

# The Effects of Shared Cognition and Performance

## Politeness and Efficiency in Group Interaction

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This study investigates the effects of shared cognition on group member satisfaction and group task performance. The hypotheses are that groups who have shared cognition concerning communication rules, such as politeness and efficiency, will be more satisfied with their group processes and will perform a task better than will those in groups lacking shared cognition concerning communication rules. The research involved 67 groups ( $N = 236$ ) performing a radio assembly task for 20 minutes. Group members in the shared cognition condition received the same instructions to communicate politely (or efficiently). In the non-shared cognition condition, some members in a group received instructions to communicate politely and other members in the same group received instructions to communicate efficiently. The data are consistent with the part of the hypothesis relating to satisfaction but not to the one relating to performance.

**Keywords:** *shared cognition; politeness; efficiency; communication rules; satisfaction with group processes; group task performance; small groups*

Shared cognition is an essential element in understanding group cognition. It refers to thoughts, attitudes, knowledge, beliefs, and expectations common to all members of a group. Some research involving cognitive approaches to group work has focused on how group members achieve shared understanding and how members' similarity in knowledge and mental models affects group performance. Overlapping cognitive structures have been referred to as shared mental models (Cannon-Bowers, Salas, & Converse, 1993), team member schema similarity (Rentsch & Hall, 1994), and shared beliefs (Langfield-Smith, 1992), among others. As cognitive commonality among the members increases and comes to represent an entire team's organized cognitive structure, team-level shared cognition emerges in the form of a team mental model (Klimoski & Mohammed, 1994) and collective cognition (Langfield-Smith, 1992). Common to these notions is that group members share similar cognitive structures, although they may vary in type and form.

Communicative aspects of group member interactions represent a type of cognition that can benefit group processes and outcomes when they compose shared

cognition. Because communication significantly affects how group members perform tasks, this research reflected an effort to directly tie communication to cognition in groups by spotlighting inquiries involving cognitive approaches to group work. When two or more people work together, mutual knowledge and shared rules become essential in coordinating their conversation topics and flow. The establishing of common ground among interactants allows them to be more effective in their communication (Clark & Carlson, 1982; Clark & Marshall, 1981). Cushman and Whiting (1972) noted that consensually shared rules are essential for communication itself to occur between two or more interactants, and, furthermore, consensually shared rules in communication enable the interactants to effectively engage in interdependent activities with others. The successful transfer and interpretation of information are contingent on "interpenetration of participants' perspectives in regard to appropriate communication rules" (Cushman & Whiting, 1972, p. 219). The primary concern of this investigation is people's understandings or beliefs about ways in which to communicate properly in terms of politeness and efficiency. One type of shared cognition is what group members know or believe to be appropriate or effective ways to communicate in group work. Having uniform communication rules (relating either to politeness or efficiency) among group members may improve the way they engage in their tasks. On the other hand, to the extent that politeness and efficiency are incompatible, if, within the same group, some members believe in efficiency as a way of communicating, whereas other members believe in politeness, undesirable outcomes are possible.

### Sharing Communication Rules

Sharing rules about communication contributes to the quality of interaction and mutual understanding among group members as long as the rules about communication are based on generally accepted social and cultural communication norms and practices. Specifically, when members agree on rules underlying communication processes in group work, they can understand each other better and work more effectively. They are more apt to exert effort in building shared information or common ground (e.g., mutual knowledge, mutual beliefs, and mutual assumptions) with others to accomplish their conversational goals (Clark & Carlson, 1982; Clark & Marshall, 1981). If group members have similar understandings of how a certain type of information should be communicated and they then communicate with one another according to such understandings, they are more likely to be satisfied with their group processes and more successful in performing their task.

The specific types of communication rules that team members share correspond to Kellermann's (Kellermann & Park, 2001; Kellermann & Shea, 1996) two conversational constraints: *politeness* and *efficiency*. Kellermann's conversational constraint theory posits that politeness and efficiency are primary but separate constraints that

affect tactical choices in pursuing conversational goals (Berger & Kellermann, 1994; Kellermann & Park, 2001; Kellermann & Shea, 1996). By being polite, a person is being "mannerly, courteous, and respectful" (Kellermann & Park, 2001, p. 4). By being efficient, a person is "direct, immediate, and to the point, not wasting time, energy, effort, or steps" (Kellermann & Park, 2001, p. 4).

Efficiency in communication as a fundamental communication rule is reflected in Grice's (1975) four conversational maxims: quantity, quality, manner, and relation. The way to contribute to conversation is to make one's statements sincere or truthful (i.e., quality), clear (i.e., manner), relevant (i.e., relation), and with the right amount of information (i.e., quantity) for the conversational goals. Literal and direct adherence to such maxims presents efficient indications of speakers' meanings (Brown & Levinson, 1987; Kellermann & Kim, 1991). Politeness in communication, as another fundamental communication rule, is foundational in Brown and Levinson's (1987) notion of politeness. Politeness refers to conversing in such a way to address the hearer's desire to be approved of and unimpeded by the speaker's action (Brown & Levinson, 1987). By being polite and indirect in conveying the intended messages, people violate Grice's conversational maxims. In this sense, being polite may also be inefficient.

Expectations for politeness and/or efficiency vary with situations and groups, and violations of such expectations have consequences. For example, a speaker violating Grice's (1975) maxim of relation (e.g., being irrelevant in the course of conversation) is seen as less sincere and more self-focused (Davis & Holtgraves, 1984). Providing less information than expected (i.e., violation of quantity maxim) can be perceived as deceptive (McCornack, Levine, Solowczuk, Torres, & Campbell, 1992). Ambiguity (i.e., violation of the clarity maxim) in individuals' responses can make them appear incompetent (Lane, 1993). Given that a speaker's politeness can influence the hearer's perception of the social distance between the two and the speaker's power (Holtgraves, 1986; Holtgraves & Yang, 1990; Slugoski & Turnbull, 1988), different expectations about polite behavior can contribute to unfortunate perceptions or judgments of each other. In short, not sharing communication rules can have consequences for group interaction.

## **Satisfaction With Group Processes**

Sharing communication rules can be crucial for individuals' satisfaction with group processes. Satisfaction is "a holistic, affective response to the success of behaviors that are selected based on expectations" (Marston & Hecht, 1988, p. 236). Because communication rules, as a type of shared cognition, may enable group members to have smoother and more pleasant interactions with others and make better progress in their work, it is likely that sharing communication rules is positively associated with satisfaction with group processes. Research shows that central

to satisfaction with group processes are a sense of fulfillment about how well group members work together (Hecht, 1978a, 1978b), maintenance of group processes and work (Keyton, 1999), and also members' perceptions concerning participation, message types, feedback, interaction management, status, motivation, and progress toward the group goal (Heslin & Dunphy, 1964; Keyton, 1999; Marston & Hecht, 1988). When group members do not agree about each other's expected communication behavior, it is likely that work coordination, maintenance of group processes, and interaction management are impeded, decreasing satisfaction with how members work together. Thus,

*Hypothesis 1(H1):* Groups with a shared understanding of communication rules are more satisfied with their group process than are groups without a shared understanding.

## **Task Performance**

Sharing communication rules can affect task performance. By having shared cognition, groups are expected to process information more effectively, increase coordination, and have their members be able to develop accurate predictions about teamwork and task work (e.g., Cannon-Bowers et al., 1993). When the frame of reference is explicitly disclosed among group members, team performance improves (Mitchell, 1986). Performance increases when members share their negotiated belief structures (Walsh, Henderson, & Deighton, 1988). When members share their mental models, they perform better in flight-combat simulations (Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000) and in student groups (Peterson, Mitchell, Thompson, & Burr, 2000). Similarly, in a study of students' performances, those whose knowledge structures matched (i.e., were similar to) their teachers' knowledge structures performed better than those whose knowledge structures differed from their teachers' knowledge structures, even when controlling for the amount of knowledge (Goldsmith, Johnson, & Action, 1991). When group members agree about ways in which they can communicate with each other, they minimize chances for misunderstanding and conflict. This suggests that

*Hypothesis 2(H2):* Groups with a shared understanding of communication rules perform their tasks better than do groups without a shared understanding.

## **Politeness and Efficiency in Communication**

Although the purpose of this research is to compare shared *versus* nonshared understanding of communication rules, it is possible that differences exist even within shared cognition groups when members differ in their communication rules. Members of a group with a shared understanding of politeness as a proper way to communicate may or may not have greater satisfaction with their interactions than

those in another group with shared understanding of efficiency as a proper way to communicate. Similarly, differences may or may not affect performance. Thus,

*Research Question 1(RQ1):* Are groups with a shared understanding of politeness communication rules different from groups with a shared understanding of efficiency communication rules in terms of group satisfaction (RQ1a) and group performance (RQ1b)?

## Method

### Overview

The participants received instructions for communicating either politely or efficiently. Groups whose members received the same instructions were considered shared cognition groups, whereas groups whose members received different instructions were considered nonshared cognition groups. After reading the instructions, the participants interacted with their fellow group members while performing a group task (assembling a radio) for 20 minutes. After 20 minutes of interaction, they completed a questionnaire assessing their understanding of the instructed patterns of communication in their group's interactions and another questionnaire relating to their satisfaction with group processes. Independent coders rated each group's task performance by examining the number of steps completed.

### Participants

The participants were 236 undergraduates (64.83% women, age  $M = 20.93$ ,  $SD = 3.30$ ) enrolled in communication courses at a large Midwestern university in the United States. The participants took part in the study in exchange for extra credit in their classes. The majority were Caucasian (65.3%), 11.0% were Asian American, 10.6% were African American, 5.1% were mixed, 3.8% were Hispanic, 0.4% were Native American, 0.8% were Pacific Islander, and 2.9% were Other (i.e., unclassifiable).

### Procedure

Up to six students could sign up for each time slot to allow for no-shows, and four people were to be randomly chosen to participate if more than four did show. In light of a poor turnout rate, however, three-person groups were retained for the analysis. The experiment had 32 three-person and 35 four-person groups. There were 3 all-male, 19 all-female, and 45 mixed-gender groups. Although group size and gender composition were included initially in all the following analyses to assess their potential effects, the analyses revealed no significant effects, and these variables were excluded from subsequent analyses and hypothesis tests.

## Group Task

The participants assembled AM radios using radio kits. This task can be considered as a simulation of the type of work found in manufacturing organizations and has been used successfully in previous studies of transactive memory and its effects on training (e.g., Liang, Moreland, & Argote, 1995). The radio kits were from the Tandy Corporation (Radio Shack Model 28-179). Each kit contained a circuit board and dozens of mechanical and electronic components (e.g., resistors, transistors, capacitors, a speaker, and antennae). The circuit board included prepunched holes with special symbols and pictures indicating where the different components should be mounted. Assembling the radio required participants to insert dozens of components into different positions on the circuit board and then to accurately connect each component to the others. Diagonal pliers and a Phillips-head screwdriver were provided as required in the radio kit instructions. No other special tools for performing this task were required. A completed radio was shown to each group as a prototype, so that members could visualize their final product. Each group had 20 minutes to complete the task. The time limit was established on the basis of a pretest indicating that 25 to 30 minutes was sufficient for task completion. A time limit of 20 minutes served to limit ceiling effects in performance.

## Manipulation of Shared Communication Rules

In the shared communication rules treatment condition, each member of a group received the same instructions concerning how to communicate with other group members. One half of the shared rules groups ( $n = 19$  groups consisting of 10 three-person groups and 9 four-person groups) received a politeness version, and the other half ( $n = 20$  groups consisting of 11 three-person groups and 9 four-person groups) received an efficiency version (see the appendix for the instructions). The politeness version included instructions designed to motivate group members to act politely by communicating indirectly, showing concern to not hurt the feelings of others and to be supportive of others. The efficiency version included instructions designed to motivate group members to act efficiently by communicating directly, wasting neither time nor words and expressing opinions clearly.

In the nonshared condition ( $n = 28$  groups consisting of 11 three-person groups and 17 four-person groups), one or two members of a group received politeness instructions, and the remaining one or two members of the same group received efficiency instructions. That is, with four-person groups, two members received efficiency instructions, and the other two members received politeness instructions. Distribution of efficiency instructions or politeness instructions was by random assignment. In three-person groups, either only one person received politeness instructions or efficiency instructions were randomly assigned. Intentionally, the two types of instructions appeared to be almost identical, so as to create the impression

that participants were receiving similar instructions. Furthermore, on finishing reading their instructions, the participants were to turn them over to indicate their readiness for the next step (the actual intention was to prevent the group members from looking over each other's instructions).

## Manipulation Check

*Pilot study.* Prior to the current study, for the purpose of checking the manipulation and experimental procedure, a pilot study was conducted with 119 undergraduate students (83 women and 36 men; age  $M = 19.53$ ,  $SD = 1.68$ ) enrolled in communication classes at a West Coast university in the United States. The majority of the participants were Caucasian (63%); 15.1% were Asian American, 6.7% were Hispanic, 6.7% were mixed, 4.2% were African American, 0.8% were Native American, 0.8% were Pacific Islander, and 1.7% were Other (i.e., unclassifiable). The pilot study was conducted with the same procedure and the same group task as the main study.

As a behavioral manipulation check, each group was videotaped. Due to a mechanical difficulty, one group's session was not recorded. Three raters independently rated each member's communication patterns in terms of politeness and efficiency. Videotaped recordings of 13 groups (46 individuals in 6 three-person groups and 7 four-person groups) were randomly chosen and used to train the raters. The coders viewed all individuals in the 13 tapes (i.e., all members in each group) while they underwent training. Intercoder reliability coefficients were calculated for the remaining 20 recorded group sessions. The obtained Krippendorff's coefficients of reliability ranged from .63 to .83 across the rating items, with an average of .74.

At the individual level, participants who received politeness instructions communicated more politely ( $M = 5.15$ ,  $SD = 0.79$ ) than efficiently ( $M = 4.81$ ,  $SD = 0.76$ ),  $t(59) = 2.49$ ,  $p < .05$ , ( $O^2 = .08$ ). Likewise, participants who received efficiency instructions communicated more efficiently ( $M = 5.63$ ,  $SD = 0.61$ ) than politely ( $M = 4.34$ ,  $SD = 0.92$ ),  $t(54) = 6.77$ ,  $p < .001$ , ( $O^2 = .45$ ). Correlations between participants' self-reported communicative behaviors and raters' assessments of participants' communicative behaviors were significant both for politeness in communication,  $r(110) = .27$ ,  $p < .01$ , and for efficiency in communication,  $r(110) = .30$ ,  $p < .01$ . The measurement items used in coders' ratings and participants' self-reports were similar to the ones used in the main study as described below.

*Main study.* To determine whether participants in the current study followed the instructions, they completed a questionnaire that assessed their communicative behavior in their respective groups. Specifically, after they completed their task, they indicated on ten 7-point scales (1 = *strongly disagree*, 7 = *strongly agree*) their understandings of the instructed patterns of communication in their group's activities

(e.g., "My group members and I expected each other to communicate politely"; "My group members and I expected each other to say only what we needed to say"; "My group members and I expected each other to be accepting of each other even when we disagree with each other"; etc.). A confirmatory factor analysis, with a two-factor solution (i.e., six items [communicate indirectly, communicate sincerely, communicate politely, be supportive, be accepting of each other, and be careful not to hurt each other's feelings] for a politeness factor and four items [say only necessary things, communicate clearly, express opinions straightforwardly, and communicate efficiently] for an efficiency factor), did not reveal a close fit (NFI [normed fit index] = .80, CFI [comparative fit index] = .82, GFI [goodness-of-fit index] = .81, AGFI [adjusted goodness-of-fit index] = .69). To increase the fit, one item of the politeness factor (be supportive) and one item of the efficiency factor (communicate clearly) were dropped from the model, and another CFA was conducted. The result yielded good and acceptable fit (NFI = .91, CFI = .93, GFI = .92, AGFI = .86). The politeness and efficiency factors correlated negatively,  $r(233) = -.28, p < .001$ . For later analyses, participants' scores for politeness ( $\alpha = .84$ ) and efficiency ( $\alpha = .70$ ) were the averages across the retained items.

At the individual level, participants who received the politeness instructions had higher expectations for communicating politely ( $M = 5.95, SD = 0.83$ ) than efficiently ( $M = 4.44, SD = 1.51$ ),  $t(231) = 9.53, p < .001, \omega^2 = .28$ . Likewise, those who received the efficiency instructions had higher expectations for communicating efficiently ( $M = 5.69, SD = 0.96$ ) than politely ( $M = 4.71, SD = 0.94$ ),  $t(231) = 7.85, p < .001, \omega^2 = .21$ .

For group-level analyses, an ANOVA showed a significant difference among the three groups in their means for politeness in communication,  $F(2, 64) = 22.07, p < .001, \omega^2 = .39$ . Tukey's HSD analysis revealed that groups with politeness instructions had significantly higher expectations concerning politeness in communication ( $M = 6.06, SD = 0.47$ ) than did groups with efficiency instructions ( $M = 4.63, SD = 0.88$ ) and nonshared groups ( $M = 5.00, SD = 0.70$ ), which were not significantly different from each other. Another ANOVA revealed significant differences among the three types of groups for efficiency in communication,  $F(2, 64) = 14.47, p < .001, \omega^2 = .29$ . Tukey's HSD analysis showed that groups with efficiency instructions ( $M = 5.79, SD = 0.63$ ) had significantly higher expectations concerning efficiency in communication than did groups with politeness instructions ( $M = 4.93, SD = 0.51$ ) and nonshared groups ( $M = 4.96, SD = 0.60$ ), which were not significantly different from each other.

## Dependent Measures

The satisfaction measures were adaptations of Keyton's (1991) global satisfaction indices. Items that directly related to politeness and efficiency instructions were dropped (e.g., "Group members take into account the feelings and thoughts of

everyone in the group" and "Group members are able to express themselves freely and clearly"). Furthermore, items unsuited for zero-history groups were dropped (e.g., "Everyone attends each group meeting"). One item ("I am satisfied with the way we do our work") was added to assess research participants' satisfaction with their group interaction. A confirmatory factor analysis was used to test the dimensionality of the satisfaction measures. A one-dimension solution with the 15 items ( $\alpha = .93$ ) yielded an acceptable fit ( $NFI = .94$ ,  $CFI = .95$ ,  $GFI = .82$ ,  $AGFI = .75$ ).

The measure of task performance was the number of correct steps that each group accomplished within its allotted 20 minutes. The total number of steps was 70, categorized as installing specific parts (e.g., mounting the amplifier PCB assembly and mounting the FM loop antenna). A radio completion rating form was developed from the assembly instructions included in the radio assembly kits. Because the total number of steps to be completed was 70, ratings of each group's performance could range from 0 to 70. None of the groups completed their assembly within 20 minutes. The average number of steps completed was 22.01 ( $Mdn = 22$ ,  $SD = 5.22$ ,  $Min = 9$ ,  $Max = 33$ ). Two research assistants, unaware of the hypotheses and experimental conditions, evaluated each group's radio completion. The Krippendorff's coefficient of reliability was .97.

## Results

### Overview

RQ1 was concerned with whether shared cognition condition groups receiving instructions in politeness would differ from shared cognition condition groups receiving instructions in efficiency. Hypotheses 1 and 2 predicted differences between shared cognition and nonshared cognition groups in satisfaction with group processes and performance, respectively. Because the correlation between satisfaction and performance was neither significant nor large,  $r(65) = .22$ ,  $p = .06$ , univariate, rather than multivariate, tests were conducted for each dependent variable. Although group size and gender composition were considered for their potential effects on these two dependent variables, they were found to not be statistically significant.

### Main Analyses

In answering RQ1, a  $t$  test comparing groups with politeness instructions ( $M = 5.59$ ,  $SD = 0.72$ ) and groups with efficiency instructions ( $M = 5.65$ ,  $SD = 0.61$ ) for satisfaction with group processes yielded a nonsignificant and trivial result,  $t(37) = 0.30$ ,  $p = .76$ ,  $\omega^2 = .00$ ,  $95\% CI(r) = -0.28, 0.37$ ,  $95\% CI(M_{diff}) = -0.50, 0.37$ . Another  $t$  test comparing groups with politeness instructions ( $M = 21.16$ ,  $SD = 5.04$ ) and groups with efficiency instructions ( $M = 23.30$ ,  $SD = 6.11$ ) for performance revealed

another nonsignificant result,  $t(37) = 0.20, p = .84, w^2 = .00, 95\% \text{ CI}(r) = -0.29, 0.35, 95\% \text{ CI}(M_{\text{diff}}) = -5.79, 1.50$ . In short, the two types of shared cognition groups—politeness in communication and efficiency in communication—did not significantly differ from each other with regard to task performance or satisfaction.

For HI, the result of a  $t$  test comparing shared cognition groups ( $M = 5.62, SD = 0.66$ ) and nonshared cognition groups ( $M = 4.79, SD = 0.60$ ) for satisfaction with group processes was significant and substantial,  $t(65) = 5.28, p < .001, w^2 = .29, 95\% \text{ CI}(r) = 0.46, 0.63, 95\% \text{ CI}(M_{\text{diff}}) = 0.51, 1.14$ . On the other hand, for H2, the result of a  $t$  test comparing shared cognition groups ( $M = 22.26, SD = 5.64$ ) and nonshared cognition groups ( $M = 21.68, SD = 4.64$ ) for task performance was not statistically significant,  $f(65) = 0.44, p = .66, w^2 = .00, 95\% \text{ CI}(M) = -0.08, 0.17, 95\% \text{ CI}(M_{\text{diff}}) = -2.02, 3.18$ . The data were consistent with HI and inconsistent with H2.

## Multilevel Analysis

Unlike group performance, which was measured at the group level, satisfaction with group processes was measured at the individual level and had an intraclass correlation of .38, indicating a significant amount of group-level variance,  $\chi^2(66) = 210.27, p < .001$ . Thus, to provide a more proper test for HI, hierarchical linear modeling (HLM; Raudenbush & Bryk, 2002) was also conducted to examine group-level and individual-level variations in satisfaction with group processes. Furthermore, the individual scores on politeness in communication and efficiency in communication measures (i.e., individuals' understandings of the instructed patterns of communication in their group activities) and group means of politeness in communication and efficiency in communication, which were previously used for the manipulation checks, were also included in the HLM as independent variables.

The main group-level predictor, induced shared cognition type, was dummy coded (0 = *nonshared cognition groups*, 1 = *shared cognition groups*). The effect of shared cognition type on group mean satisfaction (i.e., group-level variation in group mean satisfaction scores) was significant, with an unstandardized coefficient of 0.75,  $t(65) = 4.69, p < .001$ . Introducing shared cognition type to the model reduced the group-level variation in satisfaction by about 37% (from 0.38 to 0.24). This finding corroborated the Mest results for HI.

Individual politeness and efficiency were included in the model to explain the individual-level variations in satisfaction. Before individuals' expectations about politeness and efficiency in communication entered the model as individual-level predictors in the model, the predictors were group mean centered in order to estimate "the level-1 relationship net of any group-membership effect" (Raudenbush & Bryk, 2002, p. 135). The analysis showed that the effect of individual-level politeness on individual-level variation in satisfaction was significant, with an unstandardized coefficient of 0.24,  $\beta(66) = 5.41, p < .001$ , and the effect of individual-level efficiency

on individual-level variation in satisfaction was also significant, with an unstandardized coefficient of 0.21,  $f(66) = 3.58, p = .001$ . The introduction of politeness and efficiency in communication to the model reduced the individual-level variation in satisfaction by about 25% (from 0.61 to 0.46). Furthermore, for examining whether or not the way politeness and efficiency were related to satisfaction varied across the groups, the analysis showed that the slope for politeness in communication significantly varied across the groups, with a variance of 0.02,  $\%^2(63) = 85.27, p = .03$ , whereas the slope for efficiency in communication did not significantly vary across the groups, with a variance of 0.01,  $\%^2(63) = 70.86, p = .23$ . That is, for the within-group relationship between individual expectations about politeness in communication and individual-level satisfaction with group processes, the groups had different slopes, and the average slope across 67 groups was positive and significantly different from zero. On the other hand, for the within-group relationship between individual expectations about efficiency in communication and individual-level satisfaction, the groups had similar slopes, and the average slope across 67 groups was positive and significantly different from zero.

A cross-level interaction occurs when a group-level predictor explains a significant amount of the variance in the relationship (i.e., the Level 1 slope) between an individual-level predictor and the dependent variable. Because groups differed in the ways individual expectations about politeness communication were related to individual-level satisfaction with group processes, group-level predictors were used for testing a cross-level interaction. As shown in Table 1, the final model included the shared cognition type, the group mean politeness score, and the group mean efficiency score as group-level predictors in order to account for the variance in the Level 1 slope for individual expectations about politeness in communication.

For testing a cross-level interaction shown in the middle part of Table 1, the results revealed that group mean politeness in communication was a significant predictor for the variation in the relationships between individual-level politeness in communication and individual-level satisfaction in group processes. That is, a one unit increase in group mean politeness was associated with a 0.056 increase in the slope of individual-level politeness in communication for individual-level satisfaction in group processes. On the other hand, shared cognition type and group mean efficiency were not significant for the Level 1 slope; the relationships between individual-level politeness in communication and individual-level satisfaction in group processes did not become stronger in shared cognition groups when compared to nonshared cognition groups or in groups with a higher group mean efficiency.

The group-level predictors were also included in the final model for predicting the variation in the Level 1 intercept (i.e., group mean satisfaction adjusted for the Level 1 predictors). The top part of Table 1 shows the results for the three group-level predictors for group mean satisfaction. Shared cognition type was a significant predictor of group mean satisfaction. Controlling for group mean politeness and

**Table 1**  
**Results of the Final Model**

Fixed Effect	Coeff.	SE	<i>t</i> -Ratio	<i>p</i> Value	95 Confidence Interval
<b>Model for group mean</b>					
Intercept, $\gamma_{00}$	4.869	0.122	39.950	< .001	4.63, 5.11
Shared cognition type, $\gamma_{01}$	0.671	0.167	4.012	< .001	0.34, 1.01
Group mean politeness, $\gamma_{02}$	0.110	0.053	2.091	.040	0.01, 0.22
Group mean efficiency, $\gamma_{03}$	0.083	0.075	1.119	.268	-0.07, 0.23
<b>Model for politeness—satisfaction slope</b>					
Intercept, $\gamma_{10}$	0.278	0.057	4.909	< .001	0.17, 0.39
Shared cognition type, $\gamma_{11}$	-0.060	0.091	-0.640	.524	-0.24, 0.12
Group mean politeness, $\gamma_{12}$	0.056	0.023	2.407	.019	0.01, 0.10
Group mean efficiency, $\gamma_{13}$	0.059	0.035	1.700	.094	-0.01, 0.13
<b>Model for efficiency—satisfaction slope</b>					
Intercept, $\gamma_{20}$	0.208	0.058	3.564	.001	0.09, 0.32
<b>Random Effect</b>					
	Variance Component	<i>df</i>	$\chi^2$	<i>p</i> Value	
Group mean, $u_{0j}$	0.263	62	182.972	< .001	
Politeness—satisfaction slope, $u_{1j}$	0.003	62	59.186	> .500	
Level 1 effect, $r_{ij}$	0.480				

Note: Equations illustrating the model are as follows:

$$SAT_{ij} = p_{0j} + p_{1j}(\text{politeness}_{ij})^3 + P_{ij}(\text{efficiency}_{ij})^a + r_{ij},$$

$$P_{0j} = \gamma_{00} + \gamma_{01}(\text{shared cognition type}_{ij}) + \gamma_{02}(\text{group mean politeness}_{ij})^{1m} + \gamma_{03}(\text{group mean efficiency}_{ij})^{1m} + u_{0j},$$

$$P_{1j} = \gamma_{10} + \gamma_{11}(\text{shared cognition type}_{ij}) + \gamma_{12}(\text{group mean politeness}_{ij})^{1m} + \gamma_{13}(\text{group mean efficiency}_{ij})^{1m} + u_{1j},$$

SAT<sub>ij</sub> is satisfaction with group processes for individual *i* (*i* = 1, 2, . . . , *rc*) in group *j* (*j* = 1, 2, . . . , /).

a. Group-mean centered.

b. Grand-mean centered.

c. This slope was treated as fixed because the variance in the slope for efficiency was not significant.

$r_{ij}$  is a random error.

$y^a$  is the average of Level 1 intercepts (i.e., group mean satisfaction) across the groups.

$u_{0j}$  is the unique increment to the intercept associated with group *j*.

$y_{10}$  is the average of politeness—satisfaction regression Level 1 slopes across the groups.

$u_{1j}$  is the unique increment to the slope associated with group *j*.

$y_{20}$  is the average of efficiency—satisfaction regression Level 1 slopes across the groups.

group mean efficiency, a one unit increase in shared cognition type (i.e., nonshared cognition group vs. shared cognition group) was associated with a 0.671 increase in group mean satisfaction with group processes. In addition, group mean politeness in communication was a significant predictor of group mean satisfaction. The higher the group mean politeness, the greater satisfaction with group processes. On the other hand, group mean efficiency in communication was not significant.

## Discussion

Characterized simply, shared cognition is similarity among group members' understandings and knowledge structures. As Cushman and Whiting (1972) discussed, consensually shared communication rules provide the interactants with "order and regularity in the communication process" (p. 228), which become the basis for interactants to make sense out of particular transactions with one another. If group members have similar expectations concerning the appropriate way of communicating with one another and have the same understanding of how to communicate in their groups, shared cognition exists in the group. The current study used politeness in communication and efficiency in communication as alternative group rules to create two types of shared cognition conditions (one in which all the group members were expected to communicate politely and another in which all the group members were expected to communicate efficiently) and one type of nonshared cognition condition.

The present study revealed that groups with a shared understanding of communication rules were more satisfied with their group processes than were groups without such a shared understanding. Group-level analyses also demonstrated that the two types of the same shared cognition condition groups (i.e., groups who expected to communicate politely and groups who expected to communicate efficiently) did not differ regarding satisfaction and performance. In addition, regardless of the type of communication rules, the condition of members sharing the same expectation was consequential for increasing satisfaction, compared to the condition of members not sharing the same expectation. The multilevel modeling results, however, revealed more detailed information about the roles of politeness and efficiency in satisfaction with group processes. Within each group, individuals' expectations concerning politeness in communication and efficiency in communication both positively contributed to their satisfaction with group processes. More interestingly, the positive relationship between polite communication and satisfaction became stronger when the group mean score on polite communication was higher. In the current study, the group mean score on polite communication was more likely to be higher when a greater number of group members had politeness instructions. Thus, this finding indicates that the individual-level relationship between polite communication and satisfaction with group processes, which was estimated after removing any group membership effect, was likely to be affected by the extent to which members shared their expectations (i.e., the degree of similarity) concerning polite communication during group activity.

On the other hand, the individual-level relationship between efficient communication and satisfaction was more likely to be uniform across various groups, regardless of group characteristics (e.g., group mean score on efficient communication). These findings may indicate that being surrounded by members with the same expectations concerning efficient communication is a sufficient condition for a

understanding with diagnostic and predictive tasks may differentially influence their diagnostic judgments, which would indicate that different domains of shared cognition have different implications for different types of tasks (Ho & Keller, 1994).

Another reason for the lack of relationship between shared cognition and performance level is the possibility of social loafing, as in group members' motivational loss and reduced efforts toward a collective task (Harkins & Szymanski, 1987). Being in shared or nonshared cognition groups may not have affected individuals' motivation to do well in performing the task. It is possible that most participants in the experiment simply lacked interest in the task. Previous research has identified group cohesiveness (Karau & Hart, 1998), high instrumentality, identifiable individual performance on group performance (Shepperd & Taylor, 1999; Williams, Harkins, & Latane, 1981), and out-group comparison standards (Harkins & Szymanski, 1988) as some of those factors that reduce social loafing. The current study might not have the qualities that could decrease social loafing.

## Limitations and Future Research Suggestions

One issue in the current research is that politeness and efficiency instructions served as a means of creating shared and nonshared cognition groups. Given the assumption that politeness and efficiency are incompatible, nonshared cognition groups consisted of members who had received different instructions concerning how to communicate. However, according to conversational constraint theory, politeness and efficiency can be compatible (Kellermann & Kim, 1991). In other words, in some situations, polite responses can be also efficient ones for achieving conversational goals. Especially with zero-history groups, as long as people do not want to be rude to each other and people do not react favorably to those who are rude, polite behavior can be efficient in "breaking the ice" and promoting cooperation. Another possibility is that in the work setting used in this research, group members might have enacted *both* polite and efficient communicative behaviors. In other words, for the 20 minutes of interaction, it is possible that group members alternated between polite and efficient communication behaviors. If members of groups with politeness instructions also communicated efficiently and members of groups with efficiency instructions communicated politely, the distinction between shared cognition and nonshared cognition becomes ambiguous.

The possibility also exists that satisfaction with group processes leads to shared cognition. Because the current study manipulated shared and nonshared cognition, only the effect of shared cognition on satisfaction with group processes could be examined, and not the reverse. However, a reciprocal relationship seems to be possible. Previous research has indicated that subordinates satisfied with their supervisors are more likely to have greater perceptual congruence, in addition to perceptual congruence, leading to satisfaction (Hatfield & Huseman, 1982; White, Crino, &

Hatfield, 1985). It is possible that the more satisfied individuals are in interacting with group members, the more such individuals are likely to share more knowledge and beliefs. In summary, shared cognition and satisfaction may have a structural relationship of production and reproduction of each other (Poole, Seibold, & McPhee, 1996).

Finally, a common criticism of group communication research is its extensive use of zero-history groups in laboratory settings (e.g., Prey, 1994). The current study may be subject to such criticism. The study involved undergraduate students, most of whom were strangers to each other and who interacted for only 20 minutes in a laboratory regarding a task with which they had no experience. It is possible that the current findings may or may not generalize to natural groups outside of a laboratory setting. More research should be conducted to examine the role of shared cognition in natural groups over time.

## Conclusion

Cognition concerning communication rules can influence outcomes such as satisfaction with group processes. As shown in the current study, group communication research may benefit from incorporating theories and models relating to politeness and efficiency in language use and applying them to the work group context. By focusing on communication rules as the content of shared cognition, the current study empirically examined the direct effects of shared cognition rather than merely describing or rationalizing post hoc the roles of communication and shared cognition in group processes. The relationship between cognition and communication in groups and teams deserves greater attention and awaits more commitment from group communication researchers.

## Appendix

### Manipulation of Shared Communication Rules

#### Polite Communication Instructions

This research investigates different ways groups work on their tasks. We are interested in various communication patterns as group members act politely to each other. We want you and your group members to communicate as politely as possible toward each other while working together on a group task. In other words, in this group, your group members expect you to be polite to them as you expect your group members to be polite to you. As you know, there are many different ways to be

*(continued)*

## Appendix (continued)

polite. To help you and your group members, we suggest a few ways below to be courteous to each other. Please remember, as you work on this task together with your group members, it is very important that you and your group members act courteously toward each other.

1. As you perhaps are aware, one way of being polite is to converse indirectly. That is, when you want something, politely ask others if they can do X or if they are willing to do X, rather than making the request directly. For example, if you wish another person to give you a transistor, you may want to say "Can (or, Will) you give me the transistor?" rather than "Give me the transistor." Indirectness will help you be polite.
2. Another way to communicate politely, as you may know, is to be considerate and to be accepting, even if you disagree with other people. If you see another member make a mistake, be gentle and do not hurt his or her feelings. You might say something like "I'm not sure, but maybe that's not the best way to do it," or "Is it possible that this wasn't the best way?" rather than, "You did it wrong." As a way of being supportive of the other person, you may also prefer to say things like, "Yes, you have a point," or, "I hear you; that makes sense." Gentleness and supportiveness will help you be polite.
3. It is often suggested that being polite means communicating that you don't want to interfere with the other person. For example, you may want to say something like "I don't want to bother you, but I am wondering if you could give me a hand?" or, "I know you're busy, but could you take a look at this?" Showing that you don't want to bother others can help you be polite.
4. Being polite can also mean communicating in such a way that others have a positive impression of you as a polite person. Creating harmonious relationships with others by being polite is very important. Try to make nice comments about others' contributions and compliment them. As you know, politeness sometimes means being attentive to your group members' needs and feelings. Efforts to create a positive image of you can help you be polite.

In summary, being polite in your interaction with your group members is very important. Please try to communicate as courteously as you can while working cooperatively with your group members.

While working on your group task cooperatively and politely, please act as natural as possible and as if you are working in a real group. Please do not talk about this instruction while working on your group task. You may notice that some of your group members are not as polite as you expect them to be. In that case, if you would like, it is okay for you to note these people's lack of politeness, but do not remind them about this instruction. For example, please do not say, "Our instructions are to be polite." Rather, you may want to encourage others to be polite by saying, for example, "Wouldn't it be nicer if we work more politely with each other?" Please remember not to talk about these instructions while working with your group members.

## Efficient Communication Instructions

This research investigates different ways groups work on their tasks. We are interested in various communication patterns as group members act efficiently with each other. We want you and your group members to communicate as efficiently as possible toward each other while working together on a group task. In other words, in this group, your group members expect you to communicate efficiently to them as you expect your group members to communicate efficiently to you. As you know, there are many different ways not to waste words. To help you and your group members, we suggest several ways to be expedient. Please remember that, as you work on this task together with your group members, it is very important that you and your group members communicate straightforwardly and directly toward each other.

1. As you probably are aware, one way of being efficient is to converse directly and quickly. Getting to the point may help you to communicate more efficiently. If you want something, ask for it directly to save time, rather than asking others if they can or if they are willing. For example, if you want others to give you a transistor, it may be better to say "Pass me the transistor," rather than "Can you please hand me the transistor?" If you see that one of your group members made a mistake, bring it to his or her attention immediately and directly. You might say something like "You did it wrong," rather than "I think you did it wrong" or "Is it possible that you did something wrong?" Talking directly and offering your opinions concisely can help you communicate efficiently.
2. It is often suggested that being efficient is to communicate what you want to say explicitly by saying only what you need to say. For example, you may want to say "Help me," rather than "I don't want to bother you, but could you give me a hand?" Or, you may say "Look at this," rather than something like "I know you're busy, but could you take a look at this?" You could say "do it this way," rather than "I hope it is ok with you that we do it this way." As you know, being efficient means staying on topic and not being overly chatty.
3. By being efficient, people often try to express their opinions clearly and right away, even if they disagree with other people. So, we want you to be straightforward. For example, you may want to say, "That's wrong." Please try not to waste words and time by saying things like "Yes, you made a good point, but I kinda think that it is possible that. . . ."
4. In order to be efficient, you may want to be very concerned with how clearly you should express your ideas so that you can avoid misunderstanding. Please try to communicate in such a way that your group members see you as an efficient person.

In summary, being efficient in the way you communicate with your group members is very important. Please try not to waste words. Communicate directly, quickly, and concisely as best as you can while working cooperatively with your group members.

While working on your group task cooperatively and efficiently, please act as natural as possible and as if you are working in a real group. Please do not talk about

*(continued)*

## Appendix (continued)

this instruction while working on your group task. You may notice that some of your group members do not communicate as efficiently as you expect them to. In that case, if you would like, it is okay for you to note these people's lack of efficiency, but do not remind them about this instruction. For example, please do not say, "Our instructions are to be efficient." Rather, you may want to encourage others to communicate more efficiently by saying, for example, "Can you be clearer?" or "Just tell me what you mean." Please remember not to talk about these instructions while working with your group members.

### Note

1. Group-mean centering was chosen over grand-mean centering because group-mean centering separates out within-group and between-group effects of individual-level predictors and allows an accurate testing of cross-level interaction without confounding it with group-level interaction (Hofmann & Gavin, 1998; Raudenbush, 1989a, 1989b; Raudenbush & Bryk, 2002).

### References

- Berger, C. R., & Kellermann, K. (1994). Acquiring social information. In J. A. Daly & J. M. Wieman (Eds.), *Strategic interpersonal communication* (pp. 1-32). Hillsdale, NJ: Lawrence Erlbaum.
- Brown, P., & Levinson, S. C. (1987). *Politeness: Some universals in language usage*. Cambridge, UK: Cambridge University Press.
- Cannon-Bowers, J. A., Salas, E., & Converse, S. (1993). Shared mental models in expert team decision making. In N. J. Castellan, Jr. (Ed.), *Individual and group decision making: Current issues* (pp. 221-246). Hillsdale, NJ: Lawrence Erlbaum.
- Clark, H. H., & Carlson, T. (1982). Hearers and speech acts. *Language*, 58, 332-373.
- Clark, H. H., & Marshall, C. R. (1981). Definite reference and mutual knowledge. In A. K. Joshi, B. L. Webber, & I. A. Sag (Eds.), *Elements of discourse understanding* (pp. 10-63). Cambridge, UK: Cambridge University Press.
- Cushman, D., & Whiting, G. C. (1972). An approach to communication theory: Toward consensus on rules. *Journal of Communication*, 22, 217-238.
- Davis, D., & Holtgraves, T. (1984). Perceptions of unresponsive others: Attributions, attraction, understandability, and memory of their utterances. *Journal of Experimental Social Psychology*, 20, 383-408.
- El-Shinnawy, M. (1998). Polarization and persuasive argumentation: A study of decision making in group settings. *MIS Quarterly*, 22, 165-198.
- Frey, L. R. (Ed.). (1994). *Group communication in context: Studies of natural groups*. Hillsdale, NJ: Lawrence Erlbaum.
- Goldsmith, T. E., Johnson, P. J., & Action, W. H. (1991). Assessing structural knowledge. *Journal of Educational Psychology*, 83, 88-96.
- Grice, H. P. (1975). Logic and conversation. In P. Cole & J. Morgan (Eds.), *Syntax and semantics 3: Speech acts* (pp. 41-58). New York: Academic Press.
- Harkins, S. G., & Szymanski, K. (1987). Social loafing and social facilitation: New wine in old bottles. In C. Hendrick (Ed.), *Review of personality and social psychology: Vol. 9. Group processes and intergroup relations* (pp. 167-188). Newbury Park, CA: Sage.

- Harkins, S. G., & Szymanski, K. (1988). Social loafing and self-evaluation with an objective standard. *Journal of Experimental Social Psychology, 24*, 354-365.
- Hatfield, J. D., & Huseman, R. C. (1982). Perceptual congruence about communication as related to satisfaction: Moderating effects of individual characteristics. *Academy of Management Journal, 25*, 349-358.
- Hecht, M. (1978a). Measures of communication satisfaction. *Human Communication Research, 4*, 350-368.
- Hecht, M. L. (1978b). Toward a conceptualization of communication satisfaction. *Quarterly Journal of Speech, 64*, 47-62.
- Heslin, R., & Dunphy, D. (1964). Three dimensions of member satisfaction in small groups. *Human Relations, 17*, 99-112.
- Ho, J. L., & Keller, L. R. (1994). The effects of inference order and experience-related knowledge on diagnostic conjunction probabilities. *Organizational Behavior and Human Decision Processes, 62*, 129-158.
- Hofmann, D. A., & Gavin, M. B. (1998). Centering decisions in hierarchical linear models: Implications for research in organizations. *Journal of Management, 24*, 623-641.
- Hollingshead, A. B. (1998a). Communication, learning, and retrieval in transactive memory systems. *Journal of Experimental Social Psychology, 34*, 423-442.
- Hollingshead, A. B. (1998b). Group and individual training: The impact of practice on performance. *Small Group Research, 29*, 254-280.
- Holtgraves, T. (1986). Language structure in social interaction: Perceptions of direct and indirect speech acts and interactants who use them. *Journal of Personality and Social Psychology, 51*, 305-314.
- Holtgraves, T., & Yang, J. N. (1990). Politeness as universal: Cross-cultural perceptions of request strategies and inferences based on their use. *Journal of Personality and Social Psychology, 59*, 719-729.
- Kaplan, M. E., & Miller, C. E. (1987). Group decision making and normative versus informational influence: Effects of type of issue and assigned decision rule. *Journal of Personality and Social Psychology, 53*, 306-313.
- Karau, S. J., & Hart, J. W. (1998). Group cohesiveness and social loafing: Effects of a social interaction manipulation on individual motivation within groups. *Group Dynamics: Theory, Research, and Practice, 2*, 185-191.
- Kellermann, K., & Kim, M.-S. (1991, May). *Working within constraints: Tactical choice in the pursuit of social goals*. Paper presented at the annual meeting of the International Communication Association, Miami, FL.
- Kellermann, K., & Park, H. S. (2001). Situational urgency and conversational retreat: When politeness and efficiency matter. *Communication Research, 28*, 3-47.
- Kellermann, K., & Shea, B. C. (1996). Threats, suggestions, hints, and promises: Gaining compliance efficiently and politely. *Communication Quarterly, 44*, 145-165.
- Keyton, I. (1991). Evaluating individual group member satisfaction as a situational variable. *Small Group Research, 22*, 200-219.
- Keyton, J. (1999). Relational communication in groups. In L. R. Frey, D. S. Gouran, & M. S. Poole (Eds.), *The handbook of group communication theory and research* (pp. 192-224). Thousand Oaks, CA: Sage.
- Klimoski, R., & Mohammed, S. (1994). Team mental model: Construct or metaphor? *Journal of Management, 20*, 403-437.
- Lane, C. L. (1993). Yes, I don't understand: Yes, no and European-Polynesian miscommunication in New Zealand. *Journal of Pragmatics, 20*, 163-188.
- Langfield-Smith, K. (1992). Exploring the need for a shared cognitive map. *Journal of Management Studies, 29*, 349-368.
- Liang, D. W., Moreland, R. L., & Argote, L. (1995). Group versus individual training and group performance: The mediating role of transactive memory. *Personality and Social Psychology Bulletin, 21*, 384-393.
- Marston, P. J., & Hecht, M. L. (1988). Group satisfaction. In R. S. Cathcart & L. A. Samovar (Eds.), *Small group communication: A reader* (5th ed., pp. 236-246). Dubuque, IA: William C. Brown.

- Mathieu, J. E., Heffner, T. S., Goodwin, G. R., Salas, E., & Cannon-Bowers, J. A. (2000). The influence of shared mental models on team process and performance. *Journal of Applied Psychology, 85*, 273-283.
- McCornack, S. A., Levine, T. R., Solowczuk, K. A., Torres, H. I., & Campbell, D. M. (1992). When the alteration of information is viewed as deception: An empirical test of information manipulation theory. *Communication Monographs, 59*, 17-29.
- McGrath, J. E. (1984). *Groups: Interaction and performance*. Englewood Cliffs, NJ: Prentice Hall.
- Mitchell, R. (1986). Team building by disclosure of internal frames of reference. *Journal of Applied Behavioral Science, 22*, 15-28.
- Mohammed, S., Klimoski, R., & Rentsch, J. R. (2000). The measurement of team mental models: We have no shared schema. *Organizational Research Methods, 3*, 123-165.
- Peterson, E., Mitchell, T., Thompson, L., & Burr, R. (2000). Collectivistic efficacy and aspects of shared mental models as predictors of performance over time in work groups. *Group Processes & Intergroup Relations, 3*, 296-316.
- Poole, M. S., Seibold, D. R., & McPhee, R. D. (1996). The structuration of group decisions. In R. Y. Hirokawa & M. S. Poole (Eds.), *Communication and group decision-making* (2nd ed., pp. 114-146). Thousand Oaks, CA: Sage.
- Raudenbush, S. W. (1989a). "Centering" predictors in multilevel analysis: Choices and consequences. *Multilevel Modeling Newsletter, 1*(2), 10-12.
- Raudenbush, S. W. (1989b). A response to Longford and Plewis. *Multilevel Modelling Newsletter, 1*(3), 8-11.
- Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods* (2nd ed.). Thousand Oaks, CA: Sage.
- Rentsch, J. R., & Hall, R. J. (1994). Members of great teams think alike: A model of team effectiveness and schema similarity among team members. In M. M. Beyerlin & D. A. Johnson (Eds.), *Advances in interdisciplinary studies of work teams: Vol. 1. Theories of self-managing work teams* (pp. 223-262). Greenwich, CT: JAI.
- Shepperd, J. A., & Taylor, K. M. (1999). Social loafing and expectancy-value theory. *Personality and Social Psychology Bulletin, 25*, 1147-1158.
- Slugoski, B. R., & Turnbull, W. (1988). Cruel to be kind and kind to be cruel: Sarcasm, banter, and social Nations. *Journal of Language and Social Psychology, 7*, 101-121.
- Stewart, G. L., & Barrick, M. R. (2000). Team structure and performance: Assessing the mediating role of intrateam process and the moderating role of task type. *Academy of Management Journal, 43*, 135-148.
- Strauss, S. (1999). Testing a typology of tasks: An empirical validation of McGrath's (1984) group task circumplex. *Small Group Research, 30*, 166-187.
- Walsh, J. P., Henderson, C. M., & Deighton, J. (1988). Negotiated belief structures and decision performance: An empirical investigation. *Organizational Behavior and Human Decision Processes, 42*, 194-216.
- White, M. C., Crino, M. D., & Hatfield, J. D. (1985). An empirical examination of the parsimony of perceptual congruence scores. *Academy of Management Journal, 28*, 732-737.
- Williams, K., Harkins, S. G., & Latane, B. (1981). Identifiability as a deterrent to social loafing: Two cheering experiments. *Journal of Personality and Social Psychology, 40*, 303-311.

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