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ABSTRACT

Asking questions is a salient event in group learning environments such as classrooms. Laboratory experimental results indicate that co-learner questions can affect judgments of comprehension. A study involving 94 male and 209 female students at a large midwestern university examined whether students would be aware of such alterations in comprehension judgments in classroom settings. Results indicated that students' awareness of having monitored their comprehension was higher when co-learners asked questions, and in a classroom where teachers discouraged questioning. Students indicated lower levels of understanding when an inquiring co-learner rarely asked a question, and in a class where questions were discouraged more than encouraged. Contrary to prediction and prior evidence, there was no indication that whether co-learners did or did not ask questions influenced students' judgments of comprehension adequacy. Students indicated that they were more likely to ask a question when other students asked, when a questioner had rarely done so in the past, and when teachers encouraged questioning. (Six figures of data are included.) (Author/RS)

Co-learner Questions Affect Comprehension Monitoring and Questioning Intentions

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Abstract

Asking questions is a salient event in group learning environments such as classrooms. Laboratory experimental results indicate that co-learner questions can affect judgments of comprehension. The present study examined whether students would be aware of such alternations in comprehension judgments in classroom settings. Students (N = 303) indicated effects on their: a) awareness of having monitored, b) comprehension, and c) likelihood of asking questions themselves, under eight classroom conditions. Results suggest that students' awareness of having monitored their comprehension was higher when co-learners asked questions, and in a classroom where teachers discouraged questioning. Students indicated lower levels of understanding when an inquiring co-learner rarely asked a question, and in a class where questions were discouraged more than encouraged. Contrary to prediction and prior evidence (Karabenick, 1993), however, there was no indication that whether co-learners did or did not ask questions influenced students' judgments of comprehension adequacy. Students indicated they were more likely to ask a question when other students asked, when a questioner had rarely done so in the past, and when teachers encouraged questioning.

Co-learner Questions Affect Comprehension Monitoring and Questioning Intentions

Comprehension monitoring —the metacognitive judgment of whether one understands material— is critical since it regulates the use of learning strategies (e.g., Markman, 1985; Weinstein & Mayer, 1985). Confusion signifies to the learner that task mastery would be facilitated by the initiation or the continued use of such cognitive strategies as rehearsal, organization, and elaboration. Most research on monitoring has focused on text-based (reading) tasks that typically occur in private. Yet considerable learning takes place in public settings, creating the potential for social influence (Brown & Palincsar, 1988). Social comparison processes (Festinger, 1954; Goethals & Darley, 1987) and studies of group conformity (Asch, 1955) suggest that cues signifying another learner's monitoring status could have an impact on self-judgments of comprehension. One salient social event is that of asking questions. Recently, Karabenick (1993) demonstrated such effects in a laboratory setting. Compared to a non-social control condition, those viewing a speech reported greater confusion when another participant asked several questions, and less confusion when no questions were asked.

The present study tested whether social influences on monitoring found in the laboratory would generalize to the ubiquitous group instructional context of the classroom. In addition to whether other students (i.e., co-learners) asked questions, a co-learner's prior questioning history, and the degree of teacher support for classroom questioning were experimentally manipulated. Students' awareness of their own monitoring activities, monitoring judgments (level of understanding), and intentions to ask questions were assessed.

Based on prior findings, and on attribution and correspondent inference principles (e.g., Jones & Davis 1965; Kelley, 1967), it was hypothesized that students would be more aware of having monitored their comprehension and would judge themselves more confused: a) when co-learners asked questions than when they did not, b) when inquiring co-learners had a history of infrequent questioning, and c) when instructors discouraged classroom questioning. Stronger intentions to ask questions were expected when: a) co-learners asked questions, b) co-learners had a history of infrequent questioning, and c) instructors encouraged questions.

Method

Data were obtained from 94 male and 209 female students at a large midwestern university. All participants responded to two sets of four hypothetical scenarios (each consisting of a 2 X 2 factorial design) that described questioning under different conditions while a teacher was presenting material to a class. One set crossed teacher support with whether a questioner had a prior history of having almost never vs. very frequently asked questions. An example of one of the four conditions is: "You are in a class in which the teacher encourages questions and you and other students feel very comfortable about asking them. Suppose that you are listening carefully to the material the teacher is presenting when a student who almost never asks questions raises his/her hand to ask a question. How would the fact that this student had a question to ask affect you?"

The other set crossed teacher support of questioning (discouraged vs. encouraged) with whether co-learners asked questions (none vs. several students). An example of one of the four conditions is "You are in a class in which the teacher discourages questions and you and other students feel very uncomfortable about asking them. Suppose that you are listening carefully to the material the teacher is presenting when several students raise their hands to ask a question. How would the fact that these students had a question to ask affect you?"

Students responded to each scenario on three 7-point bipolar scales (-3 to +3), indicating whether the conditions described would make them: a) think less vs. think more about whether they understood the material, b) less vs. more certain they understood the material, and c) less vs. more likely to ask a question.

Results

Effects of whether co-learners ask questions

Analyses of variance (all F-ratios had 1 and 302 *df* and all significant effects were at $p < .0001$) indicated that, compared to when none were asked, the presence of co-learner questions led to greater awareness of monitoring ($F = 185.3$) and of questioning likelihood ($F = 200.1$). Interactions revealed that these effects on monitoring awareness ($F = 21.3$) and questioning likelihood ($F = 61.7$) were greater when teachers discouraged than when they encouraged questions. Contrary to prediction, students indicated that the presence or absence of co-learner questions would have no effect on judgments of comprehension.

Effects of co-learners' prior history of questioning

Means for each of the dependent measures for the set of scenarios that factorially combined the co-learner's prior questioning history and level of teacher encouragement of questioning are presented in Figures 4 through 6. Students indicated that a question from a co-learner who rarely asked previously, compared to one who did so frequently, would make them less certain that they understood the material ($F = 20.0$) and would increase the likelihood they would ask questions ($F = 35.4$), but not their awareness of having monitored ($F < 1$).

Main effects of level of teacher encouragement

When teachers discouraged, rather than encouraged questions, they were more aware of having monitored (only in the present/absent scenario set —$F = 15.4$), less certain they understood the material ($F = 105.2$ and $F = 48.6$ for present/absent and prior history scenario sets, respectively) and lower likelihood of asking questions ($F = 62.9$ and $F = 39.2$ for present/absent and prior history scenario sets, respectively).

Conclusions

Results suggest that students' awareness of having monitored their comprehension would be higher when co-learners ask questions, and in a classroom where teachers discourage questioning, but that awareness would not depend on a co-learner's prior questioning history. Furthermore, students would be less certain they understood material when a co-learner who rarely asked did so, and in a class where questions were discouraged. Contrary to prediction and prior evidence (Karabenick, 1993), however, there was no indication that whether co-learners did or did not ask questions would affect comprehension judgments.

This study provides further evidence that comprehension monitoring processes (awareness and/or judged levels of understanding) are influenced by the presence of others' questions and the context (prior history and teacher encouragement) in which they are asked. Further studies of social influences on monitoring in particular, and metacognition in general, are warranted. It would be important, for example, to examine individual differences in susceptibility to social influence. As suggested by other studies (e.g., on conformity), students who are less competent and therefore less confident about their level of comprehension might be particularly influenceable, especially on more complex tasks and in early phases of learning when ambiguity is high.

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Think About Whether Material Is Understood

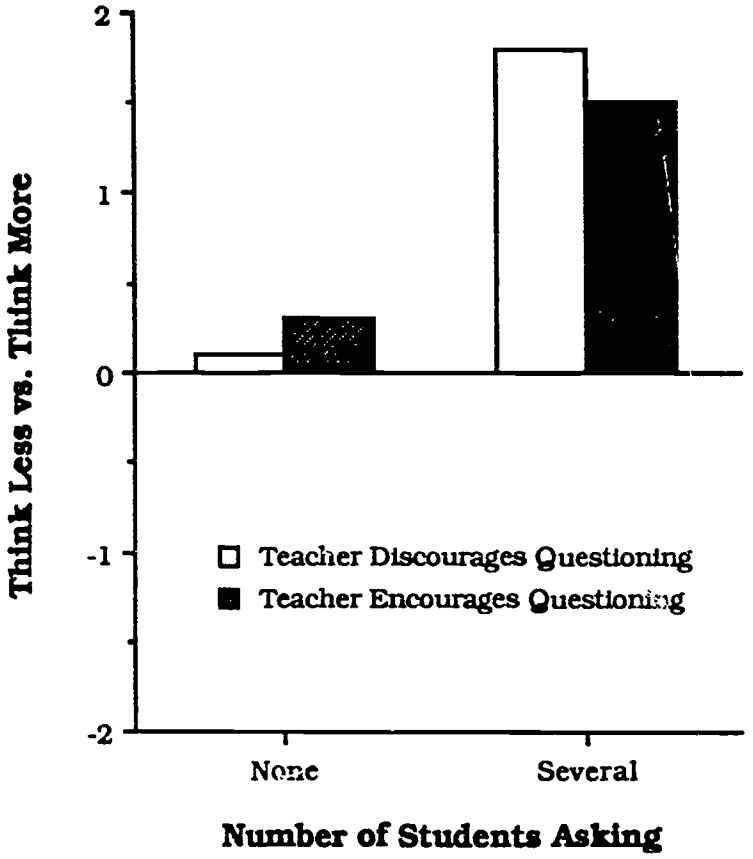

Figure 1

Certainty of Understanding the Material

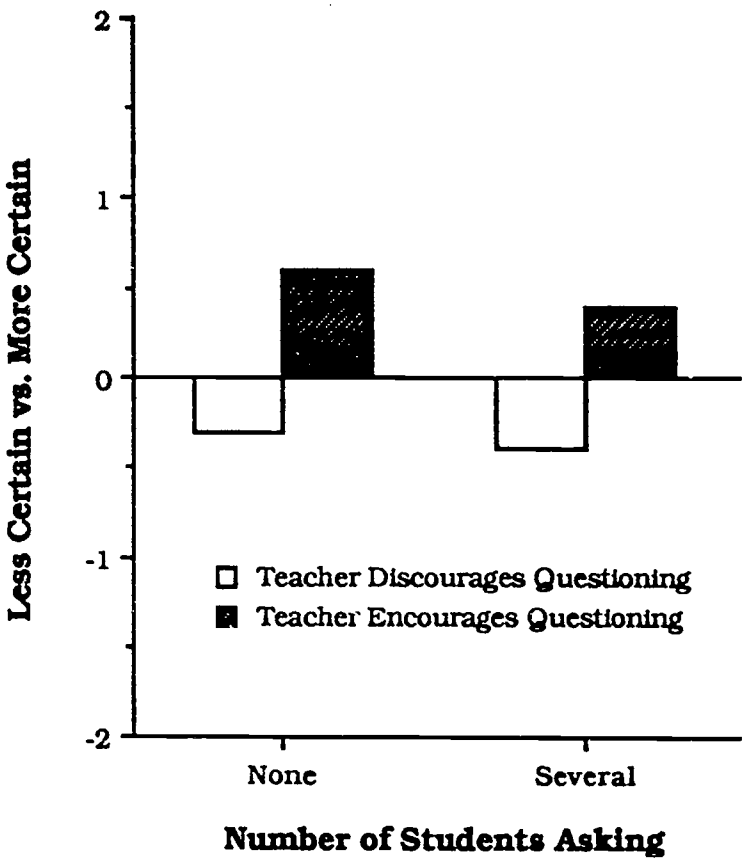

Figure 2

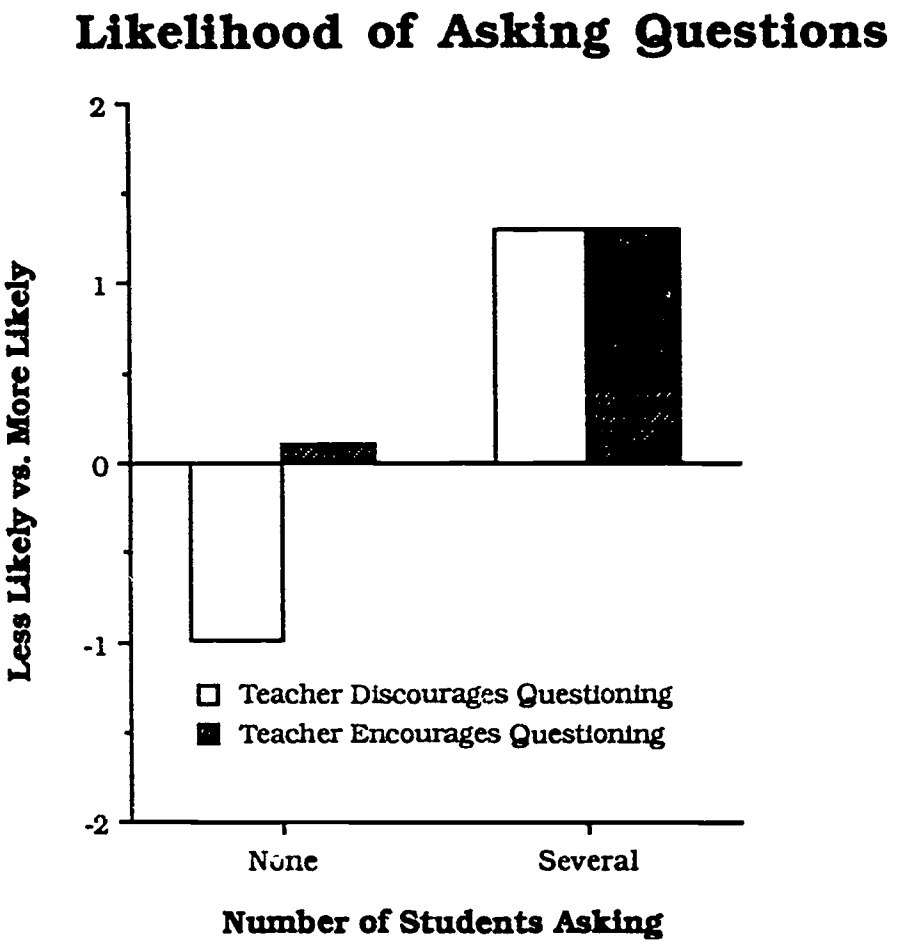
Likelihood of Asking Questions
2
1
0
-1
-2
Less Likely vs. More Likely
Teacher Discourages Questioning
Teacher Encourages Questioning
None
Several
Number of Students Asking

Figure 3

Think About Whether Material is Understood

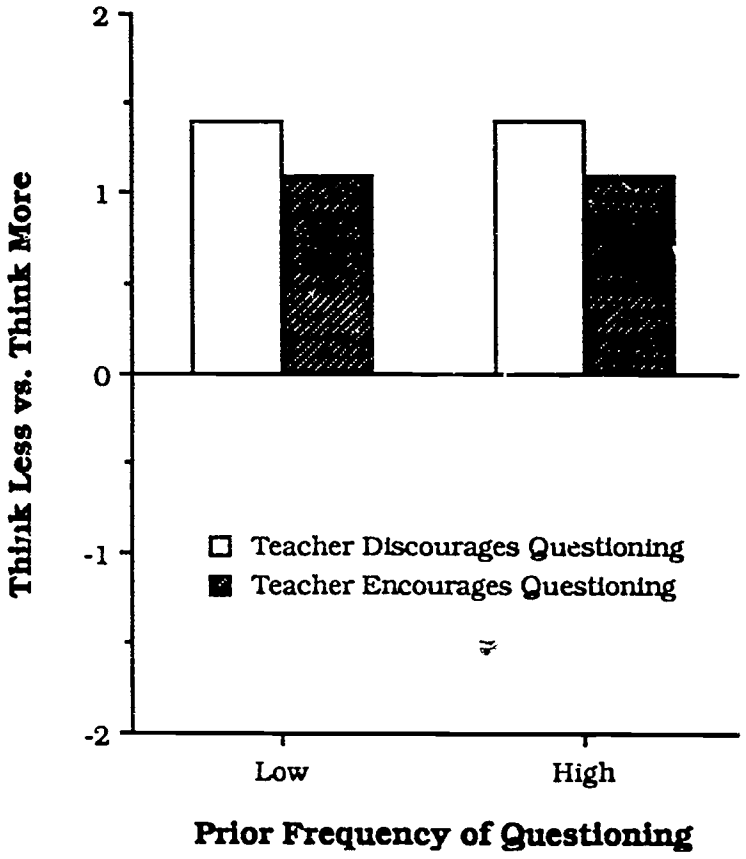

Figure 4

Certainty of Understanding the Material

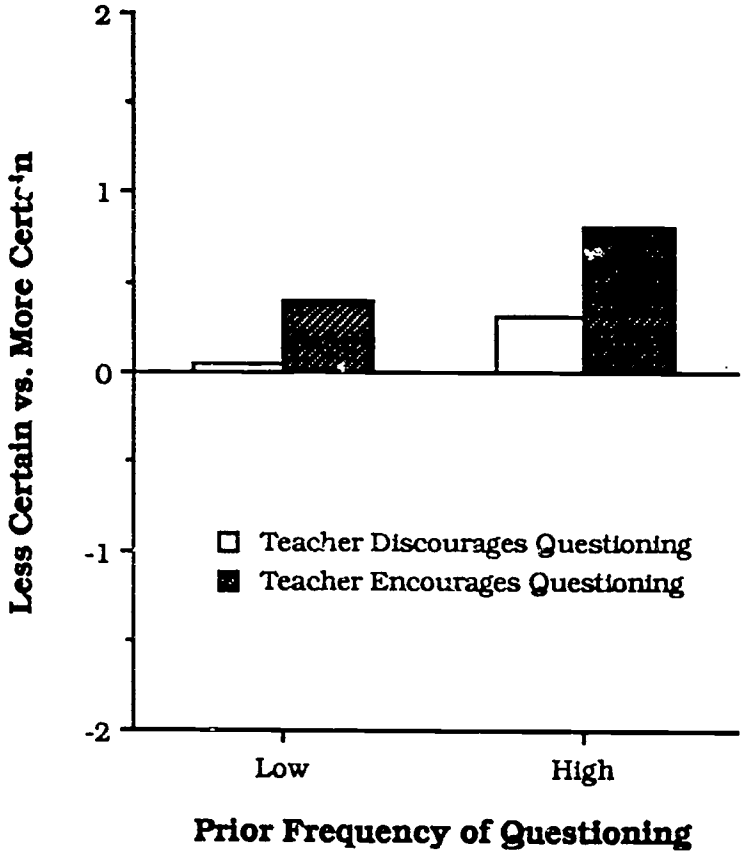

Figure 5

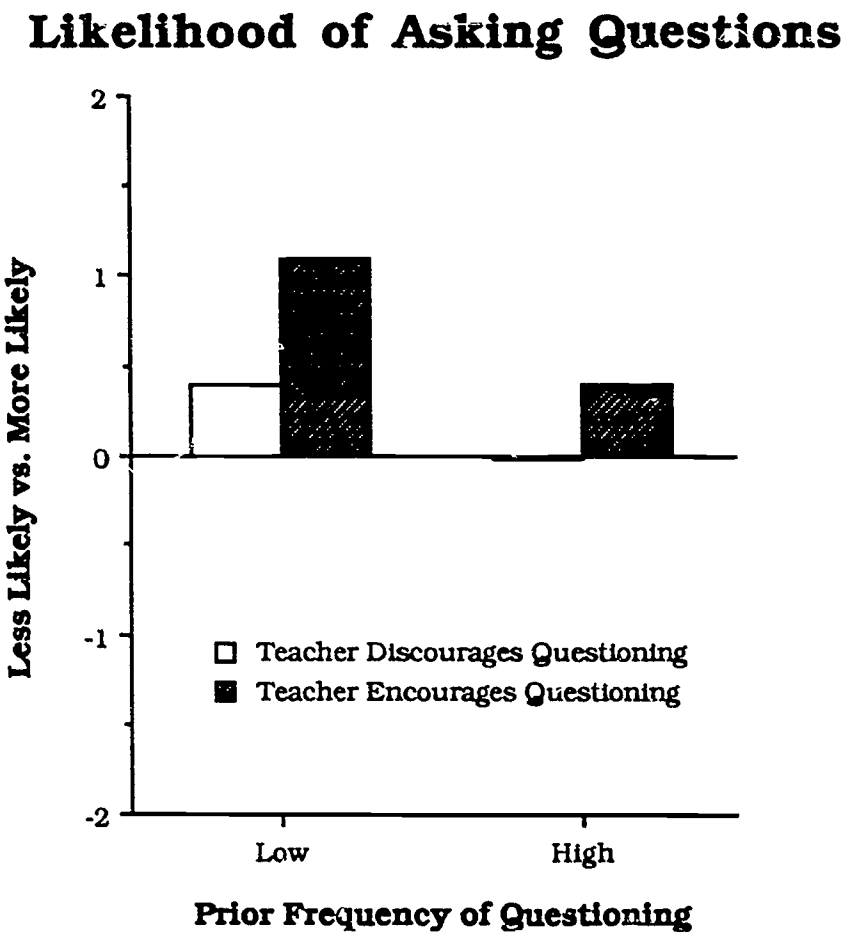
Likelihood of Asking Questions
2
1
0
-1
-2
Less Likely vs. More Likely
Teacher Discourages Questioning
Teacher Encourages Questioning
Low
High
Prior Frequency of Questioning

Figure 6