a greater number of reciprocal tradeoffs than circular tradeoffs; in contrast, groups who met with all members present were expected to achieve a greater number of circular tradeoffs than reciprocal tradeoffs. This hypothesis was supported by a significant interaction: Negotiators in the full-group condition achieved more circular tradeoffs ($M = 2.57, SD = 3.08$) than reciprocal tradeoffs ($M = 1.86, SD = 2.14$). In contrast, negotiators in the dyadic-restricted condition achieved more reciprocal tradeoffs ($M = 2.17, SD = 1.59$) than circular tradeoffs ($M = 1, SD = 2.34$), $F(1, 24) = 4.55, p < .05$. (see Table 2). Simple effect tests indicated that reciprocal tradeoffs were more likely than circular tradeoffs in groups restricted to dyadic communication, $F(1, 11) = 9.14, p < .02$. There were no significant differences among tradeoffs within the full-group communication con-

Table 2

Number of Integrative Tradeoffs as Determined by Communication Network and Tradeoff Structure

Communication	Tradeoffs	
	Circular	Reciprocal
Full-group ($n = 14$)	2.57 ± 3.08	1.86 ± 2.14
Dyadic-restricted ($n = 12$)	1.00 ± 2.34	2.17 ± 1.59

Note. Higher scores indicated more integrative tradeoffs.

dition. There were no significant main effects on the number of integrative tradeoffs achieved ($Fs < 1, ns$).

Joint Profit

Joint profit was greater in the reciprocal tradeoff task ($M = \$21,335, SD = \$2,922$) than in the circular tradeoff task ($M = \$20,414, SD = \$2,389$), $F(1, 24) = 6.51, p < .02$. No other main effects or interactions were significant for this measure.

Equality of Profits

Hypothesis 3 predicted groups would distribute resources more equally among members when the task involved reciprocal tradeoffs, but not circular tradeoffs. In support of the prediction, negotiators in the reciprocal task structure divided resources more equally amongst themselves ($M = \$5,621$ difference in payoffs, $SD = \$5,310$) compared with negotiators in the circular task structure condition ($M = \$7,943$ difference, $SD = \$5,047$), $F(1, 22) = 4.92, p < .04$. No other main effects nor interactions were significant for this measure.

Discussion

The central question in our investigation concerned how communication constraints and tradeoff structures affect negotiation in triads when members possess specialized knowledge. The groups of negotiators we studied faced two challenges: meeting the client's requirements and budget constraints and determining which of several possible solutions best served their own interests. A key finding was that individuals in three-member groups restricted to dyadic-only communication perceived the other group members to be more competitive than individuals who engaged in full-group discussion. Moreover, individuals restricted to dyadic communication judged themselves to be more competitive than individuals who engaged in full-group communication. We believe dyadic-restricted communication heightens perceptions of competitiveness because of the isolate role produced when two people meet privately within three-member groups. Although the isolate role is not permanent—because pairwise communication rotates among three possible sets of pairs within a

group—the time spent in isolation, in which the individual is not privy to the interactions among other members, may undermine group morale and trust, producing greater concerns about exploitation than full-group communication.

Joint profit was greater when tasks were reciprocal rather than circular, which supports the view that reciprocal tradeoffs are simpler to recognize and carry out than are circular tradeoffs. The predicted interaction between communication and task tradeoff emerged in the number of integrative tradeoffs made within groups. When group members were restricted to dyadic communication, they were more likely to identify reciprocal tradeoffs than circular tradeoffs; in contrast, when groups were allowed to communicate with all members present, they were more likely to identify circular tradeoffs than reciprocal tradeoffs. The former was the more notable difference, however. Groups limited to dyadic-only communication only identified one sixth of the possible circular trades; they were much better able to achieve reciprocal trades. This suggests that restricting communication may be especially detrimental to group performance when the task structure requires complex, circular tradeoffs. We cite two reasons for this difficulty. One is related to task-communication congruence; the other is related to norms of reciprocity. Our study does not distinguish between these two explanations.

Because equality of outcomes is a key measure of the fairness of group decisions (Bazerman, 1993; Messick, 1992), it is important to understand the factors that lead to unequal resource distribution. Fairness considerations are especially important within organizational contexts because perceived injustice may reduce group morale and organizational effectiveness (Bies & Moag, 1986). Reciprocal tradeoff structures led to more equal division of resources among group members than did circular structures. As we noted, reciprocation of concessions among negotiators is conducive to a more equal division of resources in reciprocal tradeoff structures, but does not promote equal division of resources within circular tradeoff structures. In a sense, the norm of reciprocity backfires on individuals in circular tradeoff structures.

The conclusions that may be drawn from our results have limited generalizability in terms of the participant population, task, and context. The participants in our study were undergraduate stu-

dents, a group with less experience in negotiation and organizations than managers. Although we believe that managers' greater experience may exert a main effect on performance, with managers better able to discover integrative potential in negotiation tasks than naive students, we have no reason to believe the interaction observed between communication and task structure on tradeoffs does not characterize more experienced groups.

Another consideration is that the incentive structure for participants in our experiment is different in actual negotiation situations. However, our observation of students in these negotiations suggests that the task was highly involving. We examined negotiations among groups of three individuals who were virtual strangers to one another before the beginning of the task. In real-world contexts, individuals in organizations have a history of experience with one another and a future with one another. None of these important organizational elements was present in our simulated organization. Further, our results are limited to interactions among groups of three individuals. Undoubtedly, negotiations become more complex as the size of the group increases. Finally, we only examined only two types of communication structures within organizations; other important structures, such as centralized communication, should be examined in future research.

In light of the limitations of the present research, we may identify some practical applications for negotiation in groups of three. First it is important to note that much of the work of organizations is done in small groups or teams (French, Bell, & Zawacki, 1989), and many important group decisions are made in groups of three. For example, the U.S. Apollo space program missions involved groups of three astronauts, and airline pilot crews in 747s have three people in the cockpit. Such task groups are complex because of the increased amount of information necessary for individuals to consider when making decisions or developing a viable joint product (Burgelman, 1983).

Second, the results of the investigation suggest the effectiveness of negotiation depends on, at the very least, a consideration of the task structure and communication structure in triads. As we have seen, the communication and tradeoff patterns dramatically affect the quality of joint products, as well as the interpersonal functioning of triads.

Restricting communication within triads to groups of only two heightens perceptions of competition within the group. Kramer (1991) suggests that when negotiators fear exploitation by others, they may actually engage in competitive behaviors to demonstrate firmness and resolve. Our investigation did not explore the relationship between feelings of competition, group behavior, and performance. Our speculation is that feelings of competition may manifest themselves in terms of actual behavior, but this remains to be examined.

Third, we found that reciprocal tradeoff structures generally led to greater joint profit and a more equal distribution of resources. We argued that norms of direct reciprocity are more strongly felt and acted on than are norms of indirect reciprocity, especially when group members are not motivated to increase cohesion (Sahlins, 1974). Our findings suggest some prescriptive implications in this regard. First, organizations who care about joint profitability could benefit from a careful examination of the incentive structures built into small group decision-making tasks. Second, to the extent that it is reasonable to modify such incentive structures, those that encourage reciprocal tradeoffs ultimately will be more profitable and result in greater equality under some circumstances. Finally, it may be possible to make circular tradeoffs more viable if organizational norms are introduced that minimize the trust issue involved in indirect reciprocation. Probably the best known example is the Christmas-present giving solution, wherein a group of individuals mutually agrees to exchange gifts in a circular fashion: Each person gives a gift to another person who does not directly reciprocate, but receives instead a gift from yet another person. Presumably, such circular tradeoffs are effective and satisfying because the expectations for reciprocation are made very salient to group members.

Finally, we found that for groups who communicated with all members present, ability to make integrative tradeoffs did not differ for reciprocal and circular tradeoff structures. However, for groups with restricted communications, the ability to successfully construct and implement circular tradeoffs was greatly inhibited. We restricted the communication in our experimental triads to two members at any one time. On a more realistic level, consider the effects that placing three members of a project team in different office locations

or on different schedules may have on their ability to work together as a group. To the extent that these constraints inhibit or prohibit full communication, their ability to construct circular tradeoffs may be greatly curtailed. Managers often face choices and make decisions about the practice and regulation of group communication and task incentive structures. The results of the present investigation suggest that managers should provide for unrestricted communication when intergroup harmony is important (such as when perceived competition would threaten group welfare) and when the task structure is known to be circular. We suspect such changes may be difficult to implement in some groups because, once established, communication patterns are quite resistant to change (Cohen & Bennis, 1962; Mills, 1967).

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