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CLASSROOM INTERACTION, NEGOTIATION, AND COMPREHENSION: REDEFINING RELATIONSHIPS

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The following study was undertaken to address theoretical claims regarding the importance of negotiated interaction to the comprehension of second-language (L2) input through a comparison of three different interactional behaviors of L2 learners in a classroom context. Three groups of L2 learners were asked to carry out their teacher's directions to a comprehension task: eight Negotiators, who were encouraged to negotiate by requesting clarification, repetition, and confirmation of the directions; eight Observers, who were not permitted to interact with the teacher, but could watch and listen as the Negotiators did this; and eight Listeners, who carried out the task away from the other two groups by listening to a text of the directions which had been generated through negotiation. Results of the study revealed comparable comprehension scores for each of the three subject groups. Moreover, follow-up analyses suggested that individual subjects whose level of comprehension development was at or above the level of their classmates could comprehend the direction input whether they engaged in negotiation, observed negotiation, or listened to the text of negotiated input. However, for subjects at lower developmental levels of comprehension, direct participation in negotiation was the most effective means to facilitate comprehension of the direction input.

INTRODUCTION

The claim that comprehension of input is a necessary condition for second-language acquisition (SLA) has been a dominant theme in current SLA theory [see, for example, Krashen (1981, 1982, 1985) and Long (1980, 1981, 1983, 1985)]. This, in turn, has stimulated research on how learners come to comprehend second-language (L2) input which they do not initially understand. Chaudron (1983, 1985), Long (1980, 1981, 1983, 1985), Gass and Varonis (1985a,b), and Varonis and Gass (1982), have pioneered an impressive amount of empirical research in this area, and, through individual studies on input comprehension, Blau (1982), Brown (1987), Cervantes (1983), Ellis (1985), Johnson (1981), and Kelch (1985) have supplied a wealth of descriptive data.

The research to be reported below, together with two earlier studies (Pica *et al.*, 1986, 1987), has also drawn on current theoretical claims about the significance of input comprehension to SLA. Of specific interest has been the need to find empirical support for the arguments of Long (1980, 1981, 1983, 1985) that the learner's comprehension of unfamiliar input is best aided when they engage in a negotiation of meaning with their interlocutors. During

negotiation, a listener signals that the meaning of the speaker's input is not clear, either through requests for confirmation or clarification of the speaker's message or in response to the speaker's checks on message comprehensibility. The speaker and listener then try to modify and repair this input so that it can be understood.

EMPIRICAL BACKGROUND

Initial research in this area (Pica *et al.*, 1986, 1987) was able to document contributions made by negotiation to the learner's comprehension of input during one-to-one native speaker (NS)–non-native speaker (NNS) interaction, and to pinpoint specific ways in which this was accomplished linguistically. This research focused on the impact of two conditions of input exposure on the L2 comprehension of 16 English NNSs. These subjects, all of low intermediate proficiency and enrolled in the preacademic English program of a university in the United States, had been randomly assigned to one of the following two L2 input conditions.

In condition 1, the input consisted of 15 directions to a comprehension task. The directions required eight of the NNSs, on an individual basis: (1) to select from a collection of pictures a specific picture of a human animal, plant, house, or vehicle, as a female NS of English described the picture to them, and (2) to position the picture on a board which displayed the background to an outdoor scene. These directions has been generated originally by native English speakers and then used to check their comprehension on the same task. For purposes of condition 1, the lexis and syntax of each of the directions was modified by the researchers before it was presented to these subjects. The modifications included elaborations such as repetition, synonymy, and paraphrase, and reductions in sentence length and syntactic complexity, all of which had been shown by previous research to facilitate comprehension of English L2 input [see, for example, Blau (1982), Brown (1987), Cervantes (1983), Chaudron (1983, 1985), Gass and Varonis (1985a,b), Johnson (1981), Kelch (1985), Long (1985), and Varonis and Gass (1982)]. In condition 1, therefore, pre-modified input alone was the only source of information regarding item selection and placement. Subjects were not allowed to ask questions or seek help from the NS as she presented the directions.

Condition 2 was designed to promote negotiation of the meaning of directions which were not initially understood. In condition 2, the direction giver presented each direction in its original, unmodified linguistic form, again on an individual basis, to the other eight NNS subjects, but then checked on their comprehension and encouraged them to request clarification of unclear direction content. It was believed that the opportunity to ask clarification questions or signal difficulty which had been given to subjects in condition 2 would lead to their negotiation with the direction giver, and that the negotiation would trigger the kinds of input elaborations and reductions which had been built into the pre-modified input of condition 1.

Results of the study revealed striking differences between subjects' comprehension in the two input conditions. When comprehension was measured by the accuracy with which each group of subjects selected and placed the task items, comprehension was significantly better

($t = 3.78$, $p < 0.05$) in condition 2. Two consistent patterns were also found. First, those individual directions which were understood better in condition 2 than in condition 1 contained significantly more repetition, rephrasing, and synonym replacement of direction content words. Second, at least 75% of these modifications had occurred during negotiation, i.e. in NS responses to NNS requests for confirmation or clarification of direction content.

What did these results indicate with regard to L2 learning and instruction? The overall finding that negotiation assisted comprehension pointed toward the design of classroom environments in which students play an active role as negotiators with their teacher, so that they can seek clarification and confirmation of unfamiliar words and structures. However, this finding also raised a number of practical issues about the extent to which negotiation in the classroom could benefit all L2 students. Of specific concern were students such as those identified by Sato (1982), whose styles of classroom participation are such that they seldom question their teacher, seek help with comprehension, speak out voluntarily, or acknowledge difficulty with L2 understanding. Additional concerns were raised in light of findings by Allwright (1980), Busch (1982), Day (1984), Ellis (1984), Politzer and McGroarty (1985), and Saville-Troike *et al.* (1984) that, for many L2 learners, voluntary participation does not always correlate with their successful SLA. Further reluctance to endorse negotiation as a classroom mode came from the acknowledgement that teaching methods such as Delayed Oral Practice (Gary, 1978; Postovsky, 1974; Winitz, 1973) and Natural Approach (Krashen and Terrell, 1983) have reported success in techniques which emphasize active listening but without the signalling and repair work which characterize the negotiation of meaning.

Nevertheless, the powerful impact negotiation had made on learners' comprehension in our research led to speculations on ways in which successful, but less interactive language learners in the classroom might somehow be benefiting from the adjusted input generated by their teachers and more interactive peers. Since our results had shown that negotiation moves served as vehicles for repetition, we thought that perhaps *any* repetitions arising from classroom negotiation had the potential to facilitate comprehension for *all* classroom participants, not just for those who individually signalled difficulty, requested clarification, or sought confirmation of input. And taking this speculation just one step further, we wondered whether repetitions in themselves, provided they were sufficient in quantity, could ensure comprehension even when these repetitions were not negotiated among classroom participants. In other words, we wondered whether input adjusted *a priori* could facilitate comprehension as well as interactionally adjusted or negotiated input, provided that the *a priori* adjustments were derived *directly* from negotiated, interactionally adjusted data, and not simply from researcher intuition about how and where these adjustments should be made. These questions led to the study reported below.

METHODOLOGY

This follow-up study again examined comprehension on the same directions task which had been used in the earlier research on input conditions 1 and 2. However, now, comparisons were made of the comprehension of three groups of English L2 students as they carried out the task. The three groups, labelled Negotiators, Observers, and Listeners

will be described in greater detail in Table 1. Each group was composed of eight adult NNSs of low intermediate proficiency who represented a variety of native languages. The direction giver was a teacher, who was an NS of English with many years of teaching experience. The subjects in each of the three groups were students of this teacher, either during the time of the study or in the immediately preceding semester. The Negotiators and Observers came from one classroom (classroom 1) and the Listeners came from a different classroom (classroom 2).

Table 1 shows the composition of each group in classrooms 1 and 2 according to a number of variables, including native language, sex, and the interaction levels and group placements to which they were assigned. Table 1 also shows individual percentages of classroom interaction behavior. To determine this percentage figure, a trained coder observed classrooms 1 and 2 over a period of 3 weeks, charting participation patterns of the students during activities which were teacher-fronted and interactional, and therefore shared some similarity with the direction task they would be asked to carry out during the research.

The coder counted the number of times each student initiated a turn: (1) by seeking help, or (2) by responding to a general solicit from the teacher. For each of the two classrooms, the total number of these initiating moves as produced by *all* students was first computed. This total became the denominator of a classroom interaction ratio in which the numerator was the number of times each *individual* student initiated a turn or responded to a general solicit. For example, if there were a total of 100 appeals and responses to general solicits and student A produced 25 of them, that student's classroom interaction score was 25%. These interactional moves were believed to be the kinds of moves which would be used by the students in asking and responding to questions as they followed the directions task. They were also a subset of those which had been used by Seliger (1977) and Day (1984) in earlier research on the L2 learning success of high and low classroom interactors.

The students' interaction percentage scores were used to order them from the highest to the lowest interactors. Students from classroom 1 were matched according to interaction scores, and then assigned to either the Negotiators or the Observers group. In classroom 2, all eight students were assigned to the same Listener group. As shown in Table 1, classroom interaction percentages in classroom 1 ranged from 2 to 19% across learners, but the scores tended to cluster together with a few students in each group of Very High, High, and Low Interactors. In classroom 2, which contained only eight students, and, therefore, greater proportions of individual students' participation, the interaction percentages per student were higher, but the scores still clustered together into two Very High, two High, and four Low Interactors. Table 1 shows that in both classrooms, the proportions of Very High and High Interactors versus Low Interactors were almost identical—about 75 versus 25%.

The eight students in the group of Negotiators were given each direction as unmodified input. This was the same unmodified input which had been taken from the text of NS directions and used in condition 2 of our previous study. The Negotiators were asked to carry out the task in the same way as the condition 2 subjects: They were encouraged to ask for clarification and confirm their comprehension of the directions with the teacher

Table 1. Native language, sex, classroom interaction percentage, interaction level, and group assignment for 24 subjects

Subject number	Native language	Sex	Classroom interaction behavior			Interaction level very high (VH) high (H), or low (L)	Group assignment [negotiator (NEG), Observer (OBS), or Listener (LIS)]
			Appeals for help	Responses to general solicits	Percentage*		
Classroom 1, $n = 16$ subjects							
High Interactors:			*n*	*n*	%		
16	French	Male	4	14	13	VH	NEG
10	Italian	Female	0	10	7	H	NEG
1	Arabic	Male	0	10	7	H	NEG
7	Spanish	Female	0	10	7	H	NEG
Total			4	44	34		
5	Arabic	Male	12	14	19	VH	OBS
6	Italian	Male	1	10	8	H	OBS
9	Somali	Female	0	10	7	H	OBS
4	Tamil	Male	0	10	7	H	OBS
Total			13	44	41		
Low Interactors:							
15	Spanish	Female	0	4	3	L	NEG
2	Korean	Male	2	2	3	L	NEG
8	Spanish	Female	0	4	3	L	NEG
13	Mandarin	Male	0	4	3	L	NEG
Total			2	14	12		
11	Portuguese	Male	1	2	2	L	OBS
14	Japanese	Female	0	6	4	L	OBS
3	Polish	Male	2	2	3	L	OBS
12	Taiwanese	Male	1	3	3	L	OBS
Total			4	13	12		
Classroom 2 n 8 subjects							
High Interactors:							
8	Arabic	Male	11	35	22	VH	LIS
5	Spanish	Female	9	36	22	VH	LIS
1	Greek	Male	6	28	16	H	LIS
6	Spanish	Female	4	25	14	H	LIS
Total			30	124	74		
Low Interactors:							
7	Spanish	Female	1	14	7	L	LIS
2	Korean	Male	5	9	7	L	LIS
3	Arabic	Male	2	10	6	L	LIS
4	Arabic	Male	1	11	6	L	LIS
Total			9	44	26		

*Percentage = *individual appeals for help + responses to general solicits* / total *n* self-initiations + responses to general solicits for all students (rounded to nearest whole number).

direction giver, who also checked with the Negotiators as to whether the directions could be understood or needed to be repeated.

The group of eight Observers carried out the same direction task at the same time as the

Negotiators. Observers were not permitted to seek assistance from the teacher, but were advised to listen attentively as she worked with the Negotiators, as this would help them to understand and follow the directions. Students from both groups sat in a circle in full view of the teacher, and worked behind individual screens. No one could see anyone else in the classroom execute the task and had to rely on linguistic input in order to select items and place them appropriately.

Following this phase of data collection, a group of eight Listeners was asked to perform the same task as the Negotiators and Observers. All conditions for data collection, including seating arrangement and partitioning off of task materials were maintained, but the Listeners were not given any opportunity to seek clarification of the direction input, negotiate its meaning, or observe such negotiation. Instead, they listened to the teacher read a text which had been constructed by the researcher so that it contained a comparable amount of original and repeated input and took a similar amount of time to present as the directions produced when the Negotiators and Observers had carried out the task with their teacher.

Figure 1 displays a comparison of an extract from the text of directions given to the Listeners and an extract of the negotiated directions from which they were derived. As shown in the extract, the text contained all of the redundancy and elaboration of content words which had been generated by the Negotiators and their teacher, but none of the negotiation moves which had often contained or triggered the redundancy. The text had also been modified in several morphosyntactic areas: questions were changed into statements. Imperatives were deleted, except to preserve the initial encoding of each direction. Articles, pronouns, and existential "it" and "there" were also added where it was necessary to support repetitions.

Comparability of the negotiated directions and the text developed therefrom was checked prior to presenting the text to the Listeners. For each of the 15 directions, amount of repetition and rewording, length in number of words, and duration in seconds were coded by the researcher on each set of directions, and by two trained coders on random samples. Inter-coder agreement was as follows: repetition and rewording: 0.97, length: 0.99, and duration: 0.95.

t-Tests revealed that there were no differences in the amount of repetition and rewording in the negotiated and text directions, as the mean number of repetitions and rewordings per direction was an identical 40.8 for both sets. The difference in the mean length of the directions in the two sets was not very large, as the negotiated directions averaged 153.2 words and the text 142.0 words per direction. However, a *t*-test showed that this difference was significant at the 0.005 level [$t = 3.46$ (14 df), $p < 0.005$]. Although every effort had been made toward achieving comparable direction length in both sets, it was nearly impossible to do this, because the transfer of negotiated direction content into the text format required elimination of brief utterances such as "excuse me", "all right", or "yes" which were abundant in the negotiated directions.

It was important to ensure that the amount of time given to the Listeners was as close as possible to that which had been taken by the Negotiators and Observers so that input processing time could be ruled out as an explanation for any differential results which were found. Although the text of directions had fewer words than the Negotiated directions,

Negotiated Directions

Teacher	Students, by number
ok moving down to the right, moving down to the **right**	
place the bumble bee in the girl's hair	10 which is **bumble bee**? **bumble**
bee?	15 **bumble bee**
ok what's a **bumble bee**?	10 **insect**
a **bumble bee** is a **little bug**, an **insect**,	
it **flies**, it **goes zzzzz**	1 **bee bee**
bumble bee	1 it make a- it **make a honey**
	8 **like a mosca**
yeah **bumble bees**, it's **like a mosca** I don't know	
f they **make honey** or not they **fly**	1 **bumble bee**?
the **bumble bee** is in the **girl's hair**	
the **bumble bee** is in the **girl's hair**	15 in or on?
	16 on the middle of
what?	7 where in the right left or middle?
	16 in the middle?
it doesn't say put it anywhere you want .. just put it	
in **her hair** put it in **her hair**, ok? in **her hair**	

Analysis: n words: 142, n repetitions and rewordings of content words (e.g., **bumble bee**, **right**, **girl's**, **hair**): 33, duration: 1 minute, 55 seconds

Directions Text

Moving down to the right, that's moving down to the **right**, place the bumble bee in the girl's hair. A **bumble bee** is an **insect**. A **bumble bee** is a **little bug** or **insect**. A **bumble bee flies**. A **bumble bee goes** *zzzzz*. It's a **bee**. A **bumble bee** might make **make honey**, **like a mosca**. We don't know if they **make honey** or not. A **bee flies like a mosca**. It's **like a mosca**. The **bumble bee** is in the **girl's hair**. The **bumble bee** is in **her hair**. It could be in the middle of it, on the right, left or in the middle. It doesn't matter if the **bumble bee** is in the middle. Put the **bumble bee** anywhere in the **girl's hair**. Just put it in **her hair**. Put the **bumble bee** in **her hair**.

Analysis: n words: 144, n repetitions and rewordings of content words (e.g., **bumble bee**, **right**, **girl's**, **hair**): 32, duration: 1 minute, 58 seconds

Fig. 1. Excerpt from negotiated directions and direction texts.

this did not present a major problem in regard to keeping time constant because the teacher had rehearsed her delivery of the directions. Thus, the mean time was 1.36 min for each direction given to the classroom of Negotiators and Observers and 1.36 min for each direction presented to the Listeners.

HYPOTHESES

Several hypotheses were tested, motivation for which came from three distinct, but interconnected sources. Each of these sources provided indications that the three different subject groupings—Negotiators, Observers, and Listeners—could succeed on the directions task. First theoretical claims and our earlier findings that negotiation is critical to input comprehension predicted success for the Negotiators. Second, classroom research findings on successful SLA among students who avoid self-selection or refrain from initiating interaction predicted success for the Observers. It was believed that the Observers, allowed only to hear and witness input as it was modified through the negotiation of others, would achieve some comprehension, but not as much as the Negotiators because the negotiation would be a step removed from their involvement, and the input not strictly directed toward their individual needs.

Third, results of our previous research which had affirmed the facilitating effect of redundancy and elaboration of input on L2 comprehension predicted success for all groups, including the Listeners. Unlike the Observers, however, the Listeners would not be in a position to benefit from other participants, who, sharing confusions similar to their own, could seek and receive clarification and assistance. Yet, the redundancy built into the text of directions suggested that some comprehension would be possible.

It was therefore hypothesized that all subjects would show some degree of comprehension, but in this order: the Negotiators would show better comprehension than the Observers, who would, in turn, show better comprehension than the Listeners.

RESULTS

Did negotiation with the teacher direction giver result in more accurate comprehension of the directions than observation of this negotiation? In support of the first hypothesis of the study, it was found that the Negotiators had slightly higher comprehension scores than the Observers. Results showed that the mean score for the eight negotiators was 13.25 out of 15 or 88% and the mean score for the eight Observers was 11.75 out of 15 or 78%.

No support, however, was found for the hypothesis that the Observers would have greater accuracy in following the negotiated directions than the Listeners, as the Listeners had a mean of 12.12 out of 15 directions or 81% accuracy. This score was slightly better than the Observers' 78%. There was also a tiny difference of two percentage points between the Listeners' score of 81% and the combined scores of the Negotiators and Observers, which was 83%. These small differences among the groups' comprehension scores gave weak support to the hypothesis that the Negotiators would show better comprehension than the Listeners, and no support to the hypothesis that the Observers would also show better comprehension than the Listeners, as essentially the groups showed highly similar amounts of L2 comprehension.

FOLLOW-UP ANALYSES OF RESULTS

Further analyses of data sought to find out how the students' classroom interactional patterns affected both their approach to the task and their comprehension of the directions.

First analyzed were relationships among their comprehension scores, group assignments, and classroom interaction levels through a two-way analysis of variance (ANOVA). As shown in Table 2, when comprehension scores of the Negotiators, Observers, and Listeners were submitted to ANOVA, it was revealed that the value of Factor B, classroom interaction behavior, which was 6.95, exceeded the critical value of F ($F = 4.41$ for 1df), but the value of factor A, group assignment, which was 0.59, did not ($F = 3.55$ for 2 df). Thus, it appeared that students' original classroom interaction behavior was a crucial factor in their comprehension of the directions, but their assignment as a Negotiator, Observer, or Listener was not important to their success.

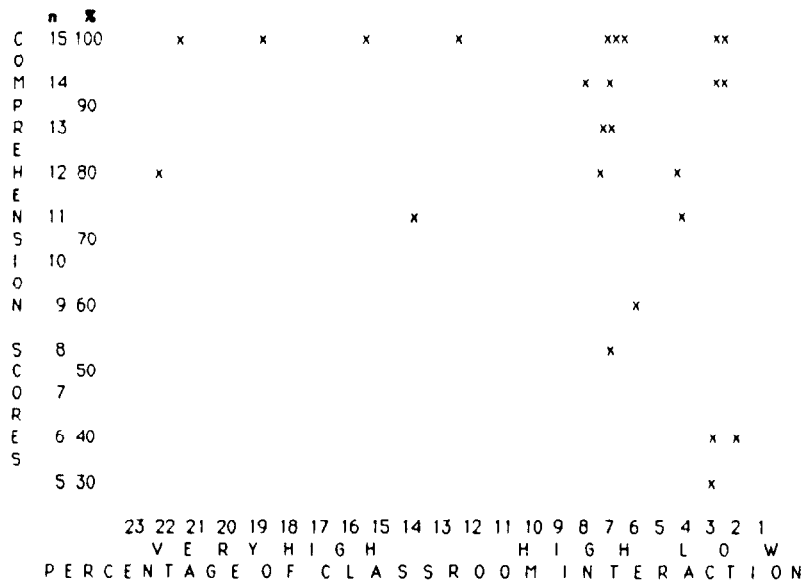
Table 2. ANOVA for comprehension scores related to classroom interaction level and group assignment

Source	SS	df	MS	F
Between groups				
Group assignment (A)	9.75	2	4.88	0.59
Classroom interaction level (B)	57.03	1	57.03	6.95**
A × B	29.09	2	14.55	1.77
Within groups	147.76	18	8.21	
Total	243.63	23		

**Factor B exceeds the critical value of F for 1/8 (4.41). Factor A does not exceed the critical value of F for 2/18 (3.55). Therefore, what appeared to be critical for listening comprehension was the difference in subjects' level of classroom interaction rather than whether they negotiated, observed negotiation, or listened to a negotiated text.

To shed more light on this finding, the students' interaction levels were then plotted against their comprehension scores. Results of this procedure showed that, in both classrooms 1 and 2, the poorest comprehenders on the directions task were also the lowest interactors. As shown in Fig. 2, the three low-interaction subjects in classroom 1 had comprehension scores of 5 or 6 out of 15, well below the means for their groups and that two of the students in classroom 2, again both low interactors, had scores of 8 and 9 out of 15, again considerably below the mean comprehension score for the Listeners group. Thus, for subjects who had come to the directions task with levels of classroom interaction which were low in relation to the other students in their classroom, the overall finding was that input was less comprehensible regardless of their group assignment.

Additional analysis of the data revealed that two of the Negotiators, both from the low-interaction category, had used no negotiation moves during the course of the task. Therefore, they actually carried out the task as Observers, even though they had been assigned to the study as Negotiators. When the comprehension scores of these two non-negotiating Negotiators were removed, the mean comprehension score of the remaining two low interacting Negotiators was 14.5, which was comparable to that of other high interacting subjects, both those in the Negotiator group and those in the two other groups. These results on the low-interaction Negotiators suggested that opportunities for negotiation, *if taken*, facilitated comprehension of the directions about equally for High and Low Interactors. However, the results were regarded with caution and not submitted to statistical analysis, given the small number of subjects eligible for comparison.



	Negotiators, n = 8		Observers, n = 8		Listeners, n = 16	
	Subject Number	Comprehension Score	Subject Number	Comprehension Score	Subject Number	Comprehension Score
High	16	15	4	15	1	11
Interaction	10	15	5	15	8	15
Subjects	7	15	6	14	5	12
	1	12	9	13	6	11
Total correct		57		57		53
% correct		95%		95%		88
Mean		14.25		14.25		13.25
Low	8	15	3	15	7	14
Interaction	2	14	14	11	2	13
Subjects	15	14	11	6	3	8
	13	6	12	5	4	9
Total correct		49		37		44
% correct		82%		62%		73%
Mean		12.25		9.25		11.00

Fig. 2. Comprehension scores of subjects in relation to coded level of classroom interaction.

CLASSROOM INTERACTION AS AN INDEX OF CLASSROOM COMPREHENSION

Although the initial motivation for the study was to find out whether L2 input would be *more or less* comprehensible to students according to their group placement as Negotiators, Observers, or Listeners, the results of the ANOVA, as noted in Table 2, made it imperative to direct further analysis toward their classroom interaction behavior. It was important

to find out why responses to general solicits and appeals for assistance—the two behaviors believed most relevant to the directions task and therefore used to determine what was then called the "classroom interaction level"—would have such a bearing on comprehension across all three subject groupings. The most obvious and immediate answer was that the subjects who had been labelled High Interactors performed the way they did because they were better or worse comprehenders to begin with. This speculation was confirmed through further analysis, evidence for which came from two sources.

The first source of evidence was the classroom coding data which had been used to assign subjects as High versus Low Interactors. As shown again in Table 1, classroom interaction had been coded in terms of appeals for teacher assistance and responses to general solicits, to the exclusion of other classroom interaction categories, in the belief that these variables coincided closely with the kinds of negotiation moves subjects would make in order to comprehend unclear directions. Negotiation moves such as clarification and confirmation requests and feedback to comprehension checks were not included in the coding procedures as previous experience in observing classrooms had shown these moves to be a rare commodity [see, for example, Long and Sato (1983) and Pica and Long (1986) for documentation].

Furthermore, it was believed that there were enough connections between negotiation moves *vis-à-vis* classroom appeals for assistance and responses to general solicits to insure confidence in using them somewhat analogously. For example, it was assumed that, for directions they did not understand, students could seek help from the teacher. Because of this possibility, a connection was posited between appeals for assistance in the classroom and negotiation moves such as clarification and confirmation requests. It was also assumed that the students could express individual needs for assistance when the teacher solicited feedback as to the comprehensibility of direction content. These exchanges seemed analogous to student responses to their teacher's general solicits during class time.

However, in re-thinking the connections between the classroom interaction variables chosen for the study and the activity of negotiation, it was later realized that, if anything, classroom exchanges involving general solicits and their responses were actually *opposite* to what had been defined as negotiation, i.e. a mutual activity geared toward signalling needs to understand unclear input, checking on input comprehension, and adjusting interaction toward mutual comprehension. What was realized was that responses to general solicits were essentially responses to comprehension questions, and thus tapped into students' comprehension strengths rather than their comprehension needs.

This re-analysis of the findings on the classroom observation component of the study led to the realization that using responses to general solicits as a means of rating students as High or Low Interactors revealed more about their current levels of *listening comprehension* than it did about their potential for negotiation. What made this realization particularly striking was that further review of the interaction profiles of the classroom coder showed that the bulk of subjects' interaction percentage scores had been formed on the basis of responses to general solicits rather than appeals for assistance. As shown further by the data in Table 1, for example, only seven of the 16 students in classroom 1 had made any appeals for assistance from their teacher during the period of classroom observation and

coding, and almost half of these appeals had come exclusively from one student. These findings suggested that the interaction percentage scores which had been used as a basis for Interaction Level placement were comprised in very large part of responses to teachers' general solicits, i.e. questions which invited them to display their comprehension, rather than questions which checked on their need for teacher assistance.

Furthermore, this re-analysis of the classroom coding data was not the only evidence pointing to the realization that the groups had been arranged unwittingly according to high versus low comprehension. Additional support was found from ratings made by the subjects' recent and current teachers with regard to their skills in L2 comprehension and patterns of classroom interaction. Without being told the purposes or results of this survey, the teachers were asked to rate from 1 to 10 first the students' comprehension and, second, their classroom interaction behavior (in terms of the students' tendencies to respond to general solicits and make appeals for assistance). Results of the survey indicated close correlations between the comprehension and interaction ratings. Pearson-product moment analysis revealed correlation coefficients of 0.97 between comprehension and interaction among the students in classroom 1 and 0.90 for the students in classroom 2, with a significance level of $p < 0.005$. A close correlation was also found between the teachers' comprehension ratings and students' comprehension scores on the directions task. Again, correlation coefficients were 0.88 for classroom 1 and 0.94 for classroom 2, and were significant at the 0.005 level or better.

ADDITIONAL CONCERNS

The finding that the more important variable in success with the directions task was classroom interaction level (or actually comprehension level), rather than group assignment as Negotiator, Observer, or Listener left some additional questions to answer. For one thing, it was of interest to know why, among the *Low Interactors*, the group of Observers displayed the lowest comprehension scores ($X = 9.25$), and, in fact, was lower in accuracy than the low interacting Listeners ($X = 11.0$). The answer to this question led to acknowledgement of the effect of redundancy alone in making input comprehensible to the Listeners. As so many studies of input comprehension have shown, and as the present results suggest, repetition and rewarding of input are keys to its comprehensibility. Negotiation moves seem to be a vehicle or trigger for redundancy rather than, in themselves, comprehension facilitators.

With this in mind it is important to note that 108 of the 612 repetitions and rewordings in classroom 1 were produced by the students and thus were often non-target-like. This figure comprised 18% of all repetitions heard during the negotiated directions. On the other hand, all 612 repetitions heard by the Listeners were produced by the teacher direction giver in target-like English and therefore they may have been easier to understand. If, furthermore, the Observers had focused their attention primarily on input from their teacher as they carried out the directions (not an unlikely situation in this large classroom of 15 low intermediate learners), then the 18% of NNS-generated repetitions might not have been noticed by them at all. In addition, since the study indicated that Low Interactors appeared also to be "low comprehenders", it may have been the case that, as Observers, they had

to rely on teacher input pitched to the high-interaction Negotiators, at a level beyond their current level of comprehension.

One final question was posed in light of the unintentional arrangement of the groups on the basis of comprehension level. It was of interest to know whether the results of the study revealed anything about *developmental* changes in learners' facility for dealing with different input conditions as their L2 comprehension became more accurate. Whether the Highs and Lows are thought of in terms of High Interactors, or "high comprehenders", one interesting outcome of the study was that, for Highs, placement into a group of Negotiators, Observers, or Listeners made very little difference in their comprehension. This suggested that for subjects who had reached a higher level of L2 comprehension than their classmates, negotiation was not the only pathway to comprehension. Indeed there were several ways of making input comprehensible to the more advanced comprehenders of the present study. This is certainly in keeping with what a number of researchers—Long, in particular—have been arguing for quite some time—that negotiation of input through interactional modification is especially important in the *early* stages of SLA. And it is interesting to note that most reports on the success of Low Interactors in the classroom [e.g. those by Busch (1982), Day (1984), and Politzer and McGroarty (1985)] have been based on data from relatively advanced learners.

Another point to bear in mind is that the input to the three groups was not so different for variables which have proved to be important in previous research on input comprehension, e.g. redundancy of input and rate of its delivery. Both the negotiated directions available to the Negotiators and Observers and the text of directions given to the Listeners contained the same amount of repetition and rewording, and all three groups were given comparable amounts of time in which to carry them out. Thus it appeared that linguistic modifications of content words and the timing of the delivery of the direction input were what really mattered for its comprehension.

CLASSROOM IMPLICATIONS AND DIRECTIONS FOR FURTHER RESEARCH

In light of the results of our previous research on L2 comprehension, which pointed to negotiated input as superior to pre-modified input, we still feel confident in advising teachers to work toward negotiation with their students, even their less interactive ones, especially since, as the present study has shown, low interaction may be a sign of low comprehension and therefore an inability to understand questions addressed to the entire class, and may not always be due to social, psychological, or culturally based reluctance toward classroom participation. As results of this study suggest, however, for learners at higher levels of comprehension relative to classmates, direct involvement in classroom negotiation may not be necessary. This cannot be stated for certain, however, given the many limitations in the design of the study.

What is the next step in this line of research? In light the problems which arose from classroom coding in the present study, it seems essential to repeat the study, using a revised classroom coding procedure. Data must be collected through classroom coding categories which separate interaction, based on comprehension, from negotiation based on a need

for comprehensible input. Considerably more time should be spent on classroom observation in order to uncover tokens of negotiation moves such as clarification and confirmation requests, which have been shown to be infrequent, but not altogether absent, from teacher–student interaction. It might also be useful to substitute a negotiation task, which, in bypassing the more typical but less negotiated classroom lesson, would facilitate classroom data collection on subjects' potential to negotiate during the directions task. Such classroom tasks are much less common than more traditional teacher lessons, but are becoming increasingly available [see Pica *et al.* (in press)].

There is also a need for longitudinal studies which reveal how learners evolve into better comprehenders through classroom interaction and negotiation of meaning. Longitudinal studies may show how, as learners become better comprehenders of L2 input, they can become more versatile in their approach to comprehension tasks. Such studies may also indicate ways in which learners come to deal with the task of understanding input under conditions which are not supportive of their initially preferred classroom interaction style. On a less optimistic note, longitudinal studies may also reveal that learners at low levels of interaction never do, in fact, become more proficient comprehenders, but, instead, remain at a low level of proficiency, and discontinue their language studies. There remains the unfortunate possibility that the better comprehenders identified through classroom research are a self-selected sample of classroom learners.

The field of SLA has long professed a need for longitudinal studies of L2 learners. This appeal has been focused on the need to describe and analyze linguistic features of interlanguage and strategies used in communication and learning. Results of the present study on input comprehension suggest that longitudinal studies are also in order for both a more informed understanding of the nature of L2 comprehension and a clearer definition of the relationship that classroom interaction and negotiation have to each other and to the comprehension process.

NOTES

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