Knowledge Matters: The Effect of Tactical Descriptions on Negotiation Behavior and Outcome

Laurie R. Weingart  
Carnegie Mellon University

Elaine B. Hyder  
University of British Columbia

Michael J. Prietula  
University of Florida

The impact of tactical knowledge on negotiator behaviors and joint outcomes was examined. It was hypothesized that the availability of written descriptions of negotiation tactics would provide negotiators with the knowledge necessary to apply in a mixed-motive negotiation and that, as a result, these negotiators would engage in different behaviors leading to higher joint outcomes than would negotiators without this knowledge. Ninety dyads engaged in a multi-issue joint venture negotiation: 45 dyads were provided tactical descriptions, and the other 45 were not. Dyads with tactical knowledge engaged in more integrative behaviors and achieved higher joint outcomes, with integrative behaviors serving as mediators of the knowledge-outcome effect. Distributive behaviors were found to be negatively related to joint outcome but were not influenced by tactical knowledge.

Although negotiations occur every day, people often fail to reach agreements that maximize joint gain, even when negotiating simple conflicts (Neale & Northcraft, 1986; Pruitt, 1981; Raiffa, 1982). When agreements are reached, there are frequently other solutions that exist which could further benefit either or both parties. In more formal terms, negotiators often do not achieve Pareto optimal solutions on tasks with integrative potential. Although people often think they have done the best they could in a negotiation, they are frequently mistaken.

The problem of suboptimal negotiated solutions has been examined from both cognitive (e.g., Carroll, Bazerman, & Maury, 1988; Neale & Bazerman, 1991) and social interaction perspectives (Lewis & Fry, 1977; Putnam & Jones, 1982; Putnam & Wilson, 1989; Schultz & Pruitt, 1978). Although separate examination of social and cognitive processes has provided insight into specific aspects of the negotiation process, the present research is unique in that it considers these processes concurrently and in the context of a general problem-solving framework. Viewing these processes as problem solving provides a unifying framework that explains negotiation processes principally in terms of knowledge being applied to tasks. In the current study, negotiator knowledge was influenced through the use of a simple intervention: We provided negotiators with written descriptions of negotiation tactics in an attempt to influence tactical behavior and quality of the agreement.

Concurrent consideration of cognitive and social processes is important because these processes are interdependent. A negotiator’s knowledge of negotiation tactics affects the strategies chosen (or available), which in turn influence the social interaction between the two parties (Carroll & Payne, 1991). This social interaction yields new knowledge for the negotiators, who then revise their perspective of the negotiation and strategies as appropriate. This cycle continues until either a settlement or an impasse is reached.

Negotiation Within a Problem-Solving Framework

There is a substantial literature on negotiator cognition that examines the reasons people fail to achieve Pareto optimality. In a recent book summarizing much of the research, Neale and Bazerman (1991) argued that deviations from optimality arise from systematic biases in the negotiators’ reasoning. Biases result from the inappropriate application of simplifying heuristics. Research on negotiation biases has provided interesting and important descriptive insight into the problem of suboptimal agreements as well as occasional prescriptive recommendations on how to improve outcomes. However, one limitation of this research is an apparent lack of a dominant, overarching theoretical perspective that would provide a unifying framework for the range of observed phenomena (Carroll & Payne, 1991). Our purpose in this study was to extend the previous research on negotiation failure by examining negotiation processes within the broader context of a general theory of intelligent deliberation, one that interprets tasks such as negotiation as instances of general problem solving (Newell & Simon, 1972).

Neale and Bazerman (1991) began to address individual cognitive processes in negotiation by viewing behavioral decision theoretic interpretations as extensions of earlier work on bounded rationality. Bounded rationality posits that individuals in an organization may intend to be rational but are actually less...
than rational in execution because limits on cognitive capacity restrict their ability to achieve optimality in the pursuit of their goals (Simon, 1976). Although we take a somewhat different perspective, our arguments share an important common ancestry—the principle of "bounded rationality."

Simon (1955) articulated two assertions underlying the concept of bounded rationality: (a) Human beings are able to achieve only a very bounded rationality because of limited cognitive capacity and limited information, and consequently, (b) they are prone to (necessarily) simplify the decision situation. However, successful problem solving does occur, and experts in complex domains consistently emerge. The reason for this is that although humans are quite limited in their cognitive capacity to process information, they are quite robust in their ability to develop new knowledge and knowledge structures that functionally expand these limits. Successful problem solving, then, is due not to fundamental differences in the "hardware" of problem solving, but rather to the particular adaptations of the "software" of problem solving (i.e., the knowledge) to the task environment at hand (e.g., Anderson, 1990, 1993; Newell, 1990; Simon, 1969; VanLehn, 1991).

Studies of individual problem solving have concluded that the primary source of variance in behavior on problem-solving/decision-making tasks is due to differences in task-specific knowledge, including its organization and availability (Baralou, 1992; Ericsson & Smith, 1991; Sternberg & Frensch, 1991). Thus, the search for an explanation of performance success (or failure) on a particular task begins with an examination of the task and the critical knowledge required to be brought to bear on the task, whether the task domain is physics, engineering, mathematics, economics, or negotiation.

Knowledge about negotiation can include strategic and tactical information, impressions about the other party's reputation or skills, and information about the negotiation situation (number and scope of issues, integrative potential, constituencies, deadlines). Furthermore, knowledge (and its availability) changes as the negotiation task unfolds within the task environment. The task environment includes the behavior of the other party, the success of attempted strategies, as well as the content of the task itself (Newell & Simon, 1972). We propose that a critical reason negotiators reach suboptimal agreements is that they fail to bring to bear the appropriate knowledge required for solving the negotiation problem at hand.

**Acquiring Knowledge of Negotiation Tactics**

The majority of negotiation research has examined the role of task experience (as a source of knowledge) on negotiation performance. In these studies, research participants either entered the negotiation with a history of professional negotiation experience (Neale & Northcraft, 1986; Scholz, Flescher, & Bentrup, 1983) or entered the negotiation naively and accumulated experience through controlled, multiple trials (Bazerman, MaglioZZi, & Neale, 1985; Neale & Northcraft, 1985; Thompson & DeHarpport, 1994). The results of these studies demonstrated that experienced negotiators outperformed naive negotiators but that the performance advantage diminished as naive negotiators learned from repeated experience with similar (but not necessarily identical) tasks (Bazerman et al., 1985; Neale & Northcraft, 1986). Furthermore, even a single negotiation experience has been shown to significantly improve joint performance on similar subsequent negotiation tasks (Thompson, 1990a, 1990b).

However, in the actual development of skill, both experience and instruction can play important roles (Hayes-Roth, Klahr, & Mostow, 1981). Before a skill or strategy can be applied, it must be present, in some form, as knowledge held by the problem solver. Knowledge about what is to be done, but not necessarily knowledge of how to do it (i.e., declarative knowledge of negotiation strategies), is a necessary first step for the actual application of those strategies, as in the application of any cognitive skill (Anderson, 1985). Although experiential exercises can be used to prompt the discovery or recall of strategies, they can often be quite inefficient (Gagne & Briggs, 1988) because there is little control over the knowledge actually acquired. Whereas previous negotiation researchers primarily focused on experiential learning by providing a series of negotiation tasks, we concentrated on effectively controlling the knowledge gained by providing explicit instruction through written descriptions of negotiation tactics.

One study examined the effect of explicit instruction on negotiator behavior and outcomes (Thompson, 1991, Experiment 2). The results showed that negotiators who were instructed to engage in a single type of tactical behavior(either seeking or providing information about issue importance—used more of these behaviors than negotiators in a control condition or in a condition in which the negotiator was only alerted to the possibility that the task was non-zero-sum) (Thompson, 1991). However, opponents of the instructed negotiators did not alter their behavior, with the exception of providing information in response to information requests. Finally, instructed negotiators achieved higher joint outcome than did negotiators in the control condition. These results suggest that providing knowledge through instruction to negotiators can alter behavior and improve outcomes. However, it appears that instruction must be provided to both parties in order to ensure significant changes in both parties' behavior. Whereas Thompson (1991) instructed one party on a single tactical behavior, in the current study we examined knowledge about a broader range of tactical behaviors provided to both parties.

Building on Thompson's (1991) approach, we focused on knowledge gained from written presentation and provided naive negotiators with descriptions of a set of negotiation tactics that could be used. Negotiators did not have to extend cognitive effort to determine which tactics to apply to the task; rather, they were provided the necessary, and we believe sufficient, components of knowledge required for successful performance of the task. However, we did not permit them the opportunity to apply (i.e., practice) those tactics prior to the study. Thus, our purpose in this study was to explore how negotiation processes and outcomes would be influenced by participants' efforts to apply, rather than induce, simple negotiation tactics.

**Integrative and Distributive Negotiation Tactics**

The negotiation literature suggests several task-specific tactics that can potentially influence negotiation outcomes.
Integrative tactics typically address (and attempt to accommodate) the underlying interests of one or both parties and contribute to the development of integrative (i.e., high joint benefit) agreements (Pruitt, 1981). These tactics, commonly effective when negotiators value issues differently, provide negotiators the opportunity to trade concessions on less important issues in order to achieve gains on more important issues. Thus, integrative tactics can be used to achieve integrative solutions on issues that provide such opportunity (i.e., integrative issues). Distributive tactics, on the other hand, are those that are used to achieve unilateral concessions from the other party (Pruitt, 1981) and to maximally distribute the resources generated in one's favor (Lax & Sebenius, 1986). Distributive tactics can be appropriate for issues that are equally valued by both parties (i.e., distributive issues). However, it has been suggested that distributive tactics (a) impede the integrativeness of agreements (Pruitt, 1981) when they are inappropriately applied to integrative issues and (b) set a confrontational tone to the negotiation (Lax & Sebenius, 1986).

Both integrative and distributive tactics are focused on in this study because both are considered necessary for the individual negotiator to reach a satisfactory agreement on a task with integrative potential (Pruitt, 1981). For instance, persuasive arguments (a distributive tactic) can be used to convince the other party that the negotiator is standing firm on his or her goals, whereas exchanging information on priorities (an integrative tactic) facilitates the search for possible trade-offs.

We believe that if naive negotiators are provided with written descriptions of a set of negotiation tactics, those descriptions will either cue existing knowledge or provide new knowledge and thus result in predictable behavior and more optimal outcomes. Whether existing knowledge is cued or new knowledge is generated depends on the existing knowledge state of the individual negotiator. Previous research tells us that naive negotiators typically engage in distributive behaviors designed to divide resources (Weingart, Thompson, Bazerman, & Carroll, 1990) and are motivated by the assumption that conflict situations are zero-sum (i.e., win–lose) in nature (Thompson & Hastie, 1990). This suggests that naive negotiators have relevant knowledge about distributive tactics and perhaps less knowledge of integrative tactics. Therefore, providing negotiators with descriptions of integrative tactics should be more likely to provide new knowledge, whereas providing negotiators with descriptions of distributive tactics should be more likely to cue existing knowledge.

Descriptions of integrative tactics are expected to contribute to the negotiator’s knowledge of negotiation, to increase the use of integrative behavior, and ultimately to improve joint outcome. When new tactical knowledge is acquired by negotiators (through the presentation of tactical descriptions), they will have a wider repertoire of behavior to apply to the negotiation and will probably engage these behaviors. Because distributive tactics are not expected to be novel to naive negotiators (Thompson & Hastie, 1990; Weingart et al., 1990), distributive tactics should not contribute to the negotiator’s knowledge of negotiation and therefore should not have an impact on behavior and outcomes.

Thus far we have differentiated between distributive and integrative tactics as two general sets of behaviors. In the following sections we further delineate these sets of tactics by focusing on the specific integrative and distributive tactics that were provided to the negotiators in this study. We use the term tactic broadly and include suggestions for both behaviors and cognitions.

### Integrative Tactics

Descriptions of two integrative tactics, not assuming a zero-sum game and trading off across issues, were included because they are closely related to one another and are necessary to improve joint outcome on the task at hand.

**Not assuming a zero-sum game.** As previously noted, research shows that naive negotiators often assume that the negotiation is a zero-sum game (Thompson & Hastie, 1990). That is, they assume that one party’s gain is the other party’s equal loss on any given issue. This assumption interferes with the discovery of mutually beneficial agreements on tasks with integrative potential (i.e., non-zero-sum) because naive negotiators then do not engage in tactics (e.g., trading off across issues) necessary to improve joint gain (Thompson & Hastie, 1990). In the current study, negotiators with tactical knowledge were warned not to automatically assume that the negotiation was zero-sum.

**Trading off across issues.** Trade-offs occur when both parties make concessions on differentially important issues in order to reconcile their interests. When there are differing priorities on issues, one party will concede on one set of issues to gain advantage on another set (Pruitt, 1981). Trading off across issues was necessary for improving joint gain on the task used in this study because the task included issues of differential importance to the negotiators. Negotiators can discover trade-offs by exchanging information about priorities or making multi-issue offers (packaging), both of which are examined in the current study. When issues are packaged together, instead of being considered independently and sequentially, it is easier to arrange trades or concessions as negotiators search for packages that are mutually beneficial (Thompson, Mannix, & Bazerman, 1988; Weingart, Bennett, & Brett, 1993).

### Distributive Tactics

Two distributive tactics, appearing firm and using persuasive arguments, were included because they are central tactics used to communicate an individual’s desires on specific issues at hand.

**Appearing firm.** Appearing firm is a distributive tactic a negotiator can use to force the other party to concede by making it look as if he or she will not move very far in the other party’s direction (Pruitt, 1981). Pruitt and Lewis (1975) showed that an increased frequency of positional commitments was related to lower joint profit.

**Using persuasive arguments.** Persuasive argumentation (or substantiation of position) is a common distributive tactic used to change the other party’s attitudes toward the issues. Persuasive arguments are usually stated in terms of attributes the other party values (Pruitt, 1981). The presentation of arguments designed to persuade the other party to concede has been shown to impede the discovery of integrative agreements (Pruitt & Lewis, 1975). Research also shows that naive negotiators tend to engage in a high proportion of persuasive argumentation (24–
27% in negotiations without time pressure (Carnevale & Lawler, 1986), which suggests that this distributive tactic is one frequently used in negotiation.

Equivocal Tactics

Two tactics can be considered equivocal in type because they can serve both integrative and distributive functions depending on their application: information exchange and setting high aspiration levels. These tactics were included because they are necessary both for communication of each party’s needs and for motivating the parties to press for better solutions.

Exchanging information. Exchanging information is believed to increase insight into the other party’s motivational structure and to increase the probability that negotiators will find integrative agreements if a zone of agreement exists (Pruitt, 1981; Putnam & Jones, 1982; Walton & McKersie, 1965). Research shows that sharing information about priorities across issues is central to the development of integrative solutions through logrolling (Pruitt & Lewis, 1975; Thompson, 1991; Weingart et al., 1990). However, when examining the exchange of general information, Tutzauer and Roloff (1988) found a significant effect for information seeking on integrativeness of agreements, but not for information giving, and Putnam & Wilson (1989) found no effect for information giving in a naturalistic negotiation. These results suggest that information exchange per se does play a role in negotiation, but it may be that different types of information differentially affect the integrativeness of negotiation outcomes.

The current study examined the sharing of two types of information: priorities across issues and preferences within issues. Exchanging information about priorities across issues (i.e., the relative importance of the issues to a negotiator) represents an integrative type of information exchange because it involves multiple issues and can facilitate trade-offs across issues (Pruitt & Lewis, 1975; Thompson, 1991). In contrast, sharing information about preferences within an issue is more distributive in nature in that it highlights the conflicting interests across parties within that issue. In this study we examined both the seeking and providing of both types of information.

Setting high aspiration levels. This tactic can also serve both integrative and distributive functions. A high aspiration level for individual outcome increases the likelihood that negotiators will achieve both high individual and high joint outcomes (Pruitt, 1981). Previous research shows that negotiators told to set high aspirations for outcomes outperform negotiators given low or no aspirations (Neale & Northcraft, 1986; Pruitt & Lewis, 1975) because negotiators given high aspirations will not accept an agreement lower than the aspiration level.

We chose the tactics listed above because we believed them to be collectively necessary and sufficient for improving joint outcome on the task (mixed-motive) used in this study. We expected improved joint outcome to occur primarily through the application of the integrative tactics provided. Avoiding a zero-sum assumption while sharing information about priorities and trading off across issues should allow negotiators to discover joint gain. The distributive tactics were considered necessary for maintaining an individualistic motivation (i.e., high aspiration) and for keeping negotiators focused on their individual needs (through persuasive argumentation and sharing information about individual preferences) so as to avoid high levels of compromise or altruistic behavior on all issues.

Hypotheses

Current theories of intelligent deliberation state that the primary source of performance variance in problem solving resides in the access and use of task-specific knowledge. Therefore, we predicted that both the behavior of the negotiators and, consequently, the outcome of the negotiation would be affected by the knowledge acquired from descriptions of negotiation tactics. Six hypotheses, stated here in terms of the general classes of integrative and distributive tactical knowledge and behavior they involved, were examined in this study.

Hypothesis 1: Dyads composed of negotiators with tactical knowledge will reach agreements characterized by higher joint outcomes than those reached by dyads of negotiators without tactical knowledge.

Hypothesis 2: Dyads with tactical knowledge will be more likely to use integrative tactics than will dyads without tactical knowledge.

Hypothesis 3: There will be no difference in the use of distributive tactics between dyads with tactical knowledge and dyads without tactical knowledge.

Hypothesis 4: The use of integrative tactics will result in higher joint outcomes.

Hypothesis 5: The use of distributive tactics will result in lower joint outcomes.

Hypothesis 6: The effect of tactical knowledge on joint outcome will be mediated by the use of integrative tactics.

Method

Participants

One hundred eighty undergraduate students participated in this study. They either participated to fulfill a research requirement in an introductory organizational behavior or marketing course or responded to advertisements posted on campus. Participants were paid approximately 1 cent per point earned from the negotiated agreement, which resulted in compensation ranging from $1.50 to $7.00. In addition, the students who responded to the advertisements received a base rate of $5.00 for attending the experiment. Analyses showed that the different participation inducement methods did not influence the primary dependent variable of joint outcome.

Sixty-seven of the participants were women, and they were randomly distributed across conditions. This resulted in 55 same-sex dyads (16 female, 39 male) and 35 mixed-sex dyads. Analyses showed that gender did not influence either individual or joint outcomes.

Task

The students participated in a two-party, multi-issue negotiation case entitled “Landers Market.” In this negotiation task, 2 participants as-
sumed the roles of entrepreneurs, a florist and a baker, who were considering the possibility of a joint business opportunity. The florist was described as having approached the baker with the proposal of combining both businesses in one location and calling it Landers Market. Participants were randomly assigned the role of florist or baker.

Four issues had to be resolved, each issue offering nine alternatives. The order in which the issues were presented in the case was varied within each condition. The issues included (a) hiring, training, and supervision of clerical staff; (b) building maintenance costs; (c) division of advertising costs; and (d) air temperature. Participants were presented with a sheet of paper describing the four issues and the nine alternatives available within each issue. They were also provided with a payoff schedule listing the four issues, descriptions of each of the nine alternatives within each issue, and a corresponding point value representing the value of each alternative. Each party received the point values only for himself or herself. For example, the nine alternatives for the temperature issue ranged from 67° to 75°. While the florist preferred a temperature of 75°, the baker preferred a cooler temperature of 67°.

Other issues had more complex alternatives. For example, one of the nine alternatives for the "clerks" issue was for the baker and florist to hire clerks together to work in both departments, to supervise clerks together, and to pay clerks depending on the hours worked for each store.

Two of the issues to be settled in Landers Market, temperature and maintenance, were distributive issues. These issues were worth the same amount of points for each negotiator, with preferences on these issues going in opposite directions. Consequently, one party's gain was equal to the other party's loss (see Appendix A for the combined payoff schedules). The other two issues, advertising and clerks, were integrative issues, worth different amounts to the negotiators, which made trade-offs across these two issues possible. Thus the case had integrative potential. If the negotiators had split the difference (i.e., selected the midpoint on all issues, or EEEE in Appendix A), they would have settled on a strictly distributive solution and the total joint profit would be 440 points. If the negotiators traded off fully across the integrative issues (i.e., "I" for clerks and "A" for advertising), joint profit would increase to the maximum of 560 points, an improvement of 27%.

Procedure

Students were informed they would be participating in a negotiation in which each of them represented a store interested in developing Landers Market. During the experimental session, participants were seated on opposite sides of a table with a chest-high barrier. This barrier prevented the negotiators from seeing each other's information sheets but did not interfere with visual contact. The negotiation task was presented to the participants and included background information, individual role instructions, and payoff schedules. Participants were not provided their opponent's payoff schedule and were requested not to explicitly divulge their own point information from their payoff schedule. Participants were also provided with a list of negotiation tactics with descriptions and examples (see Appendix B). This list consisted of the six negotiation tactics that were presented earlier: setting goals, appearing firm, using persuasive arguments, exchanging information, not assuming a zero-sum game, and trading off issues. After reading the list, participants were given a questionnaire that asked them to state the meaning of each of the tactics in their own words. Participants were not allowed to refer to the list while answering the questionnaire. When the questionnaire was completed, the list of tactical descriptions was returned to the participants. If any of the tactics were recalled incorrectly, participants were referred back to the handout to correct their answers. If necessary, the experimenter provided verbal instructions to further explain the tactics.

Joint Outcome Measure

We measured joint outcome using a Pareto efficiency score (Tripp & Sondak, 1992). Pareto efficiency was calculated as follows:

\[
\text{Pareto efficiency} = 100 \times \frac{(N_w - N_s)}{(N_b - N_s) + (N_w - N_s)},
\]

where \(N_b\) is the number of solutions that were better than the agreed-upon solution (i.e., worth more points) for at least one party but not worse (i.e., worth fewer points) for the other party; \(N_w\) is the number of solutions that were worse than the agreed-upon solution for at least one party; and \(N_s\) is the number of solutions with the same individual outcome levels as the agreed-upon solution.

A perfectly integrative solution received a Pareto efficiency score of 100%, whereas an impasse received a score of 0%. Because this variable was negatively skewed (skewness = -1.18), we used an arcsine transformation to reduce the skewness prior to use (skewness after transformation = -0.45).

Tactical Knowledge Manipulation

Two levels of knowledge were examined: tactical descriptions present (knowledge present) and tactical descriptions absent (knowledge absent). There were 45 dyads in each condition.

After completing the prenegotiation questionnaire, participants in the knowledge-present condition were separated. Each participant was then given a list of negotiation tactics with descriptions and examples (see Appendix B). This list consisted of the six negotiation tactics that were presented earlier: setting goals, appearing firm, using persuasive arguments, exchanging information, not assuming a zero-sum game, and trading off issues. After reading the list, participants were given a questionnaire that asked them to state the meaning of each of the tactics in their own words. Participants were not allowed to refer to the list while answering the questionnaire. When the questionnaire was completed, the list of tactical descriptions was returned to the participants. If any of the tactics were recalled incorrectly, participants were referred back to the handout to correct their answers. If necessary, the experimenter provided verbal instructions to further explain the tactics.

Process Measures

Coding scheme. The verbal interaction of the dyad was coded from the videotapes of the negotiation. The coding scheme, based on one developed by Weingart, Simons, Robinson, and Brett (1990), focused on the use of both integrative and distributive tactics. A set of general rules was provided to the coders, including the rule that multiple codes could be assigned to each turn but that no more than one code could be assigned to a single subject-verb-object set.

The coding scheme identified several different negotiating behaviors, including offers, information provision, questions, procedural comments, and reactions. These more general behaviors were further divided into a total of 14 subcategories reflecting distributive, integrative, and neutral tactics. Distributive tactics focused on single issues or positions on those issues. Integrative tactics focused on multiple issues and priorities across issues. Finally, neutral tactics were miscellaneous comments that were not expected to influence joint outcome. The categories used are listed in Appendix C and identified below in italics.

3 See Clyman (1995) for a discussion of this and other measures of joint outcome.

4 A principal-components analysis of the frequency of use of these integrative and distributive tactics (excluding procedural comments) in the current data set supports this distinction (see Weingart, Prietula, Hyder, & Genovese, 1995).
Offers were differentiated into two categories: single-issue offers (a distributive tactic) and multi-issue offers (an integrative tactic). Information provision was subdivided into two distributive tactics—providing information about preferences within an issue (info-preferences) and substantiation of position—and one integrative tactic, providing information about priorities across multiple issues (info-priorities). Questions were also differentiated into three categories. Two of these categories were distributive in nature—questions about preferences within an issue (ques-preferences) and questions about substantiation (ques-substantiation)—whereas the other category, questions about priorities across issues (ques-priorities), was considered an integrative tactic.

Four procedural comments were also identified. Two distributive procedures included suggestions to discuss one issue at a time (proc-1-issue) and to compromise within an issue (proc-compromise). Two integrative procedural suggestions included packaging issues, that is, discussing sets of issues simultaneously (proc-package) and using delayed reciprocity, that is, offering a current concession for an unspecified concession in the future (proc-reciprocity). Finally, the two neutral categories included positive reactions (pos-reactions) and miscellaneous remarks (misc). Negative reactions were coded, but the category was later merged into the miscellaneous category because of its low frequency.

The coded categories loosely mapped onto the more general tactics provided to the participants in the knowledge-present condition (see Appendix C). Questions and information provision regarding preferences and priorities related to the tactical description of "exchanging information," with the exchange of priorities implying that negotiators did "not assume a zero-sum game." Substantiation of position and related questions were exemplars of "persuasive arguments" and often communicated "high goals" and "appearing firm" on the issues. Multi-issue offers were the central mechanism for "crafting trade-offs" while "not assuming a zero-sum game." Conversely, by focusing on one issue in isolation, single-issue offers implied the "assumption of a zero-sum game." Finally, procedural comments regarding packaging of issues and reciprocity enacted "crafting trade-offs" and "not assuming a zero-sum game."

Coding process: Prior to coding, we unitized the videotapes using the speaking turn as the unit of analysis. To do this, a coder viewed the videotape and marked down the time at which a change in speaker occurred (using permanent timecodes from the videotape) as well as who was speaking during each speaking turn. A second coder reinspected a subset of the data, which resulted in a high level of unitizing reliability (Guetzkow's U = 0.9; Guetzkow, 1950). A total of 12,717 speaking turns were identified in the data set.

Three research assistants, blind to the research hypotheses, participated in approximately 60 hr of training in the use of the coding scheme. These three coders viewed videotapes randomly drawn from the set of 90 and practiced applying the coding scheme together and then separately. When interrater reliability among pairs of the coders reached an acceptable level on each of the categories (Cohen's kappa > .80; Cohen, 1960), they began coding the data. The coders progressed through the data set in the following manner. Pairs of the three coders independently coded each dyad. A round robin coding process was established such that each coder was paired with the other two coders equally and assignment of pairs of coders to videotaped dyads was random. This resulted in no significant differences in either (a) the number of dyads coded by pairs of coders or (b) the number of dyads per condition coded by each pair of coders. After completing a few dyads, the coders compared their coding and reconciled disagreements by together reviewing that segment of the videotape and producing a single set of codes for each dyad. Negotiation behavior was determined from analyses of these codes.

Prior to reconciliation of the coding, we computed intercoder reliability for each category. Cohen's kappa was calculated from a subset of dyads (28 dyads, 4,302 codes) for each of the categories and ranged from .75 to .89 (p < .001 for all categories; Fleiss, 1971).

Process analyses: Negotiation behaviors were analyzed in two ways. First, using the behavioral subcategories presented in Appendix C, we compared the relative frequencies of each type of behavior (number of occurrences of that behavior divided by the total number of behaviors within that dyad) across conditions. We logit transformed relative frequencies of negotiation behaviors prior to data analysis to avoid the possibility of spurious correlations when using ratio variables (Cohen & Cohen, 1983).

Second, we examined the presence or absence of five integrative behaviors, treating each behavior as a dichotomous variable (absent = 1; present = 2). A behavior was considered present if it occurred at least once during the negotiation and absent if it never occurred. Presence versus absence of integrative behaviors was examined to determine if it was the mere presence, rather than the relative frequency, of a tactical behavior that was important in the application and efficacy of tactical knowledge.

The three integrative behaviors examined in the frequency analysis were included in the presence-absence analyses: (a) multi-issue offers (b) info-priorities, and (c) ques-priorities. In addition, two procedural subcategories were included (procedural comments were coded into four subcategories for this analysis [see Appendix C]): (d) proc-package and (e) proc-reciprocity. These behaviors were considered important for discovering integrative agreements because they can lead to the packaging of issues, which has been associated with higher joint outcomes (Thompson et al., 1988; Weingart et al., 1993). Distributive tactics were not included in this analysis because each distributive tactic was used in virtually all dyads.

Results

Manipulation Checks

As stated earlier, participants in the knowledge-present condition were given a questionnaire asking them to state the meaning of each of the tactics in their own words. Negotiators in 28 of the 45 dyads in the knowledge-present condition made slightly more than one error recalling the tactics (M = 1.07, SD = 1.07) and had to be corrected by the experimenter. Results showed that there was no difference in the joint outcomes of groups with and without errors, t(43) = 0.45, n.s. There was also no effect of the number of errors on joint outcome, r(44) = -.05, n.s. Thus, to the extent that errors in recalling tactics did not have an impact on performance, it appears that participants making errors in the knowledge-present condition received adequate correction.

Joint Outcome

Pareto efficiency scores (prior to arcsine transformation) ranged from 24.41% to 100% efficiency (M = 83.37, SD = 18.17, N = 90). Seven dyads split the difference on all four issues (Pareto efficiency = 50%), and nine dyads achieved Pareto optimal outcomes (Pareto efficiency = 100%). All of the dyads that achieved Pareto optimality were in the knowledge-present condition. There were no impasses in either condition.

Hypothesis 1 predicted that dyads with tactical knowledge would achieve higher joint outcomes than dyads without tactical knowledge. In this and all subsequent analyses, the knowledge-present condition was coded as "1" and the knowledge-absent condition was coded as "2." Results showed that dyads in the knowledge-present condition achieved a higher level of Pareto efficiency (M = 90.06, SD = 12.37) than dyads in the
Table 1

Means and Standard Deviations of Relative Frequencies of Behaviors Across Conditions

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Tactical knowledge</th>
<th>Present</th>
<th>Absent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Distributive</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single-issue offers</td>
<td>4.24</td>
<td>2.54</td>
<td>5.31</td>
<td>3.12</td>
</tr>
<tr>
<td>Info-preferences</td>
<td>13.86</td>
<td>4.58</td>
<td>13.30</td>
<td>5.99</td>
</tr>
<tr>
<td>Substantiation</td>
<td>24.61</td>
<td>10.78</td>
<td>24.29</td>
<td>10.28</td>
</tr>
<tr>
<td>Ques-preferences</td>
<td>4.04</td>
<td>1.82</td>
<td>3.55</td>
<td>2.26</td>
</tr>
<tr>
<td>Ques-substantiation</td>
<td>7.21</td>
<td>2.46</td>
<td>7.44</td>
<td>3.10</td>
</tr>
<tr>
<td>Integrative</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-issue offers*</td>
<td>2.77</td>
<td>2.41</td>
<td>2.27</td>
<td>3.79</td>
</tr>
<tr>
<td>Info-priorities***</td>
<td>3.27</td>
<td>2.86</td>
<td>1.79</td>
<td>3.49</td>
</tr>
<tr>
<td>Ques-priorities**</td>
<td>1.80</td>
<td>1.73</td>
<td>.73</td>
<td>1.27</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive reactions</td>
<td>14.50</td>
<td>6.65</td>
<td>14.09</td>
<td>4.80</td>
</tr>
<tr>
<td>Miscellaneous**</td>
<td>17.80</td>
<td>6.92</td>
<td>22.12</td>
<td>7.65</td>
</tr>
<tr>
<td>Procedural comments</td>
<td>5.88</td>
<td>2.39</td>
<td>5.10</td>
<td>2.50</td>
</tr>
</tbody>
</table>

Note. Means and standard deviations are presented prior to arc sine transformation. Relative frequencies of behavior = 100 * (behavior/total behavior), n = 45 dyads per tactical knowledge condition. Info- = providing information; ques- = questions about.

• p < .05, **p < .01, and ***p < .001 for significance of F test across knowledge conditions.

Negotiation Process

Descriptive data. Relative frequencies and the presence versus absence of behaviors were examined. Results showed that participants engaged in substantiation of position most frequently (24.45% of total behavior) and asked questions about priorities across issues least frequently (1.23% of total behavior; see Table 1). In addition, only 33% of dyads suggested using a delayed reciprocity procedure, whereas 70% of dyads provided information about their priorities across issues (see Table 2).

Impact of tactical knowledge on negotiation process. To determine if tactical knowledge influenced the relative frequencies of behavior (addressed in Hypotheses 2 and 3), we performed a series of one-way analyses of variance. Results showed that knowledge-present dyads engaged in all three of the integrative behaviors more frequently than did knowledge-absent dyads: multi-issue offers, F(1, 88) = 3.94, p < .05; info-priorities, F(1, 88) = 13.34, p < .001; and ques-priorities, F(1, 88) = 10.38, p < .01. This supports Hypothesis 2 (see Table 1 for means and standard deviations).

We performed chi-square analyses to determine if the presence versus absence of integrative tactics also differed across conditions. Each of the five categories examined (multi-issue offers, info-priorities, ques-priorities, proc-packaging, and proc-reciprocity) significantly differed across conditions (see Table 2). In each case, the proportion of dyads that used the tactic was greater in the knowledge-present condition than in the knowledge-absent condition, providing further support for Hypothesis 2.

Hypothesis 3 was supported in that there were no differences in any of the distributive behaviors across conditions (see Table 1 for means and standard deviations). In addition, knowledge-present dyads made fewer miscellaneous comments than did dyads in the knowledge-absent condition, F(1, 88) = 7.54, p < .01. There were no other differences in behavioral relative frequency across conditions.

Impact of negotiation process on outcome. Hypothesis 4 predicted that joint outcome would be positively influenced by the use of integrative tactics, and Hypothesis 5 predicted that joint outcome would be negatively influenced by the use of distributive tactics. We conducted a series of correlation analyses to determine which behaviors were associated with Pareto efficiency.

The correlations showed that the three integrative behaviors—multi-issue offers, info-priorities, and ques-priorities—were positively related to Pareto efficiency and that two distributive behaviors—single-issue offers and substantiation—were negatively correlated with Pareto efficiency (see Table 3). Results also showed that all five integrative presence-absence variables—multi-issue offers, info-priorities, ques-priorities, proc-packaging, and proc-reciprocity—were positively correlated with Pareto efficiency (see Table 3). In summary, all integrative behaviors, represented both as relative frequencies and as presence-absence variables, had a significant, positive relationship with Pareto efficiency. This supports Hypothesis 4. Two of the five distributive behaviors had a significant, negative relationship with Pareto efficiency, providing support for Hypothesis 5.

Tests of mediation. To test whether the integrative behaviors mediated the effects of tactical knowledge on joint outcome (Hypothesis 6), we used Baron and Kenny’s (1986) analytic
Table 2
Presence Versus Absence of Integrative Behaviors

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Tactical knowledge</th>
<th>x²(1, N = 90)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present (%)</td>
<td>Absent (%)</td>
<td></td>
</tr>
<tr>
<td>Multi-issue offers</td>
<td>77.78</td>
<td>55.56</td>
</tr>
<tr>
<td>Info-priorities</td>
<td>82.22</td>
<td>57.78</td>
</tr>
<tr>
<td>Ques-priorities</td>
<td>82.22</td>
<td>37.78</td>
</tr>
<tr>
<td>Proc-packaging</td>
<td>71.11</td>
<td>33.33</td>
</tr>
<tr>
<td>Proc-reciprocity</td>
<td>48.89</td>
<td>17.78</td>
</tr>
</tbody>
</table>

Note, Values are percentages of dyads in each condition that engaged in the behavior at least once. n = 45 for each condition. Info- = providing information about; ques- = questions about; proc- = procedural comments about.

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

Table 4
Regression Results: Dependent Variable = Pareto Efficiency

<table>
<thead>
<tr>
<th>Variable</th>
<th>Equation 1</th>
<th>Equation 2a</th>
<th>Equation 2b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>−.39***</td>
<td>−.13</td>
<td>−.14</td>
</tr>
<tr>
<td>Multi-issue offers</td>
<td>.28***</td>
<td>.33**</td>
<td></td>
</tr>
<tr>
<td>Priority exchange</td>
<td>.37***</td>
<td>.36**</td>
<td></td>
</tr>
<tr>
<td>Proc-package</td>
<td>.23*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proc-reciprocity</td>
<td>.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>.12</td>
<td>.46</td>
<td>.42</td>
</tr>
<tr>
<td>F for R²</td>
<td>13.09***</td>
<td>28.68***</td>
<td>14.13***</td>
</tr>
<tr>
<td>Change in R²</td>
<td>.34</td>
<td>.30</td>
<td></td>
</tr>
<tr>
<td>F for change in R²</td>
<td>.25.50***</td>
<td>12.66***</td>
<td></td>
</tr>
</tbody>
</table>

Note, Proc- = procedural comments about.

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

Approach. First, as shown above, tactical knowledge was found to be correlated with Pareto efficiency, the dependent variable, as well as with two sets of proposed mediators (relative frequency variables: multi-issue offers, info-priorities and ques-priorities; presence-absence variables: multi-issue offers, info-priorities, ques-priorities, proc-packaging, and proc-reciprocity). However, some of the proposed mediators were highly intercorrelated, especially info-priorities and ques-priorities: frequency variables, r = .78, p < .001; presence-absence variables, r = .60, p < .01. To reduce the problem of multicollinearity in the regression equation, we combined info-priorities and ques-priorities into one category labeled priority exchange.

Two hierarchical regression analyses were then conducted in which dummy variables representing the manipulations were entered at Step 1 and the proposed sets of mediators were entered at Step 2. Analyses were run separately for relative frequency variables and presence-absence variables.

In the first set of equations, in which the transformed relative frequency variables were used, results showed that the effect of tactical knowledge on Pareto efficiency (β = −.39, p < .001) dropped to nonsignificance (β = −.13) when the integrative process variables were added into the equation (see Table 4, Equations 1 and 2a). This change in beta was significant, t(87) = −4.10, p < .01. Both integrative process variables (multi-issue offers and priority exchange) reached significance. In addition, the R² of the overall model increased significantly from .12 to .46 (F for change in R² = 25.50, p < .001).

We conducted a similar regression analysis predicting Pareto efficiency using the presence-absence variables as predictors. Results showed that the effect of tactical knowledge on Pareto efficiency (β = −.39, p < .001) dropped to nonsignificance (β = −.14) when the presence-absence integrative behaviors were added into the equation (see Table 4, Equations 1 and 2b). This change in beta was significant, t(87) = −4.09, p < .01. Three presence-absence variables reached significance: multi-issue offers, priority exchange, and proc-packaging. In addition, the R² of the overall model increased significantly from .12 to .42 (F for change in R² = 25.50, p < .001).

Discussion

In this study we examined the effect of knowledge about tactics on negotiation behavior and outcomes in a two-party, four-issue bargaining task. Our intent was to build on the prior body of negotiation literature and provide an explanation for negotiation "failures" based on the proposition that the primary source of variance in task behavior is due to the availability of specific negotiation knowledge.

Overview of Results

We hypothesized that by giving naive negotiators descriptions of particular negotiation tactics, their operational knowledge of negotiation processes would be altered and, as a result, they would engage in different behaviors and achieve more efficient
outcomes than would naive negotiators without this information. The results provided strong support for the hypotheses. There were both behavior and outcome differences between the two knowledge conditions. Pareto efficiency was significantly higher for the dyads with tactical knowledge. In addition, the results showed that dyads with tactical knowledge engaged in integrative behaviors significantly more frequently than did dyads without tactical knowledge. All of these integrative behaviors had a positive impact on Pareto efficiency. Finally, a test of mediation revealed that the integrative behaviors fully mediated the effect of tactical knowledge on joint outcome. Taken together, the results showed that the tactical knowledge provided the negotiators with methods to exchange information about priorities across issues and thus allowed for the crafting of multi-issue offers characterized by mutually beneficial trade-offs.

In combination with Thompson's (1991) findings that simply alerting negotiators to the fact that the task could have integrative potential was not sufficient to improve performance, these results provide evidence for the argument that naive negotiators fail to achieve optimal outcomes because they lack, or cannot engage, the task-specific knowledge to apply the necessary tactics. When provided with this knowledge, naive negotiators will use it to achieve significantly higher joint outcomes.

**Joint Outcome**

However, the story is not quite complete. Only 20% (9 out of 45) of the dyads with knowledge discovered optimal solutions on this relatively simple negotiation task. Although we expected the tactics described to have been both necessary and sufficient for achievement of Pareto optimality, it appears that participants either were not able to fully implement the tactics or did not consistently attend to them while negotiating. It is possible that there was too much information to process. Although the number of tactics provided was kept low (seven), unfamiliarity with the tactics and case materials may have resulted in information overload for these novice negotiators. It is also possible that the manipulation was not sufficient for convincing the participants that the task was not zero-sum. Finally, it may be that in addition to knowledge about how and when to apply tactics, naive negotiators require an understanding of why the tactics are important in order to effectively apply them. Additional research is warranted to determine if increased training in strategies and tactics, or a reduction in the number of rules provided, will help negotiators to further optimize outcomes.

Another potential explanation for the inability of dyads to discover optimal solutions involves the negotiators' goals. It is possible that the negotiators were working toward a different goal than that of maximizing absolute outcome. For example, if negotiators were more concerned with maximizing the difference between their own outcome and the other party's (a more competitive orientation), they might settle for suboptimal solutions. However, this explanation for suboptimal agreements is unlikely because a monetary reward was provided to negotiators at the end of the experimental session that rewarded absolute outcome. The fact that half of the dyads were rewarded to maximize joint outcome and the other half to maximize individual outcome, and that this difference had no direct or interactive effect on Pareto efficiency (Hyder et al., 1991), suggests that participants were unable, rather than unwilling, to attain their goal.

**Tactical Behavior**

**Distributive tactics.** There were no differences in the use of distributive tactics between dyads with knowledge and dyads without knowledge, even though descriptions of distributive tactics were included in the knowledge condition. In addition, the frequency of distributive behaviors was high (54% of total behavior) compared with the frequency of integrative behavior (6.28%). These results provide support for the hypothesis that using distributive tactics is "natural"—naive negotiators are familiar with and use these tactics as default approaches. This is consistent with the notion that naive negotiators often assume the negotiation is a zero-sum game (Thompson & Hastie, 1990). Distributive tactics are appropriate for zero-sum games, where the negotiator's main concern is to divide resources.

Our analyses showed that the use of two distributive tactics—single-issue offers and substantiation of one's position—was negatively correlated with outcomes. This provides support for our hypothesis that distributive tactics would have a negative impact on outcomes. None of the other distributive tactics (frequencies or presence versus absence) significantly affected outcomes. One possible explanation for this suggests that some of the distributive tactics are "more" distributive than others. For example, providing information about preferences, a distributive tactic that was negatively, but not significantly, related to Pareto efficiency, might serve multiple purposes. It could imply a positional focus within an issue, serving a clearly distributive function. On the other hand, providing preference information may be a necessary step en route to exploring the differential importance of issues, as well as for determining whether trading off is appropriate in the particular situation. In contrast, substantiation is a very significant distributive tactic, because it both focuses on the distributive nature of this task and distracts the negotiator from searching for integrative solutions. In fact, the cognitive effort required for making (or responding to) a persuasive argument is very high: Negotiators have to search for relevant arguments, evaluate the argument, keep track of the other party's arguments, evaluate that argument, craft responses, and so forth. Thus the focus of the interaction can quickly shift from determining the methods of "achieving joint gain" to determining methods of "defending your argument" or "weaving arguments to change the opponent's views." Perhaps the other distributive tactics coded in this study are not as prototypically distributive as substantiation. That is, they might not provide as much focus on the distributive aspects of the task or require as much cognitive effort. Further research into the use of these tactics would help answer these questions.

**Integrative tactics.** In contrast, dyads with tactical knowledge used more integrative tactics than did dyads without tactical knowledge. Overall, the increased use of integrative behavior in the knowledge-present condition was counterbalanced by decreases in miscellaneous behavior (e.g., miscellaneous procedural comments, reactions, off-task comments).

Although there were changes in the frequency of integrative behaviors, many of the categories were used infrequently. This is not surprising given that some of the tactics are associated with information exchange and discovery. A single use of a tac-
tic could greatly improve the integrativeness of an agreement. For example, once information about an individual's priorities across issues has been provided, the other negotiator has all the information needed to construct a mutually beneficial trade-off.

Our examination of the presence versus absence of these tactics explored that critical dimension of tactical behavior. Significantly, dyads without knowledge about tactics were more likely to never make multi-issue offers, never provide information about priorities across issues, never ask questions about priorities, never suggest packaging, and never suggest delayed reciprocity. The presence of these tactics was also positively correlated with outcome, which suggests that dyads that do not engage in these tactics at all are at a severe disadvantage and that that disadvantage is reversed with knowledge.

**Limitations and Opportunities for Future Research**

One potential limitation to the interpretation of this study involves our detailed understanding of the negotiators' knowledge state prior to the experimental session. On the basis of previous research that used undergraduate populations for experimental negotiation research, we assumed that our sample of undergraduate students was naive to integrative negotiation tactics. We did not examine the knowledge previously held by our naive participants because measurement of that knowledge might cue the relevance of specific tactics. Yet, it is possible that our naive (knowledge-absent) participants entered the negotiation with knowledge of integrative tactics but performed poorly because they assumed the task was zero-sum and therefore chose not to use integrative tactics. In the knowledge-present condition, the tactical description of not assuming a zero-sum game could have served as a cue to participants to use previously held integrative tactics, thus resulting in the application of those tactics. However, this explanation seems unlikely given Thompson's (1991) findings that simply alerting negotiators that the other party might have different priorities (i.e., the task may not be zero-sum) was not sufficient to improve performance. Her results showed that similar participants (undergraduate students in an introductory psychology course) who were cued to the task as being non-zero-sum did not use the tactical behavior necessary to solve a non-zero-sum negotiation problem. We take this as evidence that they did not hold the knowledge necessary to use these tactics.

Thus it seems more likely that the participants in this study previously held knowledge of distributive, but not integrative, tactics. Differences in the application of integrative and distributive behavior support this interpretation. If participants had held knowledge of both integrative and distributive tactics, we would have expected that their use would be similarly affected by the manipulation, which included descriptions of both types of tactical behavior. However, additional research that explicitly separates the cueing of previously held knowledge from the provision of new knowledge is needed if we are to further our understanding of how instruction interventions influence the behavior and performance of naive negotiators.

This finding also argues against the possibility that the behavioral differences across conditions were merely due to demand effects, that is, that participants engaged the behaviors only because they believed the experimenter desired them to do so. If this was the case we might expect an increase in the amount of distributive as well as integrative behavior. Because distributive behavior did not change in the knowledge-present condition, this does not appear to be the case.

A second potential limitation relates to the generalizability of our findings to the types of negotiations occurring in natural, day-to-day business or personal interactions. We believe that it is important to consider how these findings are relevant to negotiation training that is offered by business schools, law schools, and consulting organizations. Our findings suggest that simpler training techniques than those typically used in these settings may be enough to significantly alter the ability of naive negotiators to successfully resolve a common type of negotiation problem. Given that most people are not trained at all in negotiations, we expect these results to generalize to many situations in which people find themselves bargaining with others.

However, we do not know whether this simple training intervention will be effective at altering behavior in the long run. Questions remain as to whether the knowledge will be retained and whether negotiators are able to generalize the information to other negotiation situations. Previous research on knowledge gained through experience suggests that some transference is possible (Bazerman et al., 1985; Neale & Northcraft, 1986; Thompson, 1990a, 1990b, 1992; Thompson & DeHarpport, 1994). It remains to be seen whether knowledge gained through explicit instruction is equally transferable.

Subsequent research will need to examine such issues as the duration of the behavioral changes (e.g., how much practice is required to ensure retention) and the ability of the negotiators to determine which tactics are appropriate in different negotiation situations (e.g., what knowledge is required). Also, examination of the various instructional methods to use (e.g., what types of instruction minimize subsequent error), whether both parties need to be trained (Thompson, 1991), and the effectiveness of negotiation training across gender (Stevens, Bavetta, & Gist, 1993) would further our understanding of the role of knowledge in negotiation as well as in educating negotiators.

Another issue related to the generalizability of these results involves whether situational factors might interfere with the effectiveness of the tactical descriptions in improving joint outcome. For example, if the other party is unwilling to reciprocate the use of integrative tactics, a negotiator who shares information about priorities might put himself or herself at a disadvantage. In this situation, a negotiator armed only with the negotiation knowledge provided in our study might fail to achieve an integrative solution. Additional knowledge regarding how to negotiate with such an opponent would be required in order to reach an optimal solution. Other situational characteristics that might hinder the success of negotiators armed only with the information provided in this study include a purely distributive task (i.e., one in which there is no integrative potential), competitively oriented opponents, and a history of hostile interactions.

A third limitation involves constraints given our method of inquiry. This research has advanced our understanding of negotiation cognition by examining negotiation behavior as an indicator of how negotiation knowledge is applied. In fact, few studies have examined negotiation behavior directly and in such detail. Although this approach yielded much insight, we did not systematically examine the actual problem-solving methods.
used by the individual negotiators while performing the task. As a consequence, we must infer their methods from their behavior during the negotiation. We therefore run the risk of not identifying all of the important variables and, through averaging data over individuals, not identifying important differences between negotiators (Siegel, 1987).

Next steps in this line of research should be based on methodologies derived from cognitive psychology and cognitive science (Anderson, 1983;Ericsson & Simon, 1984; Newell, 1990) in order to gain a better understanding of negotiator cognition. This research should make use of detailed protocol analysis and computer modeling (e.g., Thompson, 1992) to shed light on negotiator methods at different stages of a negotiation. Further work in this area that focuses on the individual negotiator should result in a more complete understanding of negotiation, and, more important, of how negotiation behavior can be explained within the context of broader theories of human problem solving.

Conclusion

Negotiation is an everyday occurrence, yet naive negotiators are often not very good at solving simple negotiation problems. The "naive model" of the negotiation task that people bring with them fails to address the fundamental components of the task. Furthermore, even when the task unfolds, naive negotiators cannot detect the impropriety of their intuitive beliefs. As has been found in other domains, intuitive approaches can be remarkably incorrect and inflexible (McCloskey, 1983).

From a negotiation researcher's perspective, our findings have demonstrated that, in the simple problems used by much of the negotiation research community, a substantial component of the variance in joint outcome can be accounted for by knowledge gained from negotiators' simply studying a list of negotiation tactics. When negotiators are provided with such a list, joint outcome improves significantly. From a cognitive scientist's perspective, our findings have reaffirmed the central role of task-specific knowledge in problem solving. When individuals are provided with task-specific strategies to solve the problem, appropriate knowledge can be brought to bear. From an educator's perspective, our findings have supported what many of us believe in our intuitive models of the student. In conclusion, knowledge matters.

References


### Appendix A

#### Landers Market Payoff Schedule

<table>
<thead>
<tr>
<th>Clerk</th>
<th>Maintenance</th>
<th>Advertising</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hamlin Bakery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>0</td>
<td>A</td>
<td>0</td>
</tr>
<tr>
<td>B</td>
<td>25</td>
<td>B</td>
<td>5</td>
</tr>
<tr>
<td>C</td>
<td>50</td>
<td>C</td>
<td>10</td>
</tr>
<tr>
<td>D</td>
<td>75</td>
<td>D</td>
<td>15</td>
</tr>
<tr>
<td>E</td>
<td>100</td>
<td>E</td>
<td>20</td>
</tr>
<tr>
<td>F</td>
<td>125</td>
<td>F</td>
<td>25</td>
</tr>
<tr>
<td>G</td>
<td>150</td>
<td>G</td>
<td>30</td>
</tr>
<tr>
<td>H</td>
<td>175</td>
<td>H</td>
<td>35</td>
</tr>
<tr>
<td>I</td>
<td>200</td>
<td>I</td>
<td>40</td>
</tr>
<tr>
<td>Jacqui’s Florist</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>80</td>
<td>A</td>
<td>40</td>
</tr>
<tr>
<td>B</td>
<td>70</td>
<td>B</td>
<td>35</td>
</tr>
<tr>
<td>C</td>
<td>60</td>
<td>C</td>
<td>30</td>
</tr>
<tr>
<td>D</td>
<td>50</td>
<td>D</td>
<td>25</td>
</tr>
<tr>
<td>E</td>
<td>40</td>
<td>E</td>
<td>20</td>
</tr>
<tr>
<td>F</td>
<td>30</td>
<td>F</td>
<td>15</td>
</tr>
<tr>
<td>G</td>
<td>20</td>
<td>G</td>
<td>10</td>
</tr>
<tr>
<td>H</td>
<td>10</td>
<td>H</td>
<td>5</td>
</tr>
<tr>
<td>I</td>
<td>0</td>
<td>I</td>
<td>0</td>
</tr>
</tbody>
</table>

---

1216 Weingart, Hyder, and Prietula
Appendix B

Negotiation Strategies and Tactics

Here are some common negotiating tactics which may help you in your negotiation. Please read them over carefully. If you have any questions, feel free to ask for clarification from the person running the experiment.

Set Goals: Set a high, explicit goal for the outcome of the negotiation. You should be prepared to change this goal as you gain more information and can determine if your goal is realistic. For example, in the negotiation you have a walk-away value of 99 points. This represents the amount of profit points you will get if you cannot come to an agreement today. You should set a goal which is higher than this amount.

Appear Firm: Do not appear as if you will back down on your negotiating position.

Use Persuasive Arguments: Provide rationale for your position in order to persuade the other person to change their mind about an issue. For example, if it is important to you to have a low temperature for your food products you can argue that if the temperature goes above a certain level the customers will not want to buy your coffee because people find it uncomfortable to drink hot coffee when they are too warm.

Exchange Information: Try to get information about the other party's preferences on specific issues. You can do this directly, by asking a question such as "What issue is most important to you?", or more indirectly, by judging his or her reactions to your offers.

Do Not Assume a Zero-Sum Game: Do not automatically assume that a total gain in profit points for you results in a loss of profit points for the other party.

Trade-off Issues: You and your negotiating partner may place a higher, or lower, value, based on profit points, on the same issue. Trade off issues that are lower in value to you for issues which have higher value. For example, suppose you are negotiating on the amounts of products X and Y you will receive. If each level of X you receive gives you more profit points than each level of Y, offer to take less of Y, the lower valued item, if you can get more of X, the higher valued item.

Appendix C

Behavioral Coding Categories

<table>
<thead>
<tr>
<th>Tactic type</th>
<th>General category</th>
<th>Subcategory</th>
<th>Definition</th>
<th>Knowledge manipulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distribution</td>
<td>Offers</td>
<td>Single-issue offers</td>
<td>Make an offer on one issue</td>
<td>Info-exchange</td>
</tr>
<tr>
<td>Information provision</td>
<td>Info-preferences</td>
<td>State preferred level within an issue</td>
<td>Pers. arg.; set goal; appear firm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Substantiation</td>
<td>Make arguments for own position, arguments against other's</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Questions</td>
<td>Ques-preferences</td>
<td>Ask for preferred level within an issue</td>
<td>Info-exchange</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ques-substantiation</td>
<td>Question the arguments presented</td>
<td>Pers. arg.</td>
<td></td>
</tr>
<tr>
<td>Procedural comments</td>
<td>Proc-l-issue</td>
<td>Suggest addressing one issue at a time</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Proc-compromise</td>
<td>Suggest a compromise or willingness to concede on an issue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrative</td>
<td>Offers</td>
<td>Multi-issue offers</td>
<td>Make an offer on two or more issues under discussion</td>
<td>Trade-off; zero-sum</td>
</tr>
<tr>
<td>Information provision</td>
<td>Info-priorities</td>
<td>State which issues are more or less important to oneself</td>
<td>Info-exchange; zero-sum</td>
<td></td>
</tr>
<tr>
<td>Questions</td>
<td>Ques-priorities</td>
<td>Ask which issues are more or less important to other party</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procedural comments</td>
<td>Proc-package</td>
<td>Suggest discussion of two or more issues at the same time</td>
<td>Trade-off; zero-sum</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Proc-reciprocity</td>
<td>Suggest a concession to be made in exchange for an unidentified future concession</td>
<td>Trade-off; zero-sum</td>
<td></td>
</tr>
<tr>
<td>Neutral</td>
<td>Pos-reactions</td>
<td>Positive reactions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Misc</td>
<td>Off-task and low frequency comments (negative reactions, mutuality, and summarization)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Tactical knowledge manipulation: info-exchange = exchange information; pers. arg. = use persuasive arguments; set goal = set high goal; trade-offs = trade off issues; zero-sum = do not assume a zero-sum game. b Distributive procedural comments were coded but not analyzed in this study because the frequency of occurrence of each category was too low to include in the frequency analysis. They were not included in the presence-absence analysis because only integrative behaviors were included in that analysis. c Integrative procedural comments were included only in the presence-absence analysis because their frequency of occurrence was too low to be included in the frequency analysis.

Received July 16, 1993
Revision received January 18, 1995
Accepted February 8, 1996