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THE UNIVERSITY OF ALBERTA

INTERACTION STYLES AND SUCCESS AT PROBLEM SOLVING BY NON-NATIVE SPEAKERS OF ENGLISH

BY

© JUDY CAMERON

A THESIS

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FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled INTERACTION STYLES AND SUCCESS AT PROBLEM SOLVING BY NON-NATIVE SPEAKERS OF ENGLISH submitted by JUDY CAMERON in partial fulfilment of the requirements for the degree of Master of Education.

James Patrick
Supervisor

Date 25 June 1986

Dedication

To my father - **Tim Cameron** - whose patient support and encouragement have left so many options open for me.

Abstract

The present study investigated interaction styles and success at problem solving by students of English as a second language. Students were selected from a continuing education program at Alberta Vocational Center in Edmonton, Alberta. These subjects were chosen on the basis of active or passive participation in the classroom. Following this selection, subjects were randomly assigned to Active-Active, Active-Passive or Passive-Passive groups which were comprised of eight same-sex dyads. Each dyad was required to solve ten problems on a two-way interaction task. Results indicated that Active-Active and Active-Passive pairs were equally successful at the task and both were superior to the Passive-Passive group. Data also suggested that this outcome may have been a function of the effective use of communication strategies and identifying task items with the appropriate English word. It is argued that these results have practical importance for teaching English as a second language. One recommendation is that when teachers involve students in pair activities, passive students should be placed with active ones.

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I. INTRODUCTION

A. Background

Over the last twenty years in Europe and North America, there has been a shift from "language" centered approaches to "communication" models in second language classrooms. The focus of these models is on the meaningful use of language at all stages of the acquisition process. From this perspective, the message rather than the grammatical form of language is the major consideration. In other words, language learning is seen as more than just the acquisition of grammatical structures. Rather than basing a course of instruction on samples of language structure, many educators now stress the importance of providing communicative situations and introducing structure as it is needed. Thus, "communication" is both the goal and the means for achieving that goal in many second language programs. For this reason, live person-to-person encounters are highly valued. In a classroom situation, these encounters can take a number of forms: teacher-fronted activities, small group discussions, pair work and so on. Whatever the form, teachers are bound to question how pairs or groups should be selected, how to organize activities, and what form and style the teachers' own participation should take. This emphasis on communicative language teaching has led to an increased interest in the interactions between learners and their environment.

The present study is primarily concerned with the interaction of adult learners of English as a second language (E.S.L.) in dyads. A major consideration for teachers is how to effectively pair students in order to maximize communication of the target language. Since E.S.L. instructors frequently adopt a teaching strategy that involves the interaction of two students, it is important to identify the elements that make pair activities more or less effective. One factor that may play an important part in student interactions is the degree to which individuals take an active or passive role in the classroom environment. It may be

that those students who actively attempt to use English would be best grouped with other active students. On the other hand, more reticent students may suffer when paired with one another. Unfortunately, the easiest solution is to ignore the problem and simply match students arbitrarily. It is this issue that largely motivated the present research.

B. Communication to the Student

A major influence on second language teaching practices and research in recent years, has come from the work of Stephen Krashen. Krashen (1980) proposed the "input hypothesis", which claims that learners acquire language by understanding it, that is, by receiving "comprehensible input". Comprehensible input is synonymous with Corder's (1967) term "intake", which refers to language addressed to learners at a level that enables them to master more of the target language. Krashen argues that learners improve in a second language by hearing and understanding language that contains some structures slightly beyond their current level of competence (i+1). Similarly, Long (1983b) argues that learners must be put in situations where they are able to negotiate meanings in order to ensure that the input is modified to their level of understanding.

Because of this concern with the type of communication to the student, many second language acquisition studies have focused on the speech modifications that native speakers (NSs) make to provide non-native speakers (NNSs) with comprehensible input. The NS speech style called "foreigner talk" (FT) (Ferguson, 1971) is characterized by shorter utterances, slower speech, high frequency vocabulary, etc. (for a review of the literature on FT, see Hatch, 1983). Furthermore it has been shown that NSs modify the shape of conversations with NNSs by making use of comprehension checks, clarification requests, confirmation checks, and repetitions (for a review of the literature on conversational adjustments, see Long, 1983a). In addition, learners can elicit "comprehensible input" from NSs through the use of various communication strategies which serve

to help them overcome problems of communicating with limited second language resources (see Bialystok, 1983; Ellis, 1985; Faerch and Kasper, 1983; Tarone, 1977; Varadi, 1973).

Several studies have been undertaken in which either the NS's use of FT or the learner's strategy use was examined. However, a problem arises in studying only one speaker's contribution to interaction. Communication is not the result of separate scripts but of a joint endeavour involving a negotiation of meaning. Long and Porter (1985) have suggested that negotiation results in NS/NNS dyads when a task involves an exchange of information. Long (1980) found that NSs are more likely to make adjustments in their speech to NNSs when engaged in conversations where each partner has information that needs to be shared in order to complete a given task. Such exercises have been called "two-way" tasks, as contrasted with "one-way" tasks in which only one person has information to communicate.

It is difficult for classroom teachers to provide students with many NS/NNS opportunities. Therefore a great deal of time is spent with NNSs working together. Recently, a small body of research has focused on NNSs engaged in conversations with other NNSs. Researchers have questioned whether learners can offer each other genuine communicative practice (including the negotiation of meaning that is thought to promote second language acquisition) without reinforcing their own error patterns. Comparisons of teacher-fronted activities with group discussions revealed a significantly greater amount and variety of talk in the group work (see Long, Adams, McLean and Castenos, 1976; Pica and Doughty, 1985). In addition, the level of accuracy has been found to be as high in student-student interactions as in teacher-led discussions or NS/NNS dyads (Pica and Doughty, 1985; Porter, 1983). Furthermore, Porter (1983) and Varonis and Gass (1985) found as much or more negotiation in NNS/NNS dyads than in NS/NNS dyads. The issue of task type is less clear; however, a two-way task seems to generate a greater amount of negotiation (see Doughty and Pica, 1984;

but cf. Gass and Varonis, 1985). No studies to date have examined the relationship between success on a two-way task and the negotiation features (communication strategies) which have been claimed to make input comprehensible.

C. Strategies of Communication

Much of the research to date on communication strategies, has focused on learners' behavior when appropriate target language forms are not available (Faerch and Kasper, 1983; Tarone, 1977; Varadi, 1973). The studies are largely taxonomic, that is, they are devoted to identifying and categorizing the various types of communication strategies used by learners. Paraphrase, circumlocution and mime are among the strategies that are used to meet the demands of ongoing communication. A small number of studies have examined the influence of proficiency level, type of instruction and differences in strategy effectiveness (Paribakht, 1985; Haastrup and Phillupson, 1983; Bialystok, 1983). Few differences were found in the selection of strategies that could be attributed to any of these latter factors. However, more proficient speakers were sometimes found to use these strategies more effectively (Paribakht, 1985).

Canale and Swain (1980) suggest that strategies are most likely to be manifested in situations which involve meaningful communication. Importantly, few studies have assessed the communicative effect of strategies from an interactive perspective involving the interlocutor's reception and responses. Since communication strategies are used to compensate for imperfect knowledge, they may be of particular importance when NNSs are required to talk to one another in English.

A secondary aim of this study therefore, is to investigate the use and effectiveness of communication strategies adopted by NNSs interacting with other NNSs. In other words, how do learners solve problems when they are lacking vocabulary or are misunderstood by their interlocutors? Also, are there

differences in the effectiveness of strategies when the pairing of subjects is done on the basis of active or passive participation in the ESL classroom?

D. Active/Passive Interaction Styles

In a classroom, E.S.L. students typically exhibit different learning styles and different patterns of interactive behavior. Seliger (1977, 1978) classified second language learners into two categories that represented extremes of verbal behavior in the classroom. One extreme is characterized by those students who actively seek opportunities to use and practice the target language, while the other is based on those students who play a passive role and rarely initiate interactions. Those students using an active interaction pattern were labelled "high input generators" (HIG's), as they made maximum use of the target language and generated more input. The passive group were labelled "low input generators" (LIG's). Seliger hypothesized that HIG's would more readily acquire the second language than LIG's.

In one study, Seliger (1977) found that HIG's outperformed LIG's on standardized tests and field sensitivity tests. Results of performance were compared at the beginning and end of a semester. In a second study, Seliger (1978) found that LIG's also produced a significantly greater number of errors that were attributed to first language interference than HIG's. Seliger claims that HIG's are better acquirers than LIG's because they use this interaction pattern outside the classroom and are therefore able to get more comprehensible input (see Appendix A for a more detailed literature review).

E. Purpose of the Study

Regardless of their philosophy of language or language learning, teachers regularly involve students in pair or group work. For many this means an increase in the amount of language practice, more individualized instruction time, creation of a positive environment - a community feeling and a corresponding increase in student motivation (for a review of these arguments, see Long and Porter, 1985).

For others it may mean less involvement for the teacher and perhaps even less preparation time. Whatever the reason, NNSs spend a great deal of time interacting with other NNSs in many E.S.L. classrooms. It therefore seems reasonable to investigate the organization of these groups and the nature of their interactions.

One factor that may affect the communicative effectiveness of groups in a second language is the mixture of active and passive learners. This follows from Seliger's claim that LIG's and HIG's differ in amount of practice and acquisition. The main purpose of this study, therefore, is to investigate various pair combinations of active and passive adult E.S.L. learners as defined by Seliger and compare success on a two-way problem solving task. An additional question concerns those communication strategies that make task solution more or less effective within such groups.

II. METHOD

A. Subjects and Design

The participants in this study were 48 NNSs and 32 NSs of English. All NNSs were E.S.L. students at a low intermediate level in a Continuing Education program at Alberta Vocational Center in Edmonton (for a brief description of the program, see Appendix B). Level placement was determined at the Center by a written examination and an oral interview. The NNSs were classified as Active (A) or Passive (P), based on the following adaptation of Seliger's (1977, 1978) technique.

Ten E.S.L. teachers were asked to tell their students that two guests would be coming to their classroom for a 15 to 20-minute conversational exercise. At a prearranged time, the two investigators arrived at each classroom and were introduced to the students. Students were seated in a semicircle and one of the investigators sat in the middle. Students were instructed to ask this individual as many questions as possible in order to find out about her. There were no restrictions as to the type or number of questions. The teacher and the other investigator sat on opposite sides of the room as observers. While students asked questions, the investigator/observer recorded which students spoke and how often. Students were then ranked according to total number of interactions and the three highest and three lowest from each class were chosen to participate in the study as subjects in the active and passive groups, respectively. The teacher was asked to confirm whether or not the students chosen were typically active or passive in normal classroom interaction. Only those students that the teacher and both experimenters agreed on were selected for the study.

All NNS subjects were between 23 and 40 years old and had a minimum of grade nine education. All had arrived in Canada within the last six years and had received at least sixteen weeks of formal E.S.L. instruction. Subjects came from a variety of linguist/ethnic backgrounds: 17 Vietnamese (VN), 10 bilingual

Vietnamese Chinese (VN.Ch), 9 Chinese (Ch), 6 Polish (Pol), 2 Spanish (Sp), 2 Laotian (La), 1 Romanian (Rom) and 1 Swahili (Swa). Both the Chinese and Vietnamese Chinese spoke Cantonese.

Active subjects were randomly assigned to an Active-Active (A-A) group or an Active-Passive (A-P) group and passive subjects to the A-P group or a Passive-Passive (P-P) group, yielding eight pairs of subjects in each group. However, pairs were matched within each group for sex and randomly assigned to a same-sex partner. The uneven distribution of first language (L1) backgrounds made it impossible to match for L1 or to ensure that each member of a dyad had a different L1 (of the total 24 dyads, 10 shared L1 and 14 had different L1's). In each condition, A-A, A-P and P-P, there were thus 4 male and 4 female dyads (for a summary of the composition of each group, see Table 2-1).

A control group of adult NSs consisted of 8 female and 8 male dyads. These subjects were recruited from friends and students at the University of Alberta.

B. Task

A "Find the Difference" task was used in this study, which is a two-way problem-solving task designed to encourage cooperation and conversational negotiation. A two-way task has been defined as "an interaction which involves exchanges of information - that is, exchanges in which both participants have information which must be shared in order to complete a given task" (Gass and Varonis, 1985; p. 149). Such exercises are commonly found in ESL classrooms and have been used in several second language acquisition studies (see Gass and Varonis, 1985; Long, 1980).

"Find the Difference" (FD) is a game in which two participants each have a picture that differs slightly from their partner's. Both parties are required to engage in conversation in order to find out what the differences between the pictures are.

TABLE 2-1

Linguistic background of non-native speakers in dyads and experimental groups

	Active	Active	Active	Passive	Passive	Passive
Males:	*Ch	VN Ch	*VN Ch	VN	VN	Ch
	VN	Ch	Pol	VN	*VN	VN
	*Pol	Pol	La	VN Ch	VN	Pol
	VN	Ch	La	Ch	Sp	VN
Females:	*VN	VN	Ch Pol	VN	VN Ch	Swa
	*VN Ch	VN	SpCh		*VN	VN Ch
	VN Ch	Rom	*VN	VN	Pol	VN Ch
	*Ch	Ch	Ch	VN	*VN	VN Ch

*** indicates dyads sharing first language**

The pictures used in this study exhibited ten differences. Five of these differences involved objects which were present in one picture but not in the other (eg., squirrel vs no squirrel). The remaining five involved objects that were present in both pictures but were somewhat different (eg., airplane vs helicopter).

C. Procedure

All NNS-NNS dyads were given the FD task during their regular E.S.L. class time and each session lasted twenty minutes. Participants were brought to a small room and introduced to their partner. They were seated across from each other with an audio recorder placed on a table beside them and a video camera on the opposite side of the room. All subjects were made fully aware of both the

camera and tape recorder. The experimenter left the room and the participants were then given a few minutes to get acquainted.

After five minutes, the investigator returned and explained the nature of the FD task. A practice task similar to the one used in the study was given to each dyad to ensure that instructions were understood and that students knew what was expected of them.

Each student was then given a picture and instructed to converse with his/her partner for ten minutes in order to solve the ten problems. They were further instructed not to look at their partner's picture and to use English only. In order to keep track of the ten differences, the participants were told to make a check mark on a piece of paper each time they located a difference. The investigator again left the room and returned in ten minutes. All conversations were audio and video recorded, but only those conversations from the FD task were used as data.

The procedure for NS-NS dyads was somewhat different. These subjects served as controls for success on the task. In other words, while ten differences appeared on the task, it may have been possible for participants to identify differences that were extraneous to the task. In addition, the performance of these subjects allowed for a comparison between groups on order of solution. The NS subjects were seated across from one another and given the practice task. They were then asked to identify the ten differences in the experimental task without looking at each other's picture. They were told not to stop until all ten problems had been solved; meanwhile one of the members in each dyad wrote down the differences in the order in which they were found. All NS dyads successfully completed all problems and none of these sessions were recorded.

The final step in data collection was the transcription of the audio tapes (for a sample transcript, see Appendix D). Each transcription was independently checked for accuracy by another investigator. The video tapes were viewed to

note any non-verbal behavior used to solve the problems as well as to ensure that all problems were solved according to the instructions, and that the pictures were not shown to the other partner..

D. Data Analysis

The following measures were used in the data analysis.

Success

The performance of sixteen pairs of NSs served as a baseline for determining the suitability of the FD task; this baseline also established what would constitute success for NNS dyads. All NSs found ten differences. Five of the differences involved items which were present in both pictures but arrayed differently. These problems make up what will be called the "discrimination" task. The other five problems were items which were present in one picture but not in the other, collectively called the "attention" task. Each NNS dyad was given a score out of a possible 10 for success.

Time (Persistence)

Although each NNS dyad was given ten minutes to complete the FD task, many pairs finished early or simply gave up. The amount of time spent on the task was calculated in seconds for each dyad. Comparisons were made across the three groups (A-A, A-P, P-P).

Amount of Talk

The amount of talk for NNS dyads was obtained from the transcripts. This allowed for a comparison of the amount of talk across the three groups (A-A, A-P, P-P). These data were also used to determine whether one of the participants was dominating the conversation. This was of particular interest in the A-P group, where one would expect the active participant to do most of the talking. In the word counts, noun compounds and contractions were counted as two words whereas partial words of one or more syllables were counted as single words. Pause fillers such as "uh" and "um" were not counted unless they were accompanied

by rising intonation. The percent of the total words contributed by each participant was calculated by dividing an individual's total words by the sum of both participants' total words. This measure gave an indication of who dominated the conversation and by how wide a margin. In addition, the total number of words for each conversation was divided by the amount of time (seconds) spent on the task in order to establish rate of communication.

Number of Topic Initiations

The five problems on the discrimination task were designed to allow either participant to initiate the topic. Initiation was determined by identifying the person who first talked about a specific problem (maximum score of five).

Naming

Two measures of problem solving were used: naming and communication strategies. The first measure, naming, involved using an appropriate English word to identify the specific items in the task.

The discrimination task involved two key words for each identification, or ten vocabulary items in all (traffic light vs stop sign, airplane vs helicopter, main street sign vs one way sign, three birds vs four birds, purse vs umbrella). A maximum naming score of five was assigned to each NNS dyad on this task, with half points given in cases where only one of the two items was named. The attention task involved only five vocabulary items (squirrel, fire hydrant, boots, mountains and car lights on), so a maximum naming score of five was also assigned to each NNS dyad on this task, but with no half points given.

Because the use of the correct English names did not always lead to the solution of the problems, a separate percent figure was calculated for the number of vocabulary items identified that were effective and led to task solution.

Communication Strategies

The use of communication strategies involved attempts to solve the problem

in the absence of a suitable vocabulary item or attempts to clarify a message through a device such as paraphrase. The taxonomy of communication strategies used was based on existing typologies, most notably those of Tarone (1977) and Faerch and Kasper (1983), but was conceptually reorganized. Since the task in the present study was inherently cooperative, no separate category of "cooperative" strategies was used.

Because the focus of this study was on how learners communicate in a second language and since the subjects were instructed to converse only in English, only those strategies based in the second language (English) were identified. The specific communication strategies examined in this study are a subset of what has been called "achievement" strategies (Faerch and Kasper, 1983). The strategies identified here were limited to those that were overtly used in an attempt to solve one of the ten problems, excluding all "off-task" conversation.

The following achievement strategies were investigated: generalization, word coinage, paraphrase and non-linguistic strategies. In addition to these, other strategies not mentioned in the literature were found to facilitate or hinder the solution of a problem and were also scored. These included: describing the location of items, spelling out names, writing down names, or drawing a picture. Each NNS conversation was coded for the type and number of communication strategies used to deal with the ten problems. Further, a percent figure for each dyad was calculated for strategies which did and did not lead to the solution of the problems. An explanation of each strategy and examples from the transcribed data follow.

1. Generalization

"The learner assumes that his original goal can be reached by using a generalized IL (interlanguage) item or, in other words that the generalized item can convey the appropriate meaning in the given context" (Faerch and Kasper, 1983; p. 48). The use of superordinate terms (Blum-Kulka and Levenston, 1983),

approximation (Tarone, 1977) and synonymy are all instances of generalization strategies.

1a) superordinate term - the learner uses a general term to refer to a specific item (eg., "animal" is used to refer to "squirrel").

Q: I have one animal but I don't know what called. Animal.

I: Animal?

Q: Animal yeah.

Q: Animal on the side of the road.

I: On the side?

Q: Yeah animal.

I: Oh I don't. OK.

1b) approximation and synonymy - "use of a single target language vocabulary item or structure ... which shares enough semantic features in common with the desired item to satisfy the speaker" (Tarone, 1983; p. 62) (eg., "wallet" is used to refer to "purse").

D: And one lady on the street She's holding umbrella.

N: No. She holding uh that's different yeah. She, she's just uh the I think that's uh uh wallet. Holding the wallet.

D: Wallet OK.

2. Word Coinage

A word coinage strategy involves the learner in the construction of a new second language word (eg., "fire pump" is used to refer to "fire hydrant").

H: How bout this one? I don't know what you call. When there is fire the you you put the hose in the on the street.

D: Oh yeah. maybe fire pump.

H: Yeah. fire pump.

3. Paraphrase

In paraphrases, by providing descriptions, circumlocutions or exemplifications, the learner focuses on characteristic properties or functions of the intended referent. In this study, paraphrases take the form of descriptions of function or descriptions of physical and/or other specific features.

3a) description of function - indicates the functions of an object and the actions that can be performed with it (Bialystok, 1983).

M: Do you have pipe uh water?

F: Water?

M: Yeah. You know in the street I have for uh the when is make a fire you know?

F: Fire?

M: The man take water and uh put out. (mimes a hose with hands)

F: Oh no. I don't have.

M: You don't have?

F: No no.

3b) description of physical and/or specific features - refers to universal features of objects such as color, size, material and spatial dimensions. Specific features are usually denoted by the surface marker "has" (Bialystok, 1983) (eg., "it has a fan on top" is used to refer to "helicopter"). Two illustrations follow.

Y: The plane, the plane is on on the

M: Plane?

Y: Yeah but have the fan on top. You know, fan (moves hands around above head).

M: Yeah I have the plane but no fan.

Y: OK, different.

Z: And the car is standing near the the stop uh stop lights (gestures light shape).

V: Sign?

Z: I don't know how call.

V: No. My picture the car not stop light. What do you say that?

Z: You know this um lights beside the way red and green and yellow.

V: Oh, this is a traffic light yeah?

Z: Oh traffic light yeah.

V: Traffic light so my picture I got the stop, uh, uh, (gestures sign shape).

Z: Stop sign?

V: Stop sign.

Z: Oh is different.

V: Yeah different.

4. Non-Verbal Strategies

In face-to-face communication, NNSs often resort to non-linguistic strategies such as mime, gesture and/or sound imitation.

O: You got helicopter?

B: What?

O: Helicopter (makes flying motion with hands).

B: Helicopter?

O: Helicopter (makes whirring sound).

B: I got an airplane.

O: What kind of airplane? It's got the fan? (moves hands around head)

B: No, no, no, fan.

O: No fan on top? (moves hands around head)

B: No, no, no, no.

5. New Strategies Identified in the Present Study

5a) Description of Location: In order to solve a number of problems on the task, participants found it necessary to explain where the items were located. Failure to use this strategy often led to confusion.

V: My picture about um have the animal.

S: Animal?

V: Yeah animal in the uh

S: Yeah, duck walk on the street.

V: No, no, the walk. In the grass.

S: Yeah I have grass. no animal.

V: Different?

S: Yeah.

5b) Spells/Writes/Draws: Some of the dyads resorted to spelling aloud, writing or drawing the item when one of the members of the dyad did not understand. Three examples from the data follow.

S: In the corner in the corner my in the corner have the one way have the place on a sticker. The one way you know (gestures sign shape in the air with hands and draws a sign on a piece of paper).

N: Do you have the corner have the main street in from the tree there?

D: Huh?

N: M A I N (spells out MAIN) called main street right?

D: Main street?

N: Main street. You don't got it?

D: No.

J: And here's uh in the sidewalk and here's grow the grass. You have grass? In the in the sidewalk? You know grass. Green, green grass (writes down grass on a piece of paper).

No Strategy

In several cases the NNS dyads made no attempt to solve a particular problem and no mention was made of the relevant objects. Each dyad was given a score out of ten for the number of items that were not mentioned and this score was taken as a "no strategy count.

E. Reliability

Inter-rater reliability checks between two raters were conducted for the measures employed in the analyses. Two raters coded three of the transcripts together in order to establish acceptable levels of agreement for each measure. The two raters then worked independently on one quarter of the corpus. Inter-rater reliability figures were calculated in terms of simple percentage agreement. All obtained percentages were considered satisfactory. Agreement measures were:

a) success = 100%,

b) naming = 100%,

c) types of communication strategies = 92% and

d) number of topic initiations = 100%.

The total number of words, time, rate and lack of mention (no strategy counts) were calculated by one rater only.

III. RESULTS

A. Preliminary Analysis

Inspection of the data suggested that there were two qualitatively different tasks, as already noted above: a "discrimination" task (T1) and an "attention" task (T2). The preliminary analysis focused on success. The design was a 2 X 2 X 2 repeated measures analysis of variance. The between subject factors were the condition (the varied pair combinations with three levels A-A, A-P, and P-P) and sex of dyad. The within subject factor was task type with two levels (T1 and T2). All statistical analyses were based on the "Statistical Package for the Social Sciences" (SPSSX 1983). Unanalyzed scores appear in Appendix E.

Sex

Initial analysis suggested no effect of sex on success ($F = .559$; $df = 1,18$; n.s.). In other words, neither male nor female dyads were more successful on either task.

Task Type

The results of the repeated measures ANOVA indicated a significant task type difference on success ($F = 15.49$; $df = 1,18$; $p < .001$). Performance was significantly better on the discrimination task ($M = 3.97$) than on the attention task ($M = 2.96$).

Condition

There was a significant effect of condition (group membership) on success ($F = 6.50$; $df = 2,18$; $p < .005$). Both the A-A and the A-P groups performed significantly better than the P-P group on both tasks.

Interactions

There was no interaction of condition with sex ($F = .116$; $df = 2,18$; n.s.) or of condition with task type ($F = 1.82$; $df = 2,18$; n.s.). The higher order interaction of condition by sex by task type was also not significant ($F = 2.46$; $df = 2,18$; n.s.).

B. Group Effectiveness

Since condition did not interact with task type, a repeated measures design was unnecessary. A more conservative statistic, the one-way ANOVA, was performed on condition by total success.

Condition had a significant effect on success ($F = 7.27$; $df = 2,21$; $p < .005$). Analysis of the means by Duncan's multiple range statistic indicated that the A-A group ($M = 7.75$) did not differ from the A-P group ($M = 7.69$), but both of these groups differed significantly in terms of higher success rate from the P-P group ($M = 5.38$).

Since overall success differed by group membership, the next step in the data analysis was to determine which factors contributed to more effective problem-solving by the A-A and the A-P groups.

C. Factors Affecting Group Success

A number of factors were examined as possible explanations for the variation in success by the three groups. These included: time (persistence), amount of talk, number of topic initiations, use of the suitable English words (naming), communication strategies and no strategy. One way ANOVA procedures were conducted to investigate time, rate of communication, naming, communication strategies and percentage of no strategies (see Table 3-1) in order to determine whether the three groups differed on these variables.

Time (Persistence)

Although some of the dyads spent the full ten minutes on the task, others used as few as two or three minutes. The number of seconds spent on the FD task did not differ by condition ($F = .309$; $df = 2,21$; n.s.). In other words, there was no trend indicating that either of the three groups (A-A, A-P, P-P) spent more or less time on the task.

TABLE 3-1

Analysis of variance by condition (A-A, A-P, P-P)

Variable	F	df	p
Time	.309	2,21	n.s
Rate of communication	.072	2,21	n.s
Naming	1.935	2,21	n.s
Communication strategies	.520	2,21	n.s
Percentage of no strategies	2.744	2,21	<.09
Percentage of effective naming	11.429	2,21	<.001
Percentage of effective communication strategies	6.008	2,21	<.01

Amount of Talk

a) Rate of Communication

Rate of communication was determined by dividing the total number of words in a transcript by the number of seconds spent on the task. The rate of words emitted did not differ across the three groups (F = .072; df = 2,21; n.s.) as shown in Table 3-1. However, rate was found to be positively correlated with the success of individual dyads (see Table 3-3). In other words, the faster the participants spoke, the more successful they were, regardless of whether they were in the A-A, A-P or P-P groups.

b) Percent of talk contributed by each participant

The amount of speech an individual contributed to the conversation was calculated in percentages. It was expected that the active participant would dominate conversations in the A-P pairs and conversations in the matched dyads

would be balanced. The amount of talk contributed by the more talkative speaker of the A-A pairs and the P-P pairs, respectively, was an overall 56.5% and 58.6%. In the A-P pairs, the active participant did talk more than the passive participants (in five out of eight cases) but contrary to expectation, the overall percentage for active individuals was only 53.8%. The closeness of these three percentage figures is striking and indicates that the active person in the A-P dyads did not dominate conversations any more than did the more talkative individual in the A-A and P-P groups.

Number of Topic Initiations

The attention task involved objects present in only one picture; solution of the problem could thus be initiated by only one member of a pair. It was possible, however, for either participant to initiate any of the five problems on the discrimination task. In dyads where one of the participants initiated four or all of the five topics, that person was credited with having taken a leadership role. On the basis of this definition, four out of eight pairs in the A-A group, two out of eight in the A-P group and three out of eight in the P-P group were cases where one of the dyad members took a leadership role.

Naming

a) Use of the correct English word

Inspection of Table 3-1 indicates that knowledge of specific English words needed to solve the problems did not differ by condition ($F = 1.94$; $df = 2,21$; n.s.). The dyads in each group exhibited equal lexical proficiency by this measure.

b) Effective use of names

Although the ability to use the correct English words did not differ by condition; use of these words did not always lead to the solution of the problems (see Table 3-1). The percentage of effective use of names differed significantly by condition ($F = 11.429$; $df = 2,21$; $p < .001$). Inspection of the means suggests that the A-A group ($M = 92.63$) did not differ from the A-P group ($M = 95.63$)

but both were significantly more effective in their use of names than the P-P group (M_i = 76.25).

Communication Strategies

a) Use of communication strategies

The number and type of communication strategies used for solving the problems were calculated for each dyad. Table 3-2 presents the totals and the types of strategies used by pairs in each of the three groups. The number of strategies did not differ significantly for the three groups (F = .520; df = 2,21; n.s.). It appears from inspecting Table 3-2, that, in addition to using similar numbers of strategies, the three groups employed the same types of communication strategies. However, the use of particular communication strategies did not always meet with success.

b) Effective use of communication strategies

Table 3-1 indicates that the percentage of effective communication strategies differed significantly by condition (F = 6.008; df = 2,21; p <.01). Duncan's multiple range statistic further indicated that the A-A group (M = 92.12) did not differ from the A-P group (M = 96.75) but both the A-A and the A-P groups were more effective in their use of communication strategies than the P-P group (M = 74.25).

No Strategy

Although the percentage of no strategies (see Table 3-1) was not statistically significant, the general trend was for the P-P dyads to rely less on strategy use than either the A-A or A-P pair combinations (F = 2.75; df = 2,21; p <.09). Means for the three groups A-A, A-P, P-P were 13.75, 14.38, and 26.88, respectively.

TABLE 3-2

Communication strategies

	A-A	A-P	P-P
superordinate term	8	7	10 (5)
approximation	13 (3)	17 (1)	12 (3)
word coinage	1	0	0
description of function	9	13 (1)	14 (6)
description of physical and/or specific features	17 (1)	23	11 (2)
description of location	35 (3)	37 (1)	25 (7)
spells/writes/draws	2	2	2 (1)
non-verbal	25 (3)	32 (1)	29 (7)
TOTAL	110 (10)	131 (4)	103 (31)
Mean number of strategies	13.75	16.37	12.88
Percentage of unsuccessful use of communication strategies %	9.09	3.05	30.09

( ) indicates number of unsuccessful attempts

D. Predicting Success

Because rate and percentage of no strategies correlated with success a percentage of effective naming and communication strategies were related to condition, it was important to see whether these four factors could account for variation in success. In order to assess this possibility, a multiple regression equation was written that attempted to predict the number of successes from the combined effects of these variables. Since the use of effective names and effective communication strategies were highly intercorrelated (see Table 3-3),

these two variables were combined and entered as one factor representing a common underlying dimension. The combined variable was labelled "effective strategies" and included both communication strategies and naming. Table 3-4 shows the results of this analysis. Variables were entered without priority.

Total number of successes is predicted at a moderate level by the combined effects of rate, percentage of effective strategies and percentage of no strategies (R^2 = .851). Thus, approximately 85% of the variation in number of successes is accounted for by these three predictors.

Table 3-4 indicates that rate and effective strategies are positively related while percentage of no strategy is negatively related to the number of successes. The simple r values of .380 for rate, .687 for percentage of effective strategies and -.735 for percentage of no strategies, are confounded with the effects of the other predictors. Beta values can be interpreted as partial regression cooefficients and indicate the effect of each predictor when the others are statistically controlled.

The regression coefficients, or simple B values, are supplied to permit specification of the prediction equation (y = c + b1(x1) + b2(x2) + b3(x3). The b1 value is 1.259, b2 is .068, b3 is -.074, and c is the constant with a value of .811.

In order to assign the percentage increment due to each variable, part correlations for each factor were squared. This indicated that approximately 4% of the variance in success could be accounted for by rate, 25% by effective strategies, 30% by percentage of no strategies and 26% by a combination of all three variables acting at the same time. These three predictors seem to account quite well for the degree of success of the dyads.

TABLE 3-3

Correlation matrix of predictors of success

	Total	X1	X2	X3	X4
Total	1.000	.747	.566	-.735	.380
X1	.747	1.000	.773	-.369	.141
X2	.566	.773	1.000	-.125	.127
X3	-.735	-.369	-.125	1.000	-.183
X4	.380	.141	.127	-.183	1.000

Total = success

X1 = percentage effective naming

X2 = percentage effective communication strategies

X3 = percentage no strategies

X4 = rate of communication

TABLE 3-4

Results of multiple regression of total number of successes with rate, effective strategies and no strategy

Variable	B	Beta	Simple r	Part corr
Rate	1.259	.201	.380	.197
Effective strategies	.068	.517	.687	.498
No strategy	-.074	-.570	-.735	-.546

Mult R	R^2	F	p	c
.922	.851	38.277	<.001	.811

IV. DISCUSSION

A. Discussion of the major findings

The data from this study suggest that when students of a second language are required to solve a two-way interaction problem, the selection of individuals that comprise a dyad may affect success on the task. The major finding was that active pairs of E.S.L. students were better at task solution than passive dyads. Interestingly, when a passive student was required to interact with an active person, these dyads were equally as effective at solving the problems as the active-active pairs. This outcome may be important for classroom teaching.

While the difference between the pair combinations was significant, the finding should be evaluated within the context of teaching practice. Although statistical significance suggests a "real" difference between groups, it does not necessarily imply an important "practical" difference. However, the present data imply that these pairings may "in fact" make an important contribution to student-student communication. This is because the present study sampled student interaction over a brief ten minute period. Even so, the group means for solution of ten problems varied considerably (A-A = 7.75, A-P = 7.69, P-P = 5.38). It would be expected that over a longer period of time (over the course of one class session or semester) the absolute difference in communicative effectiveness of similar interactions would be large enough to make it important to the teacher. In other words, while the proportion may not change, the absolute difference could result in many more hours of effective student interaction.

Importantly, for the teacher, this results in a suggestion that is easy to implement and requires little or no monitoring. Apparently, a useful strategy for improving the performance of passive students is to make certain that they interact with active ones. There is, however, a need for exercising caution; students do not remain static. For a variety of reasons arising out of life or learning experiences,

the "passive" student may eventually become a more active learner of the second language. By the same token, the reverse may be true for the active student. There is thus a danger in labelling students and seeing these "traits" as enduring characteristics. Nonetheless, with minimal caution and occasional retesting or re-evaluation, the instructor should expect a more effective interaction for passive students when they are required to converse with their more active counterparts.

Because the present findings may have implications for classroom practice, it is all the more important to identify those factors that contributed to success on the task. Intuitively, conversational characteristics (ie., rate of communication, time on task and relative dominance of one speaker over another) and/or problem-solving strategies would appear to be the major factors that generate successful task solution. Based on this hypothesis and findings from other studies (for conversational characteristics, see Porter, 1983; and for communication strategies, see Bialystok, 1983; Faerch and Kasper, 1983; Haastrup and Phillupson, 1983; Tarone, 1977;), an analysis of these factors was attempted.

Because the present study was primarily designed to identify possible differences between the varied pair combinations, rather than a direct analysis of what produced those differences, it is difficult to make definitive conclusions about factors contributing to success. The main goal of this study was to determine if, in fact, pair combination contributed to task solution. Since this outcome was confirmed, several variables suggested by other research were examined in an attempt to account for this finding. The retrospective nature of this analysis has limitations. This is because variables are statistically rather than experimentally isolated. Even more problematic, there is no comprehensive theory that suggests what the critical interpersonal factors might be or how they might interact. Nonetheless, there are several hypotheses in the literature concerned with second language acquisition and strategy use that suggest isolated factors which produce successful communication. Based on these hypotheses and the transcribed

data obtained in the present study, several conversational characteristics and problem-solving tactics were investigated.

B. Conversational characteristics

With regard to conversational characteristics, neither time on task nor rate of communication (total number of words in a conversation divided by time) differed significantly across dyads. The finding that time on task did not differ is interesting since it suggests that P-P pairs were able to sustain conversation in a manner similar to the other groups. Rate, likewise, did not differ across groups, but it was positively correlated with success. In other words, the more successful pairs (regardless of whether they were in the A-A, A-P or P-P group) tended to be those who spoke faster.

Another major conversational characteristic that could have influenced the outcome of this study was conversational dominance by one of the pair members. Specifically, it seems reasonable to expect that the active participant in the A-P dyads would guide conversation and subsequently task solution. If so, this should be reflected by the number of topic initiations and amount of talk contributed. Yet topic initiations were predominantly made in only two of the eight A-P dyads by the active student. In the remaining six pairs these initiations appeared to be evenly distributed across both partners. With regard to amount of talk, the active subjects contributed an overall 53% of the conversation. Thus, in summary, conversational dominance by the active member of an A-P dyad (whether indexed by number of initiations or amount of talk contributed) does not appear to account for the success of these pairs at task solution. Moreover, this finding suggests that active students do not dominate conversations when paired with passive students. This conclusion is strengthened when a comparison is made between the A-P group and the other two groups. In short, on the average, the findings were that one or the other member of dyads in the A-A and P-P groups "dominated" the conversation as much or more than the active students in the A-P group.

C.Problem-solving Strategies

Because conversational characteristics did not account for successful outcome by the varied pair combinations, an analysis of strategy use was conducted. It was expected that the subjects' use of the correct English word and/or their use of communication strategies (eg., approximation, paraphrase, description, mime) would lead to problem solution. When the three groups were compared on these two measures (naming and use of communication strategies), there were no significant differences. This may have occurred because all subjects were from the same measured level of proficiency, so equal lexical and strategic competence would be expected from them.

Although the three groups were able to use communication strategies and naming to the same degree, the A-A and A-P pairs were more effective in their use of these problem-solving strategies. To provide some context for understanding how the use of strategies was ineffective for the P-P group, a selection from a P-P conversation is presented below.

H: OK. I got the girl. The girl hold umbulla.

T: Umbulla?

H: Yeah umbulla (puts hand up as if holding an umbrella).

T: I don't understand.

H: Umbulla. That's when you go outside the sky the outside raining raining. The weather raining you use umbulla for to walk.

T: I don't understand.

H: OK. Forget it.

What seems clear given the above example is that although subject H was able to gesture and describe the function of an umbrella, he abandoned the message without attempting to exploit alternative communication strategies. Not all instances of unsuccessful problem-solving were as clear as this, however. In several cases the difficulty appeared to be caused by the listener. Although one

person was using a potentially effective strategy, the other person did not respond appropriately. This suggests that teachers of a second language should pay attention to the responsibilities of the listener as well as the person contributing the message. In other words, students must realize the necessity of feedback concerning effectiveness of communication rather than simply being taught strategy use per se. The listener presumably also requires vocabulary to indicate lack of understanding.

A number of researchers have claimed that negotiation (through the use of communication strategies, repair, repetitions, etc.) serves the function of providing the learner with comprehensible input (eg., Varonis and Gass, 1985; Long, 1983). Findings from the present study suggest that a simple count of the number of negotiation features (communication strategies) does not indicate whether the intended message has actually been communicated. In other words, although the A-A, A-P and P-P groups were able to use similar numbers and types of communication strategies, these negotiation features did not always lead to comprehensible input. Rather than the total number or even types of strategies, the effectiveness of those strategies seems to be what is most important. This suggestion is based on a comparison of the three groups in the present study that revealed a significant difference in effective use of strategies. This, of course, is somewhat tautological since it was impossible to identify "effective" strategies without knowledge of task solution. Obviously those who used the most effective strategies were those who did best on the task.

A final consideration concerning task performance was the finding that several of the dyads made no attempt to solve a number of the problems. These failures even to attempt solution occurred more frequently on the attention task than on the discrimination task. This may have been because items on the attention task resembled one-way communication, since only one person had information to convey. Further, some of the items on the attention task were not

as salient as those on the discrimination task. This conclusion is arrived at by a consideration of the native speakers' performance on the task. These 'control subjects' solved the problems in a particular order. To illustrate, airplane vs helicopter was typically solved first or second by eleven of sixteen dyads. Boots vs no boots was solved last or second last by eleven of these dyads as well. The non-native speakers solved problems in a similar order (see Appendix E).

Because rate of communication, effective naming, effective communication strategies and no strategy were related to task solution, an attempt was made to determine if these measures could account for the variance in success. However, naming and communication strategies were highly inter-correlated, implying that these two variables were a measure of the same factor. For this reason, effective naming and effective communication strategies were combined and referred to as "effective strategies". Combining these two variables seems legitimate, since use of the correct English word (naming) is tactically similar to paraphrase, generalization and so on. Multiple regression indicated that the three predictors (rate, effective strategies and no strategy) accounted for 85% of the variance. Unfortunately, in the absence of any general model of communication in second language acquisition there is no a priori reason to sele ne predictor over another. Another difficulty with this analysis is that one of the three predictors (no strategy) was negatively correlated with success and suggested what students did not do rather than what made them successful communicators. It does not seem very profound to state that poor task performance is related to not attempting the task. Nonetheless, these results suggest that students who are taught "effective" strategy use are better communicators. Both parties are co-workers in tasks such as the one used in this study and they must act in concert with one another. For example, a student who uses communication strategies but does not pay attention to the listener may be ultimately unsuccessful. Given that one goal of second language programs is to develop learners' strategic competence, what these results suggest is that

communication strategies should be taught in the context of discourse.

D. Limitations of the study

Although I have attempted to argue that the results of the present investigation have practical and direct implications for teaching English as a second language, caution is required.

So-called "active" or "passive" students may converse quite differently when faced with other communication problems and when in other settings. Selinger (1983) has argued that students maintain these characteristics outside the classroom and because of this generate more or less verbal input from others which affects their second language proficiency. In contrast, Day (1984, 1985) has provided evidence that active students (labelled 'high input generators' by Selinger 1977, 1978) are not necessarily better aquirers. This discrepancy could come about because the *demands* placed on the learner by the linguistic community, whether on-going or episodic, affect style of interaction, regardless of initial classification of the student. In other words, the passive individual may communicate actively when the task requires it (for example, a passive person may become active if "forced" to talk to a taxi driver in order to get home). In a similar manner, the "active" student may passively interact with native speakers outside of the classroom. The point is that style of interaction which is assumed to affect language acquisition (eg., Stern, 1983) may depend more on the demands of the verbal environment and feedback than on inherent student traits (for a similar but not identical view, see Brown, 1980; pp. 138-139).

The task used in this study provided a ten minute sample of students' verbal interaction. The brevity of this observation naturally limits the generalizability of the present findings. A better but more costly procedure would involve longer observations and more extensive sampling. In addition, the task may not have been typical of other kinds of discourse. This is because "game-like" activities such as the one used in this study may create demand characteristics (see

Orne, 1963) that, in part, affect communication. In other words, the quasi-laboratory setting with tape recorders, video cameras and researcher along with a task that requires a definative solution is so unlike a typical everyday setting that the behaviour sampled may not be representative of usual discourse. Unfortunately, there is no solution to this problem without sacrificing internal validity (see Campbell and Stanley, 1963).

A more general difficulty with the present study was that it was designed to identify overall differences in task performance between groups of dyads; a consideration of what produced those differences after they were found was a secondary concern. As stated earlier this required a retrospective analysis of those factors that contributed to success. As Wagner (1983) has stated: "One of the first demands to be made on research into communication strategies must be to invesitigate genuine verbal interaction. Methodologically, this entails a transition to discourse and communications analysis. In this context, it should be noted that the investigations available are not based on any explicit theories of communication. This implies that the results obtained in those studies are difficult to interpret" (p. 160). This is the major difficulty with the present study; while there is a seemingly straightforward overall effect, the interpretation of that effect is problematic.

E. Suggestions for future research

Since I have argued that the results of the present investigation have practical implications for the second language classroom teacher, it would appear important to determine whether pairing passive students with active ones over an extended period of time produces more effective communication. This could be accomplished by first assessing communicative competence and then categorizing students as either active or passive and assigning them to various pair combinations. Subsequently, the classroom instructor could implement a variety of tasks that require verbal interaction between members of the dyads. Both

communicative competance and passiveness could be assessed at several time intervals (eg., eight weeks, sixteen weeks, six months and a year). In addition, it is commonly held that men are more active (in the sense of verbal dominance and aggressiveness) than women. If this is true, mixing dyads with regard to gender may merit evaluation.

Results presented in this study also suggest that naming, common strategies and rate of talking are important factors affecting communicative competence. However, as previously stated, the design limitations prevented a direct analysis of these variables. For this reason, future research could be designed in an attempt to experimentally investigate these factors. For example, communication strategies could be taught and performance on problem-solving tasks assessed. One possibility would be to teach communication strategies and then cross this factor with the active-passive classification.

Although the subjects in this study were selected according to a criterion that placed them at similar competencies, sufficient for the teaching instution they were drawn from, this could be problematic. The difficulty is that the testing procedure may not, in every case, correctly identify the language competency of tested individuals. In other words, some students who actively use the laguage may simply be more competent. If this is true, the present findings suggest that less competent students may perform better when paired with higher level students. Lending tentative support to this notion are the findings of Veronis and Gass (1985) who showed that when students of different competencies were paired, there was a greater frequency of negotiation features than when students were placed with others at the same level. Therefore, a suggestion for further research is to pair students from different competency levels and evaluate their performance on a problem-solving task.

F. Conclusion

In summary, the most interesting outcome of this study was that when

passive language learners were paired with active ones, these pairs were as effective as dyads made up of only active members. When passive students were placed with other passive students they did not perform as well as the active-active or active-passive dyads on the two-way interaction task, used in this study. A practical suggestion is that when teachers involve students in small group activities, passive students will be more effective when they are required to interact with active ones.

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APPENDIX A

REVIEW OF THE LITERATURE

Review of the literature

A. Introduction

For some years, researchers have been investigating the nature of interactions between learners in second language classrooms. These studies have been motivated by pedagogical as well as theoretical concerns.

The current trend in second language teaching is to foster meaningful use of language at all stages of the acquisition process. Classroom teachers no longer view language as an independent and unitary system but rather as a form of social activity. Since communication is the primary function of language, it is thought that language is learned best when people use it to communicate. A major focus of second language instruction concerns developing the learners' communicative competence. This involves not only linguistic accuracy but the functionally and socially appropriate uses of language. A focus on communicative competence has led to an increase in the amount of small group and pair work in second language classrooms.

Second language researchers have also been interested in determining the variables that enhance or hinder language acquisition. In the past, for example, attention was focused on variables such as competing methodologies, student aptitude and attitude and linguistic relativity. In recent years, the type and nature of the language to which the learner is exposed (language "input") have come to be regarded a crucial factor. Second language learners obtain input from contact with native speakers, teachers of the language, and from other learners. Because of the emphasis on group work in second language classrooms, some researchers have investigated the nature of the input in these interactions in an effort to determine the advantages and disadvantages of having learners work together.

B. Communicative Language Teaching: from "language centered" to "communicative" approaches

One significant change in second language instruction has been a movement toward "communicative" language teaching. Communicative approaches have come about from several changes in ways of thinking about language, learning and teaching.

In the United States in the 1940's and 1950's, structural linguistics and behavioral psychology were the major theoretical paradigms for language research and teaching (see Fries, 1952; Skinner, 1957, 1986). Approaches to second language teaching were "language" centered, that is, they concentrated almost solely on form. Structural linguistics provided tools for dissecting language into units and for comparing and contrasting two languages. Behavioral psychology provided models for teaching "verbal" behavior or "language" through operant conditioning. Verbal behavior was thought to be a set of operant responses acquired and maintained by contingencies of reinforcement arranged by the verbal community. These ideas provided the theoretical foundation for what came to be known as the audio-lingual method. Errors were regarded as detrimental to language acquisition and teachers were careful to correct errors from the beginning. In addition, the existence of errors in student production was seen to be the result of poor materials and poor pedagogy. Appropriate materials delivered appropriately were supposed to avoid all chances of student error. Little attention was paid to the functional aspects of language.

In the 1960's the generative-transformational school of linguistics emerged through the influence of Chomsky (1957, 1965). Chomsky claimed that the child is born with a predisposition to acquire language. He argued for a more abstract or "deeper" grammar that could account for the intuitions of native speakers with regard to the way sentences are organized as equivalent or ambiguous. This

implied a model of language acquisition that was not dependent on conditioning and reinforcement schedules but rather involved the constant forming and testing of hypotheses about the language. By the 1970's, second language acquisition had largely adopted this framework and errors came to be regarded as a necessary and essential part of language acquisition, since they allowed for the testing of hypotheses.

At around the same time, cognitive psychologists were interested in trying to discover psychological principles of organization and functioning (see Ausubel, 1968). Meaning, understanding and knowing were considered significant data for psychological study. Cognitive psychologists, like generative linguists sought to discover underlying motivations and deeper structures of human behavior.

Chomsky did not claim to offer a new method for second language teaching. Transformational grammar was a logical, mathematical model of language; its goal was to account for linguistic competence. Nonetheless, many applied his ideas to teaching and labelled the new method a "cognitive" approach (see Carroll, 1966). In a cognitive approach to second language learning, language is not viewed as a set of habits but as a set of abstract concepts or rules which enable the speaker to construct an infinite variety of sentences. The grammar of a language is seen as a generative device for producing these sentences. Thus, a cognitive model of second language acquisition is in accord with Chomsky's theory and hypothesis formation is viewed as critical. Interestingly, although Chomsky's position has had a major impact on theoretical considerations of language acquisition, it has not greatly affected practice in the second language classroom. His ideas did little to alter the oral/aural drilling techniques that were characteristic of the audio-lingual approach.

Chomsky (1965) drew a clear boundary as to what constituted "language" and introduced the terms "competence" and "performance" to mark that boundary. Competence refers to knowledge of the linguistic system - the grammatical rules

of a given language that an ideal speaker/hearer has internalized. Performance is one's actual use of those rules in verbal communication and includes the psychological factors involved in the perception and production of speech (eg., memory limitations, distractions, shifts of attention, context, personality). From this perspective, performance variables influence language behavior, but a theory of language is a theory of competence. In other words, the language itself can be examined and modelled independent of performance.

Although this perspective had a large impact and provided a useful context for understanding language, researchers became increasingly interested in "meaning". This issue was exemplified by Coulthard (1977) who stated: "The insights achieved by transformational grammarians were enormous but as time passed the problems became more serious. It became necessary to talk of degrees of grammaticality or acceptability; crucial examples were attacked as ungrammatical and defended as 'acceptable in my idiolect'. Meanwhile the timebomb meaning was ticking away" (p. 3).

In 1966, Dell Hymes raised the issue of "real" language use and he objected to the competence/performance distinction. He argued that Chomsky's view of language did not include the rules concerning the sociocultural significance of utterances in the situational and verbal contexts in which they are used. In other words, he argued that language could not be meaningfully characterized independently of use. Accordingly, Hymes rejected Chomsky's view of the ideal speaker/hearer, arguing that this too, was a non-existent abstraction. Finally, he redefined Chomsky's notion of competence and "communicative competence" became the new buzzword in English as a second language (E.S.L.) circles. Communicative competence includes grammatical competence and contextual or sociolinguistic competence (knowledge of the rules of language use). Second language teaching thus began to incorporate rules of language use as well as rules of grammar.

Another change occurred when Halliday (1970) added "language functions" to the notion of sociolinguistic competence. "Function" is the use to which language is put; the purpose of an utterance, as compared to the grammatical form of that utterance. Language function has to do with *what* is said as opposed to *how* it is said. Halliday pointed out that language is used for an infinite number of purposes: commanding, apologizing, requesting, etc. The function of an utterance can only be understood when it is placed in the context of the situation. Thus, both Halliday and Hymes rejected the notion of linguistic rules divorced from social context.

C. Current Approaches to Language Teaching

The re-evaluation of the conditions that develop and maintain language use has had a significant impact on the teaching of languages. In second language programs, new syllabuses were developed to replace the old "structural" ones. "Notional" and "functional" approaches began to work their way into second language teaching practices (see Wilkins, 1976). More attention was given to the teaching of language use (functions/notions) and oral work. In addition, Breen and Candlin (1980) argued that if the goal of second language programs is to develop communication skills, then the method itself should be communicative. That is, both teachers and learners should be involved in the exchange and negotiation of ideas about the learning process. The classroom in this case would no longer be "a pale representation of some outside communicative reality" (p. 98), with learners rehearsing for a performance at some later time and place. Because communication skills depend on communicative competence, it is important to identify the factors that produce this competence.

Canale and Swain (1980) examined various theories of communicative competence and their implications for language teaching and testing. They identified three key components of communicative competence: grammatical competence, sociolinguistic competence and strategic competence.

Grammatical competence refers to knowledge of rules of phonology, morphology, syntax, sentence grammar semantics and lexical items. It is the mastery of the linguistic code; the ability to recognize the lexical, morphological, syntactic and phonological features of a language and the ability to manipulate those features to form words and sentences. A person demonstrates grammatical competence by using a rule, not by stating a rule.

The sociolinguistic component is made up of sociocultural rules of language use and rules of discourse. Sociolinguistic competence requires an understanding of the social context in which language is used; the roles of the participants, the information they share and the function of the interaction.

Strategic competence refers to the use of verbal and non-verbal strategies used to compensate for breakdowns in communication. Breakdowns are considered to be due to performance variables or insufficient grammatical or sociolinguistic competence. These strategies have been referred to as "communication strategies" (Faerch and Kasper, 1983; Tarone, 1977) or "coping strategies" (Savignon, 1972). Communication strategies are used by native speakers as well as by second language learners. This is because no person knows the language perfectly and uses it appropriately in all social interactions. Paraphrasing, approximating and the use of superordinate terms are among strategies used when the correct word is unavailable or when there is misunderstanding on the part of the interlocutor.

According to Canale and Swain, each of the three components mentioned above contributes to overall communicative competence. They have recommended that teachers try to design materials that take all three areas into account.

Humanistic psychology has also had an impact on the understanding of learning and of how classroom teaching should be conducted (see Rogers, 1969). Given this influence, teachers began to focus on attitude and affect and the "whole person" approach began to be adopted (eg., Curran, 1976). Language teachers began to consider various learner-centered models.

In the late 1970's new theories of second language acquisition that attempted to explain the nature of language and learning altered views about what was important in classrooms. Krashen (1981) proposed the "input hypothesis", which emphasized language acquisition through communication. He argued that because communication is such an essential factor in natural non-formal language learning, we are justified in recommending various methods which appear to embody "communicative" methodology.From knowledge about language, learning and teaching, "communicative" approaches to second language teaching have emerged. These approaches can be characterized by the following principles:

1. Language is communication and it is learned by using it to communicate. The emphasis is on language use as opposed to usage (Widdowson, 1978). Interaction between language users and their environment is a primary objective.
2. Developing the communicative competence of the learner is the goal of second language programs.
3. Errors are regarded as a necessary and important part of the learning process.
4. The learners' role is central. The emphasis is on student initiative and interaction rather than simply teacher centered direction.
5. Not all learners proceed through the same materials at the same pace. Awareness of learner differences is essential.

If language is learned best when people use it to communicate, communication must have a central role in second language classrooms. The adoption of the previously mentioned factors will have a number of implications for teaching and for the organization and management of second language classrooms and materials. Maley (1985) presents an excellent summary of those implications and what follows is a brief restatement of that framework:

Teachers' roles will change. They will no longer be seen as possessing

absolute knowledge and authority. Their job will be to set up tasks and activities in which learners will play the major roles. They will monitor and modify these activities as needed. Authentic materials will be favored over simplified texts. Materials will be designed which take into account learners' needs as well as all of the components of communicative competence. The techniques applied to materials will be task-oriented rather than exercise-oriented. In other words, the attention will be on activities which can be achieved *through* the language rather than exercises *on* the language. Classroom procedures will favor "interaction" among students. Since much work will involve an exchange of information between students, there will be an emphasis on pair and group work.

D. Second Language Research

Communicative approaches rely heavily on the value of verbal interaction since there is a strong concensus that it is critically related to the learning process. Because of this perspective, second language researchers have begun investigating the influence of the learning environment on the learners' developing competence. The focus is on input to the learner, on the features that serve to help learners negotiate meaning and on the role of the learners' output. Because of the enthusiasm for pair and group work in second language classrooms, several researchers have been interested in providing empirical evidence to support the notion that learners can offer each other valuable communicative practice.

E. Input to the learner

Krashen (1981) proposed the "input hypothesis" claiming that learners acquire language by understanding it or by receiving comprehensible input. Comprehensible input is synonymous with "intake", which Corder (1967) used to refer to input that enables the acquirer to master more of the target language. Krashen claims that learners improve in a second language by hearing and understanding language that contains some structures slightly beyond their current level of competence.

Krashen also claims that speaking is unnecessary and that it is only useful as a means of obtaining comprehensible input. However, Swain (1985) has argued that, although input is an essential factor in second language acquisition, it is not enough to ensure that learners will become competent. She further argues that learners must be given opportunities to produce new verbal forms. What most researchers do agree upon is that learners must be put in a position of being able to negotiate new input. This ensures that the language is modified to a level of comprehensibility they can manage (see Long, 1983b).

Krashen arrived at a definition of "comprehensible input" by drawing on early research into the language used by adults when addressing children. Snow (1972) pointed out that adults use different language when addressing children than when talking to other adults. This came to be known as "baby talk", later as "motherese" and now as "caretaker speech". Extending this finding, Cross (1978) found that caretakers modify their speech to help children understand. Caretaker speech is characterized by short simple sentences, repetition, and longer pauses, among other things.

Because of this concern with the type of communication made by adults to children, second language researchers have focused attention on speech adjustments made to provide non-native speakers (NNSs) with comprehensible input. The major areas of interest include: the type of speech adjustments made by native speakers (NSs) when addressing NNSs (referred to as "foreigner talk"), the speech among second language learners themselves (interlanguage talk), and, finally, the quantity and quality of input to the learner. The majority of studies have focused on foreigner talk, while relatively few studies have examined learners' interlanguage as a source of comprehensible input for other learners.

Foreigner Talk

At least forty studies have compared the speech used by NSs in conversation with NNSs to that of NS-NS discourse (for a review of the literature

on foreigner talk, see Hatch, 1983). Foreigner talk (a term coined by Ferguson, 1971) includes characteristics such as slower rate of speech, shorter, less complicated utterances, high frequency vocabulary, fewer false starts and limited use of pronouns. NSs also ask more questions, use fewer contractions, increase volume and use a higher pitch when addressing NNSs than when addressing other NSs.

Further, it has been shown that NSs make adjustments to the interactional structure of discourse by making use of comprehension checks, confirmation checks, expansions, clarification requests, self- and other-repetitions and decomposition (Long, 1980). Topics are generally treated more simply and briefly, dealing with the "here" and "now", and NSs use stress or pauses before topics in order to make them more salient (for a review of the literature on conversational adjustments, see Long, 1983a).

Similarly, second language researchers have been interested in determining whether teachers' classroom language constitutes a more simplified code than that of NS-NS speech. Gaies (1977) compared the syntactic features of eight E.S.L. teachers in and out of the classroom. He found that the subjects' classroom speech was syntactically less complex on a number of variables (eg., shorter sentences, fewer subordinate clauses). Gaies also found that the teachers' language varied as a function of the proficiency of the learners (also see Wesche and Ready, 1985; Kleifgen, 1985).

Apparently, the type of task performed in conversations makes a difference. Long and Porter (1985) suggest that more modifications take place in conversations which require an exchange of information, as opposed to activities where only one person has information to communicate. Long (1980) found that NSs are more likely to make adjustments in their speech to NNSs when engaged in conversations where each person has information that needs to be shared. Such exercises have been called "two-way" tasks. A one-way task refers to an activity

where information is transmitted by only one person.

Interlanguage Talk

The concern with communication has recently resulted in a consideration of language exchange or interactions between NNSs. In her Ph.D dissertation, Porter (1983) examined the language produced by pairs of adult learners (of E.S.L.) in task-centered discussions. The subjects were twelve Spanish speakers representing two proficiency levels of English (intermediate and advanced) and six NSs of English. Each subject participated in separate discussions with a person from each of the three levels. This design allowed Porter to compare interlanguage talk with NS-NNS conversations, as well as look for differences across proficiency levels.

In terms of quantity of speech, the learners produced more talk with other learners than with NS partners. In addition, learners produced more talk with advanced-level than with intermediate-level partners. The number of grammatical errors, lexical errors and false starts did not differ significantly across contexts, which contradicts the notion that learners are more careful and accurate with NSs. However, Porter did find that NNS speech was about three times as "faulty" as NS speech. Importantly, Porter found an extremely low frequency of miscorrections by learners of each others' errors. This finding suggests that learners do not reinforce error patterns in conversations with each other.

Interactional features of discussions were also examined. Under the heading "repair", these features included confirmation checks, comprehension checks, clarification requests, verification of meaning, definition requests and indications of lexical uncertainty. No significant differences were found in the amount of repair used by NSs and learners. Within the two proficiency levels, it was found that learners repaired more sequences with intermediate students than with advanced ones. These data suggested that learners are capable of negotiating repair in a manner similar to NSs at both levels of proficiency. Porter also found that learners made similar numbers of "appeals for assistance", whether talking to

NSs or other learners.

Overall, it was concluded that NNS-NNS communication is beneficial, if accurate language models are also available. Although learners cannot always provide each other with accurate grammatical and sociolinguistic input, they are able to offer each other genuine communicative practice, including the negotiation of meaning (which is thought to aid second language acquisition).

Varonis and Gass (1985) compared interlanguage talk in fourteen NNS-NNS dyads with conversations of four NS-NNS dyads and four NS-NS dyads. They hypothesized that there would be differences with respect to negotiation when there was an actual or potential breakdown in communication. The NNSs were from two different first language backgrounds (Spanish and Japanese) and from two different levels of an intensive English program. The number of "non-understanding" routines which were indicative of a lack of comprehension and which led to negotiation of meaning through repair sequences were tabulated. A greater frequency of negotiation sequences were found in NNS-NNS dyads than in those involving NSs. Most negotiation occurred when NNSs were from different proficiency levels and from different first language backgrounds. Based on these findings, Varonis and Gass argue for the value of NNS conversations as a non-threatening context in which learners can practice language skills and make input comprehensible through negotiation.

A problem with this study is the claim that negotiation (indexed by number of non-understanding routines) serves to provide the learner with comprehensible input. No mention was made as to whether the speaker communicated the intended message after a non-understanding occurred. Although breakdowns in communication may provide learners with practice opportunities, more evidence is needed to support the claim that the learner has indeed received comprehensible input and that these interactions facilitate language acquisition. It may be useful to investigate communication breakdowns in task-centered discussions with

expected outcomes, in order to determine whether the listener has actually understood the message.

The issue of task type is less clear in NNS interactions than NS-NNS conversations. Doughty and Pica (1984) found that a two-way task generated significantly more negotiation work in a small group setting than a one-way task. However, Gass and Varonis (1985) looked for differences in frequency of negotiation across the two task types and found no significant differences. They did find, however, that on a second trial the amount of negotiation work decreased. They have suggested that task familiarity, type of task, role of interlocutors, and sex of dyad appear to play a part in how learners negotiate. As in their earlier study, they argue for the usefulness of NNS-NNS conversations as a means for negotiating input. In addition, they suggest that the input will be more meaningful to learners because of their involvement in the negotiation process.

Schwartz (1980) analyzed conversations between six advanced learners of English from different language backgrounds and different proficiency levels. She investigated breakdowns of understanding and described the type of repair tactics which occurred in these conversations. Schwartz found repair to involve negotiation between speakers who were attempting to achieve understanding with both verbal and extralinguistic processes. The repairs included self-initiated and other-initiated corrections. It was concluded that learners help to teach each other and therefore make good conversational partners.

Overall, the research findings on interlanguage interactions support the claim that NNSs benefit from interacting with other NNSs and suggest the following: 1) learners get more practice when conversing with other NNSs than in NS-NNS interactions and they are just as accurate (Porter, 1983); 2) learners are capable of repairing sequences and in doing so gain practice in negotiating meaning (Porter, 1983; Schwartz, 1980; Varonis and Gass, 1985); 3) NNSs negotiate

more when their NNS partners are from a different first language background and a different proficiency level (Varonis and Gass, 1983; Porter, 1983); 4) two-way tasks appear to promote a greater amount of negotiation (Doughty and Pica, 1984; but cf. Gass and Varonis, 1985); and finally, 5) it also appears that task familiarity decreases the amount of negotiation (Gass and Varonis, 1985).

Although few studies have been based on NNS-NNS interactions, researchers generally agree that second language learners gain language practice and are able to negotiate meaning (through the use of interaction features, non-understanding routines and repair) in conversations with other learners.

F. Communication Strategies

An area related to repair is communication strategy, though Tarone (1980) has suggested that repair is the broader term. This is because repair is focused on the discoursal rules for who corrects whom, when, and the correction of form as well as content, while research on communication strategies has been concerned largely with the ways the learner attempts to transmit intended meaning. Ellis (1985) has suggested that second language learners can elicit comprehensible input through the use of communication strategies.

The term "communication strategy" was coined by Selinker (1972) to account for a class of errors made by second language learners. These errors were regarded as a by-product of an attempt to express meaning in spontaneous speech when the student had a limited grasp of the target language (Corder, 1981).

Communication strategies are used to compensate for difficulties in communication. These difficulties arise as a function of inability to recall an idea or form, lack of knowledge of vocabulary, and misunderstandings. The use of communication strategies by second language learners reflects communicative competence in the target language and creates the conditions for comprehensible input. A distinction is made between strategies desighed to solve problems of speech production as opposed to speech reception. Speech production has been the

major focus of research, while receptive communication has received little attention (but cf. Carton, 1971).

Communication strategies are used by NSs as well as second language learners, because of an inability to use the language perfectly in all situations. Also, NSs are required to "simplify" their speech in a number of contexts (eg., speaking to children, NNSs, the mentally retarded).

Most research on communication strategies has focused on the identification and classification of strategies in producing lexical items (eg., Faerch and Kasper, 1980; Tarone, 1977; Varadi, 1973). A few studies have investigated the factors affecting choice of communication strategies (eg., Bialystok, 1983; Paribakht, 1985).

Varadi (1973) isolated three types of communication strategies used by Hungarian learners of English on a written translation task. He investigated the strategies employed when learners experienced a "hiatus" in their interlanguage repertoire. Varadi found that the learners replaced the meaning or form of the intended message by using other items which were part of their interlanguage system or by reducing the meaning on a formal or functional level.

Tarone (1977) chose nine intermediate E.S.L. students from a variety of first language backgrounds to describe a picture to NSs of English. The data were analyzed in order to determine the various communication strategies and to find if there was any correlation of preferred strategies with the first language background of the learner. Based on observations and reports of behavior from the subjects, Tarone identified the following five basic strategies. These were: avoidance, paraphrase, transfer, appeal for assistance and mime. Tarone also stressed the importance of eliciting data in both the native language and the target language, in order to avoid the assumption that an individual was using an avoidance strategy simply because s/he produced less data.

Tarone found that individuals exhibited preferences for certain types of

strategies and not for others, but that this preference did not depend on the students' native language. She concluded that first language background did not bias an individual toward particular strategy use and further suggested that personality may correlate highly with strategy preference.

In a later paper Tarone (1981) defines communication strategies as a "... mutual attempt of two interlocutors to agree on a meaning in situations where requisite meaning structures do not seem to be shared" (p. 65). Thus communication strategies are seen as attempts to bridge the gap between the linguistic knowledge of the second language learner and the linguistic knowledge of the interlocutor in communicative situations. In addition, communication strategies are seen as cooperative in nature; they involve negotiation of the message where both the learner and the interlocutor are aware of a communication problem which they attempt to solve on a cooperative basis.

Tarone does not specify how a learner uses the strategies identified in her earlier typology (Tarone, 1977) in a cooperative manner. Faerch and Kasper (1984) argue that if communication strategies are truly cooperative and if both speaker and listener are aware of a problem that they are attempting to solve jointly, only "appeals for assistance" qualify as genuine communication strategies. They suggest that the learner may make use of a strategy without signalling to the partner that s/he is experiencing difficulty.

Because of this problem, Faerch and Kasper (1983) have adopted a psycholinguistic definition of communication strategies as "potentially conscious plans for solving what to an individual presents itself as a problem in reaching a particular communicative goal" (p. 36). No claims are made about the cooperative nature of communication strategies; that is, the strategies adopted may be cooperative but this is a sufficient not a necessary criterion. The criterion of "potential consciousness" seems to confuse the issue, however. Whether the learner can become or is conscious of using a strategy is of doubtful importance. Rather,

the issue is to determine how the learner uses limited knowledge to cope in various communication situations.

Faerch and Kasper (1983) categorize communication strategies into subtypes. A distinction is made between strategies aimed at solving problems in reception and in production. At the production level, two major types of communication strategies are identified: reduction and achievement strategies.

Reduction strategies are used by learners to avoid problems by reducing their communicative goal. The learner may reduce the message either formally by changing the structure, or functionally by avoiding topics, abandoning the message, switching topics or avoiding initiating acts.

Achievement strategies are attempts by the learner "to solve problems in communication by expanding his communication resources..., rather than by reducing his communicative goal" (p. 45). Achievement strategies include: 1) first language (L1) based strategies such as code switching (sometimes referred to as borrowing or language switch), foreignizing and literal translation; 2) second language based strategies (sometimes referred to as 'interlanguage strategies') such as generalization, paraphrase, word coinage and restructuring; 3) non-linguistic strategies such as mime, gesture and sound imitation; and 4) cooperative strategies such as appeals for assistance.

Several researchers have used the communication strategies defined by either Tarone (1977) or Faerch and Kasper (1983) in an attempt to determine the factors influencing strategy use.

Strategy Use

Bialystok (1983) focused on the achievement strategies used by second language learners when they had a gap in their vocabulary. Subjects were sixteen grade twelve students and fourteen adult English Canadian learners of French who gave instructions to French NSs in a picture reconstruction task. No feedback was given by NSs. For each subject, a figure was calculated to represent the average

number of distinct communication strategies that were recruited for each unknown target item. Bialystok found that the more advanced students used strategies based in the second language and that the most effective strategies were those that identified functional and/or physical features of the intended concept. In addition, overall, strategies were more effective when the NNS had a greater formal control over the target language. Based on these findings, Bialystok suggests that although use of appropriate strategies is an important aspect for communicating in an imperfectly learned language, this ability is not separate from formal control over the language. In other words, second language learners at a high proficiency level perform better not only because of their strategy use but as a result of higher overall competence.

In a study focusing on conversations between NSs and eight Danish learners of English, Haastrup and Phillupson (1983) investigated strategy effectiveness and strategy preference. NNS subjects attended three different schools and were pursuing different academic goals. In order to evaluate the extent of effectiveness of different types of strategies, learner profiles were established for each conversation. The number of communication disruptions and the type and frequency of achievement strategies employed were calculated. Haastrup and Phillupson's findings confirm those of Bialystok; strategies based in the second language were the most efficient. The type of school attended with its particular attitudes, norms and teacher expectations did not appear to dictate the use of particular strategies. Like Tarone (1977), Haastrup and Phillupson suggest that strategy use may be linked to personality.

Two additional studies investigating factors influencing choice of communication strategies should be mentioned: Fahkri (1984) and Paribakht (1985). In the first study, Fahkri collected data on twelve narratives from an adult learner of Moroccan Arabic as a second language. The relationship between application of communication strategies and narrative discourse features was examined. The

findings indicated that the subject resorted to a number of strategies to compensate for linguistic deficiencies and that the application of these strategies was not random but constrained by narrative discourse features. In other words, strategy choice may be affected by the type of task performed with the language.

In a larger study, Paribakht (1985) investigated the relationship between use of communication strategies and speakers' proficiency level. The task was a concept identification exercise with twenty native speakers making up a control group. Subjects were Persian E.S.L. students from an intermediate and an advanced level (twenty in each group). Results of the analysis revealed that all three groups used the same types of communication strategies but differed in their relative frequency of use. Paribakht suggests that as learners become more proficient in the target language, they rely less on certain strategies (eg., mime) and adopt others (eg., circumlocution).

Finally, a study on the classroom situation has provided us with some insight into the role of communication strategies in teacher-student interactions. Ellis (1985) examined the interactions between a teacher and two pupils over a nine month period. In addition to examining the interactional features of the teacher's speech, Ellis looked at the learners' use of communication strategies in terms of the distinction between "reduction" and "achievement" behavior. Reduction behavior was defined as the learner missing a turn, opting out of the task by saying "no" or "I don't know", topic switching or imitating the teacher's previous utterance at an inappropriate time. Achievement behavior involved the learner's use of the first language, mime, requests for assistance and guessing.

Ellis hypothesized that reduction behavior would be more prevalent in the earlier stages but found that only one of the two students resorted to significantly more reduction behavior in those stages. The other pupil gave up as much in the later sessions as the early ones. Ellis suggests that communication strategies are not only used to obtain comprehensible input but may be the result of personality.

The work on communication strategies can be summarized as follows: 1) second language learners use communication strategies to compensate for breakdowns in communication thereby creating the conditions for comprehensible input; 2) communication strategies based in the second language appear to be more efficient than those based in the first language (Bialystok, 1983; Haastrup and Phillupson, 1983); 3) the effectiveness of strategies is also dependent on the learners' formal mastery of the language (Bialystok, 1983); 4) the type of task used to elicit strategies may dictate their use (Fahkri, 1984); 5) strategy use varies with the proficiency level of the learner (Paribakht, 1985); and Finally, 6) the use of communication strategies may be related to personality (Ellis, 1985; Haastrup and Phillupson, 1983; Tarone, 1977).

Most of the studies on communication strategies have examined the strategies learners use in conversations with NSs. However, communication between NSs and NNSs is often distorted as the NS tends to dominate the conversations. A lot of information can be obtained on the NS's foreigner talk but relatively little on the learner's use of communication strategies. Some of the studies have overcome these problems by using one-way tasks (eg., picture description, narration and concept identification), where the learner has the information to communicate. If an interactional definition of communication strategies is adopted, two-way tasks which take into account both speakers' initiations and responses should be employed. Since communication strategies are used to compensate for imperfect knowledge, they may be of particular importance when NNSs are required to talk to one another in the target language. However, an overemphasis on communication strategies and the interactions between second language learners may develop strategic competence at the expense of linguistic competence.

There has been research pointing to some of the other disadvantages of NNS-NNS interactions as well. Harley and Swain (1977), in their study on French

immersion programs in Canada, have suggested that NNS input may be responsible for the development of classroom dialects. Although it has been shown that second language learners benefit from group work, teachers must exercise caution and be aware of both the advantages and disadvantages.

G. Classroom Interaction

A number of studies have investigated the interactions which go on in second language classrooms (Long, Adams, McLean and Castenos, 1976; Long and Sato, 1983; Pica and Doughty, 1985; White and Lightbown, 1984). These studies further support the claim that group work is beneficial to students.

Long, Adams, McLean and Castenos (1976) compared speech samples from two teacher-led discussions to speech from two small group discussions, all on the same topic. Subjects were adult E.S.L. students in an intermediate level class in Mexico. Both quantity and quality of speech were examined. Quality was measured as the variety of communicative acts (not correct form) performed with the language. Both the amount and the variety of talk were found to be significantly greater in the small groups than in the teacher-led discussions. Students not only talked more but used a wider range of speech acts in the small groups. Long and his associates suggest that given appropriate tasks and topics to work with, students working in groups are able to develop some of the variety of skills (topic nomination, turn allocation, focusing, summarizing and clarifying) which make up communicative competence in a second language.

In a study on the form and function of E.S.L. teachers' classroom questions, Long and Sato (1983) compared teachers' questions to students with those of NS-NNS conversations outside of classrooms. They found that E.S.L. teachers' classroom questions were typically aimed at having students display knowledge of material covered in class rather than at eliciting referential or expressive information. Outside the class, however, referential questions were predominant in NS-NNS conversations. Long and Sato suggest that display

questions do not generally invite learners to respond at length or to initiate topics and thus sustain interaction. They see the predominance of display questions in classrooms as diminishing the value of second language classrooms as a source for learners to obtain comprehensible input.

Long and Porter (1985) contend that although such work may be helpful in developing grammatical accuracy, it is not likely to promote the type of communication skills needed outside classrooms. They suggest the use of group work as an alternative.

White and Lightbown (1984) further showed that teachers in four E.S.L. classes in a secondary school near Montreal asked thirteen times as many questions as students did and rarely gave sufficient time for students to respond. From observations of content classrooms, Flanders (1970) found that a typical teacher talks for at least half the class period. This leaves students with little available practice time. Long and Porter (1985) suggest that group work would help to change the total individual practice time.

Pica and Doughty (1985) compared teacher-fronted and small group discussions on a one-way decision-making task with data taken from a low intermediate E.S.L. class. They found that more grammatical input was available in the teacher-fronted activities mostly produced by the teachers, while students were equally ungrammatical in both situations. Unexpectedly, they found that confirmation checks, comprehension checks and clarification requests were more available in the teacher-led discussions. However, there were few of these interaction features in either situation. They attribute this finding to the fact that neither activity allowed for a genuine two-way exchange of information.

Self- and other-repetitions were quite abundant in both situations as compared to the other interaction features. Pica and Doughty suggest that self- and other-repetitions are not used by classroom teachers to negotiate meaning but as a classroom convention to ensure completion of tasks. They further suggest that

more stringent categories of repetition need to be developed in order to distinguish between classroom related moves and the negotiated interaction that goes on outside classrooms.

Contrary to what they expected, Pica and Doughty found that completions and corrections were more typical in small group work. Students also had more opportunity to use the target language in these situations.

Based on their findings, Pica and Doughty suggest that group work is useful for providing students with opportunities to practice the target language and to receive feedback on their communicative effectiveness but they caution against a steady diet of group work as restricting the amount of grammatical input to the learner. In addition, students at a low level of proficiency need more teacher-directed activities and instruction as they do not have sufficient language skills to engage in discussions or in complex problem-solving activities.

It has been suggested that the findings from the research on classroom interactions support a number of pedagogical arguments for the use of group work in second language classrooms (for an excellent review of these arguments, see Long and Porter, 1985). These arguments concern "the potential of group work for increasing the quantity of student talk, for improving the quality of student talk, for individualizing instruction, for creating a positive affective climate in the classroom and for increasing student motivation" (Long and Porter, 1985; p. 207).

Given the enthusiasm for group work in second language classrooms today, teachers and researchers are beginning to ask how groups or pairs should be organized. Varonis and Gass (1985) have suggested that sex difference may be a variable contributing to the amount of negotiation in tasks involving dyads. Age of participants may also be an important considera[illegible]rown, 1985). First language background and proficieney lev[illegible] been shown to make a difference to the effectiveness of communication (Porter, 1983; Gass and Varonis, 1983). Sato (1981) introduced ethnicity as an important variable and it has also

been suggested that familiarity of interlocutors may affect the performance of groups (Long, Adams, McLean and Castenos, 1976). A further consideration would be the verbal styles that learners adopt in the classroom. It may be that those students who actively attempt to use English would best be grouped with other active students. On the other hand, more reticent students may suffer when paired with one another. Seliger (1978, 1979) has identified two categories of learner interactive styles.

Learner Interaction Patterns

In a classroom, E.S.L. students typically exhibit different learning styles and different patterns of interactive behavior. Seliger (1977, 1978) classified second language learners into two categories that represented extremes of verbal behavior in the classroom. One classification is characterized by those students who actively seek opportunities to use and practice the target language while the other is based on those students who play a passive role and rarely initiate interactions. Those students using an active interaction pattern were labelled "high input generators" (HIG's) as they make maximum use of the target language, thereby generating more input. The passive group were labelled "low input generators" (LIG's). Seliger hypothesized that HIG's would more readily acquire the second language than LIG's.

In one study Seliger (1977) found that HIG's outperformed LIG's on standardized tests and field sensitivity tests when results of performance were compared at the beginning and end of a semester. In a second study, Seliger (1978) found that LIG's produced a significantly greater number of errors that were attributed to first language interference than HIG's. Seliger claims that HIG's are better acquirers than LIG's because they use this interaction pattern outside the classroom and are therefore able to get more comprehensible input.

Although LIG's do not create as many opportunities as HIG's for obtaining personalized input, they may nonetheless perform well in interaction with HIG's.

This may be an important consideration for teachers when small group or pair activities are implemented in the classroom, so more research on this topic is needed.

H. Summary

Over the last twenty years, second language theorists and researchers have noted a shift from "language" centered approaches to "communication" models in second language classrooms. The focus of these models is on the meaningful use of language at all stages of the acquisition process. From this perspective, the message rather than the grammatical form of language is the major consideration. In other words, language learning is seen as more than just the acquisition of grammatical structures. Rather than basing a course of instruction on samples of language structure, many educators stress the importance of providing communicative situations and introducing structure as it is needed. The goal of many second language programs is thus to develop the learner's communicative competence which is made up of a) grammatical competence, b) sociolinguistic competence and c) strategic competence. Communicative approaches to second language teaching involve an increase in communicative activities in the classroom and a trend toward more real language use. The focus is on the interactions between learners and their environment and a greater emphasis is placed on the value of group and pair activities in classrooms.

Second language acquisition is dependent upon learners receiving comprehensible input. One way this can be achieved is through the formal and interactional speech modifications that NSs make when addressing learners. Another way is through the negotiation features that learners use. Because of the increased amount of group work in second language classrooms, researchers have questioned whether learners can obtain comprehensible input from one another through the negotiation of meaning. In terms of quantity, research findings indicate that learners receive more language practice in small groups than in

teacher led discussions or NS-NNS interactions (Long, Adams, McLean and Castenos, 1976; Pica and Doughty, 1985; Porter, 1983). A greater variety of communicative acts occur in group discussions and learners engage in more negotiation for meaning in small groups than in NS-NNS interactions or teacher-led activities (Long et al., 1976; Porter, 1983; Varonis and Gass, 1983).

Generally the results have been encouraging for those who wish to promote learner-learner interactions in the classroom (but cf. Harley and Swain, 1977). However, additional information is needed on issues such as how groups or pairs should be selected, optimal size, what form and style the teacher's own participation should take, the structure of activities and whether or not the negotiation features claimed to aid second language acquisition are leading to successful communication.

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APPENDIX B

MATERIALS

Find the difference' task

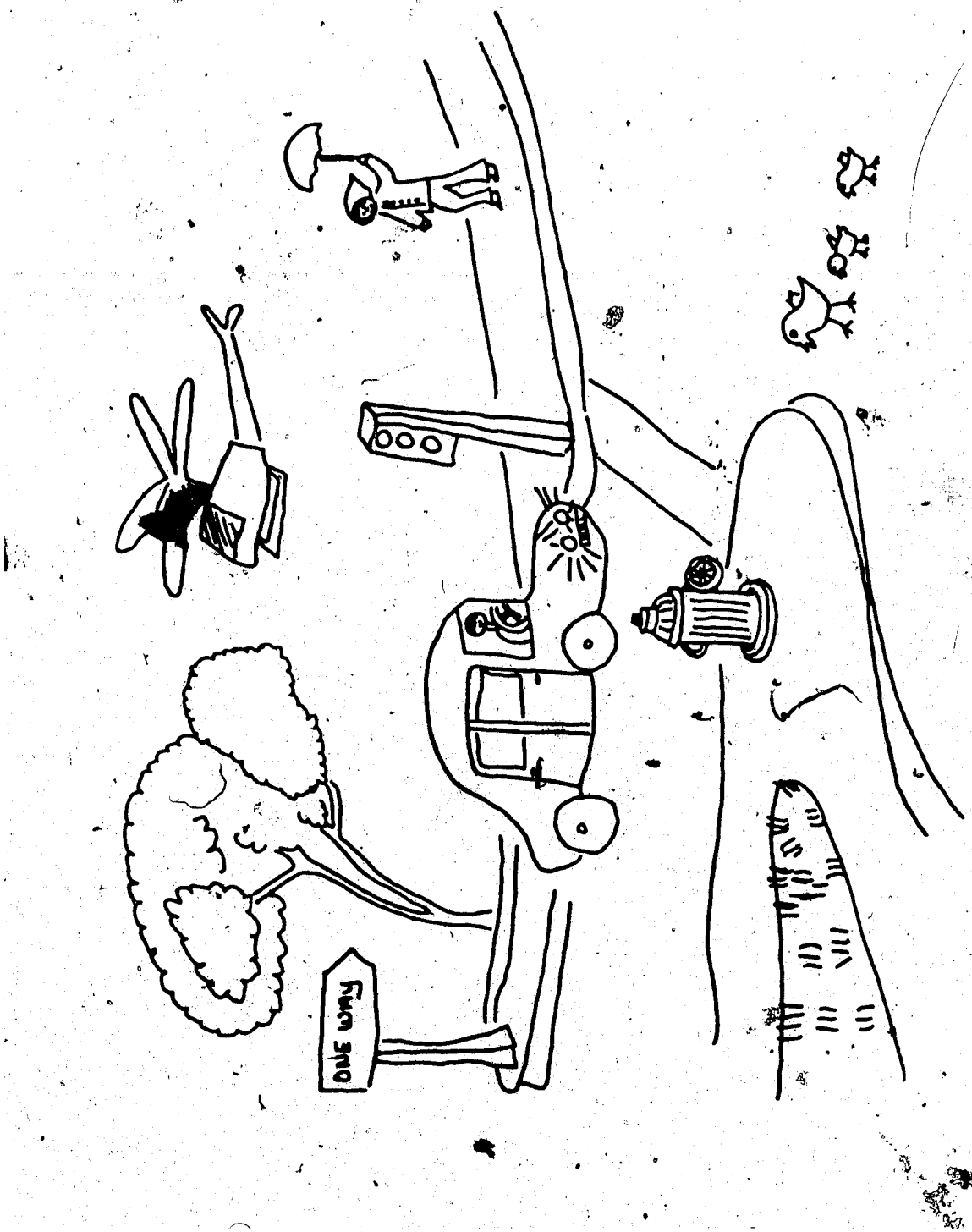
The ten differences identified in the task by the pairs of native speakers were:

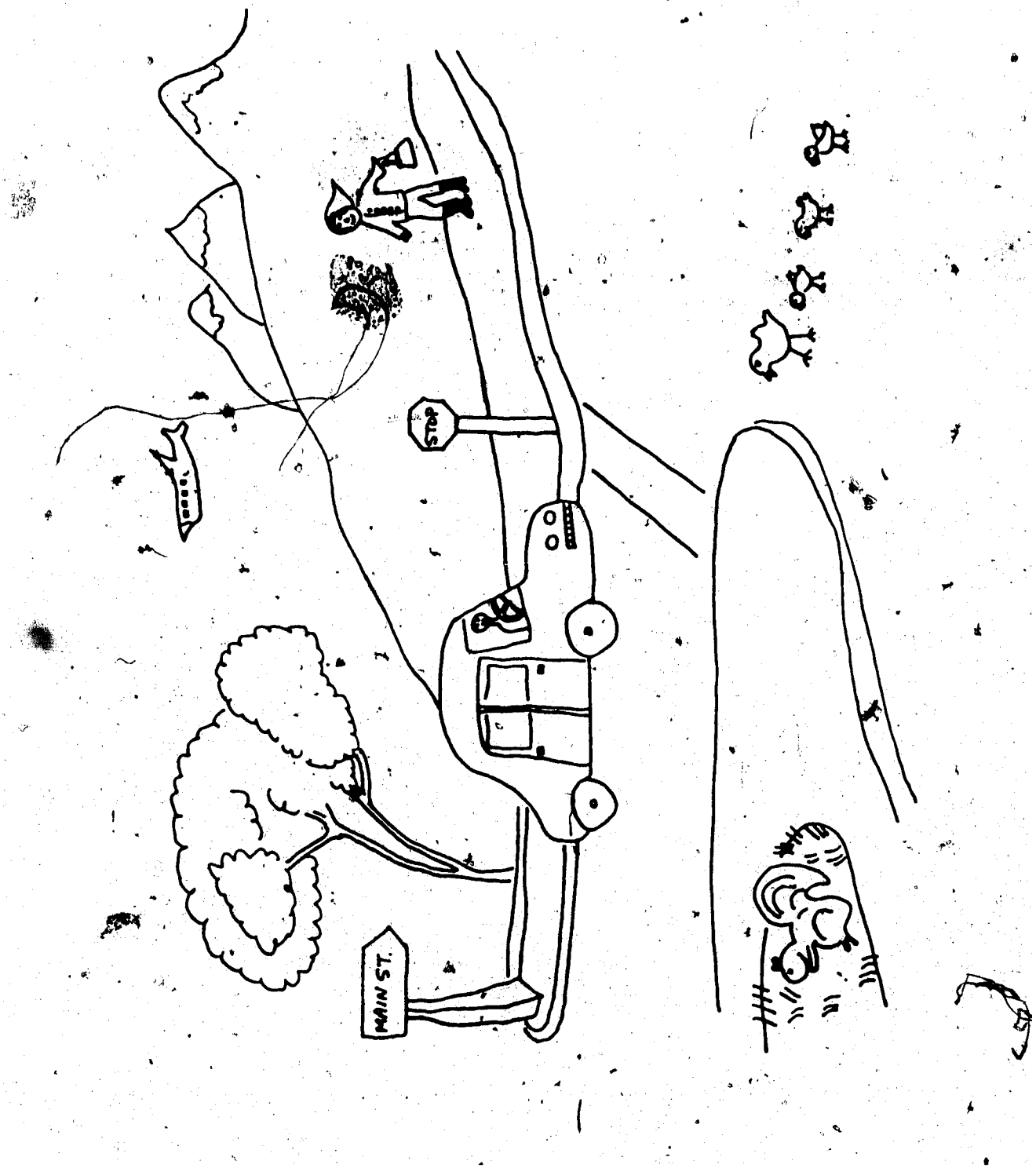
Discrimination Task

1. airplane *vs* helicopter
2. stop sign *vs* traffic light
3. purse *vs* umbrella
4. main street sign *vs* one way sign
5. 3 birds *vs* four birds

Attention Task

6. squirrel *vs* no squirrel
7. fire hydrant *vs* no fire hydrant
8. mountains *vs* no mountains
9. boots *vs* no boots
10. car lights on *vs* car lights off


ONE WAY


STOP
MAIN ST.

APPENDIX C

E.S.L CONTINUING EDUCATION PROGRAM

Alberta Vocational Center

E.S.L Continuing Education Program

The NNS subjects in [illegible] were selected from an E.S.L. continuing education program at Alberta [illegible]ional Center in Edmonton, Alberta. The courses are for newcomers to Canada, 17 years or older. The program has six levels of instruction ranging from a beginning level to an advanced class, including preparation for TOEFL. At the lower levels development of spoken English is emphasized.

As students become more proficient, more time is spent on developing reading and writing skills. Each course lasts eight weeks, two hours a day, four days a week. New students are given a written test and an oral interview and [illegible]placed at the appropriate level.

APPENDIX D

SAMPLE TRANSCRIPT

OF PROBLEM SOLVING BY ONE PAIR OF NON-NATIVE SPEAKERS

SAMPLE TRANSCRIPT

Active-Active (females)

"Find the difference" task

J: Um, my picture has um a plane. Do you have one?

F: Yeah, I have too. But what kind of the plane?

J: Oh what kind of the plane? I don't know.

F: You don't know?

J: Yeah.

F: [illegible]cture have a plane but it have um (ω) the plane is not have a (ω) you know (gestures flying - points at arms).

J: Wing.

F: Wing. Oh sorry.

J: You no wing?

F: Yeah.

J: That's different in my I don't think oh I think that's wing. Yeah wing.

F: You have wing?

J: Yeah I have wing.

F: OK, that's one different.

J: Different.

F: And my picture have um traffic light.

J: Traffic light. Traffic light?

F: Uh hm.

J: You got a traffic light? Oh lane, you mean lane or light?

F: No, traffic light.

J: Traffic light.

F: Light.

J: Oh light. No traffic light. Oh my picture doesn't my picture.

F: OK. That's two different.

J: Um my picture have a stop sign.

F: Stop sign?

J: Uh hm.

F: Oh that's different.

J: Do you have?

F: No.

J: No? That's different.

F: Maybe I think you have the stop sign but my picture the sign have the stop sign is the um traffic light. And uh and beside the traffic light have a car.

J: Oh hm.

F: And uh in front?

J: But do you mark? That number three.

F: Three?

J: Yeah that the different. I have stop sign. You don't have stop sign. So you have to mark.

F: No. You know the first one different is the plane.

J: The plane.

F: And my picture have a plane but the plane is different eh?

J: Different.

F: That's one.

J: Uh hm.

F: And two. You have the stop sign?

J: Uh hm.

F: But my picture have the traffic light.

J: Uh hm.

F: So that's two different.

J: Oh two different.

F: Uh hm.

F: And beside the traffic light have the car.

J: Yeah me too.

F: And the headlight of the car.

J: Uh hm.

F: Is on or off?

J: On or off? I don't know. I I think maybe is off. I I think is off. Yeah off.

F: Off?

J: Yeah off.

F: My picture the car is on.

J: Yeah that's different.

F: And my picture have a trees. Do you have trees?

J: Yeah a big tree.

F: And beside a trees have a sign.

J: My picture too have a sign.

F: And the sign have..

J: Main street?

F: One way.

J: No my picture don't have a one way, just a main street.

F: Main street. OK. That's different too eh?

J: Yeah.

J: Do you have um moun some mountain?

F: Some mountain?

J: Yeah.

F: No, I think maybe different.

J: Oh different. Do you have mountain?

F: No I haven't.

J: That's different.

F: My picture have no um mountains.

J: No mountain. So that's different.

F: And your picture the mountain is behind th[redacted] front of the car?

J: Beside.

F: Beside?

J: Uh hm.

F: Oh.

J: The car beside the mountain.

F: My picture is nothing beside the car. No mountain, nothing.

J: Nothing? That different.

F: Five.

J: Uh hm.

F: In my picture have a lady.

J: Lady.

F: And hold[redacted] umbrella.

J: My pict[redacted]re have a lady but she hold a bag.

F: Bag?

J: Yeah.

F: Oh that's different. Six.

J: Different.

J: My picture have some birds.

F: Birds.

J: Uh huh.

F: That's bird. Yeah my picture too. One two three. Three birds.

J: Mine four.

F: Four?

J: Yeah that's different too.

F: Different too. OK. Three more.

J: Three more. Yeah three more.

J: And my car have a bus um driver.

F: Have a driver too. Yeah.

J: Is is two door?

F: Have door?

J: Doors (gestures).

F: Doors. Yeah two.

J: Two doors. And two light in front of the car?

F: Uh hm.

J: The same?

F: Yeah but my picture the light is on. Your picture is off?

J: Yeah that's different.

J: Um my picture have a animal, but I don't know how to call the animals.

F: OK. The animal?

J: Yeah like.

F: My picture don't have the animal.

J: Like like the mouse but the long long tails (gestures tail). I don't know how to call that.

F: OK. That's different too.

J: You don't have animal?

F: No.

J: No? Two more.

F: My picture have um ground you know the ground have the gra grass (gesture).

J: Grass. My picture yeah have grass and some grass.

F: Do you have? Your picture have the grass?

J: Yeah some some grass.

F: Yeah?

J: Yeah the animal on the grass.

F: OK. Oh my picture only the grass. No animal.

J: Yeah that's different. Oh two more. My picture have a sign main street.

F: That's different. My picture have the one way-sign.

J: That's different.

J: My picture have a lady and she's walking.

F: My picture too but my picture is lady is

J: She is wearing..

F: wearing um white white jacket and the white pant. You know the colors white.

J: And the black boots.

F: And the boots um.

J: Black.

F: No, she's not wearing a boot.

J: Black, black boots.

F: Oh that's different. OK. One more.

F: Um how bout call that? You know when you walk around the street.

J: Uh hm.

F: And you can find I think some block when you walk around the street.

J: Uh hm.

F: You always find that. I don't know how to call that. You know when have the fire.

J: What happen?

F: The fire and always the firesman. You know the firesman?

J: Yeah.

F: And when the firesman need the water.

J: Yeah maybe you say that's something for put off the fire.

F: No the firesman you know when the firesman need some water. I can't say.

J: Do you have that?

F: Yeah.

J: I don't have that. That's different.

APPENDIX E

RAW SCORES

CODE

A-A = Active-Active

A-P = Active-Passive

P-P = Passive-Passive

NNSs = non-native speakers

NSs = native speakers

T1 = "discrimination" task

T2 = "attention" task

Success on T1

	Active-Active Dyad#	Active-Passive Dyad#	Passive-Passive Dyad#
Males:	1) 3.5	5) 5.0	9) 5.0
	2) 4.5	6) 5.0	10) 3.5
	3) 4.0	7) 4.0	11) 3.0
	4) 3.5	8) 4.5	12) 2.5
Females:	13) 4.0	17) 4.0	21) 3.0
	14) 4.5	18) 5.0	22) 3.0
	15) 4.0	19) 5.0	23) 3.0
	16) 5.0	20) 5.0	24) 2.0
TOTAL	33.0	37.5	25.0
MEANS	x = 4.13	x = 4.68	x = 3.13

Success on T2

	Active-Active Dyad#	Active-Passive Dyad#	Passive-Passive Dyad#
Males:	1) 5	5) 2	9) 2
	2) 2	6) 5	10) 1
	3) 5	7) 3	11) 3
	4) 4	8) 4	12) 2
Females:	13) 2	17) 1	21) 4
	4) 3	18) 4	22) 3
	15) 3	19) 3	23) 3
	16) 5	20) 2	24) 1
TOTAL	29	24	18
MEANS	x = 3.62	x = 3.00	x = 2.25

Total success on both tasks

	Active-Active Dyad#	Active-Passive Dyad#	Passive-Passive Dyad#
Males:	1) 8.5	5) 7.0	9) 7.0
	2) 6.5	6) 10.0	10) 4.5
	3) 9.0	7) 7.0	11) 6.0
	4) 7.5	8) 8.5	12) 4.5
Females:	13) 6.0	17) 5.0	21) 7.0
	14) 7.5	18) 9.0	22) 5.0
	15) 7.0	19) 8.0	23) 6.0
	16) 10.0	20) 7.0	24) 3.0
TOTAL	**62.0**	**61.5**	**43.0**
MEANS	**x = 7.75**	**x = 7.68**	**x = 5.38**

Time (Persistence) (in seconds)

	Active-Active Dyad#	Active-Passive Dyad#	Passive-Passive Dyad#
Males:	1) 331	5) 386	9) 316
	2) 440	6) 445	10) 536
	3) 295	7) 399	11) 485
	4) 600	8) 289	12) 260
Females:	13) 435	17) 424	21) 203
	14) 600	18) 458	22) 372
	15) 235	19) 472	23) 420
	16) 600	20) 450	24) 360
TOTAL	3536	3323	2952
MEANS	x = 442.00	x = 415.37	x = 369.00

Rate of Communication

	Active-Active Dyad#	Active-Passive Dyad#	Passive-Passive Dyad#
Males:	1) 1.50	5) 1.12	9) 1.00
	2) 1.16	6) 1.31	10) 1.03
	3) 1.56	7) 1.38	11) 1.09
	4) 0.69	8) 1.56	12) 1.07
Females:	13) 1.04	17) 1.05	21) 1.56
	14) 0.96	18) 1.30	22) 0.91
	15) 1.14	19) 0.92	23) 1.29
	16) 1.31	20) 0.66	24) 1.04
TOTAL	9.36	9.30	8.99
MEANS	x = 1.17	x = 1.16	x = 1.12

Amount of Talk

	Dyad#	Active-Active Total number of words	Number of words contributed by each participant
Males:	1)	497	A1 = 342, A2 = 155
	2)	514	A1 = 310, A2 = 204
	3)	461	A1 = 261, A2 = 200
	4)	418	A1 = 218, A2 = 200
Females:	13)	452	A1 = 238, A2 = 214
	14)	581	A1 = 394, A2 = 187
	15)	269	A1 = 146, A2 = 344
	16)	787	A1 = 443, A2 = 344
	TOTAL	**3979**	
	MEAN	**x = 497.36**	

A1 = most dominant participant in A-A dyads

	Dyad#	Active-Passive Total number of words	Number of words contributed by each participant
Males:	5)	432	A = 166, P = 266
	6)	582	A = 270, P = 312
	7)	549	A = 315, P = 236
	8)	452	A = 289, P = 163
Females:	17)	551	A = 396, P = 155
	18)	597	A = 315, P = 282
	19)	435	A = 229, P = 206
	20)	296	A = 143, P = 153
	TOTAL	**3894**	
	MEAN	**x = 486.75**	

Amount of talk (cont.)

	Dyad#	Passive-Passive Total number of words	Number of words contributed by each participant
Males:	9)	316	P1 = 194, P2 = 122
	10)	554	P1 = 331, P2 = 223
	11)	528	P1 = 286, P2 = 242
	12)	278	P1 = 155, P2 = 123
Females:	21)	316	P1 = 172, P2 = 144
	22)	340	P1 = 190, P2 = 150
	23)	545	P1 = 305, P2 = 240
	24)	373	P1 = 205, P2 = 168
	TOTAL	**3260**	
	MEAN	**x = 407.5**	

P1 = most dominant participant in P-P dyads

Naming on T1 (use of the appropriate English word)

	Active-Active Dyad#	Active-Passive Dyad#	Passive-Passive Dyad#
Males:	1) 3.5	5) 4.5	9) 4.5
	2) 4.0	6) 5.0	10) 3.5
	3) 4.5	7) 4.0	11) 3.5
	4) 4.5	8) 4.0	12) 3.0
Females:	13) 4.0	17) 4.0	21) 3.5
	14) 3.5	18) 5.0	22) 3.5
	15) 4.0	19) 4.5	23) 4.0
	16) 4.5	20) 4.5	24) 3.0
TOTAL	**32.5**	**35.5**	**28.5**
MEANS	**x = 4.06**	**x = 4.44**	**x = 3.56**

Naming on T2

	Active-Active Dyad#	Active-Passive Dyad#	Passive-Passive Dyad#
Males:	1) 3	5) 1	9) 1
	2) 1	6) 3	10) 2
	3) 3	7) 1	11) 3
	4) 3	8) 2	12) 1
Females:	13) 2	17) 2	21) 3
	14) 2	18) 2	22) 2
	15) 2	19) 2	23) 2
	16) 3	20) 0	24) 1
TOTAL	**19**	**13**	**15**
MEANS	**x = 2.38**	**x = 1.63**	**x = 1.88**

Naming

Total on both tasks

	Active-Active Dyad#	Active-Passive Dyad#	Passive-Passive Dyad#
Males:	1) 6.5 (0)	5) 5.5 (0)	9) 5.5 (1)
	2) 5.0 (0)	6) 8.0 (0)	10) 5.5 (2)
	3) 7.5 (0)	7) 5.0 (0.5)	11) 6.5 (1.5)
	4) 7.5 (1)	8) 6.0 (0)	12) 4.0 (1)
Females:	13) 6.0 (1)	17) 6.0 (1.5)	21) 6.5 (1)
	14) 5.5 (1)	18) 7.0 (0)	22) 5.5 (0.5)
	15) 6.0 (0.5)	19) 6.5 (0)	23) 6.0 (2)
	16) 7.5 (0)	20) 4.5 (0)	24) 4.0 (1)
TOTAL	**51.5 (3.5)**	**48.5 (2)**	**43.5 (10)**
MEANS	**x = 6.44**	**x = 6.06**	**x = 5.44**

Communication Strategies

	Active-Active							
Dyad#	1	2	3	4	13	14	15	16
Superordinate term	1	0	1	1	1	2	0	2
Approximation/synonym	3(2)	2	2	0	3(1)	1	1	1
Word coinage	1	0	0	0	0	0	0	0
Description of function	1	2	2	1	0	0	0	3
Description of physical and/or specific features	3	3	2	0	1	4(1)	1	3
Description of location	6(1)	6	6(1)	3	0	9(3)	2	2
Spells/writes/draws	0	1	0	0	0	1	0	0
Non-verbal	6	2	2	2	0	9(3)	2	2
TOTAL	**21(3)**	**16**	**15(1)**	**7**	**11(2)**	**19(4)**	**6**	**15**

( ) indicates number of unsuccessful uses of communication strategies

Communication Strategies

	Active-Passive							
Dyad#	5	6	7	8	17	18	19	20
Superordinate term	0	2	1	0	1	1	1	1
Approximation/synonymy	0	1	3	3	3	5	0	2(1)
Word coinage	0	0	0	0	0	0	0	0
Description of function	2	3	2	1	1(1)	4	0	0
Description of physical and/or specific features	5	3	3	2	1	3	4	2
Description of location	5	5	5	3	5(1)	6	1	7
Spells/writes/draws	0	0	1	0	1	0	0	0
Non-verbal	5	7	3	6	5(1)	4	1	1
TOTAL	**17**	**21**	**18**	**15**	**17(3)**	**23**	**7**	**13(1)**

( ) indicates number of unsuccessful uses of communication strategies

Communication Strategies

	Passive-Passive							
Dyad#	9	10	11	12	21	22	23	24
Superordinate term	1	2	2(2)	0	2(1)	0	1(1)	2(2)
Approximation/synonymy	1	2	5(3)	0	1	1	1	1
Word coinage	0	0	0	0	0	0	0	0
Description of function	1	6(5)	2	1	1	1	2(1)	0
Description of physical and/or specific features	2	2(1)	3(1)	1	1	0	1	1
Description of location	3	3(1)	6(2)	0	5(1)	1	4(2)	3(1)
Spells/writes/draws	0	2(1)	0	0	0	1	0	0
Non-verbal	2	3(3)	9(2)	3	7(2)	4	0	1
TOTAL	**10**	**20(11)**	**27(9)**	**5**	**17(4)**	**7**	**9(4)**	**8(3)**

( ) indicates number of unsuccessful uses of communication strategies

No strategies on T1

	Active-Active Dyad#	Active-Passive Dyad#	Passive-Passive Dyad#
Males:	1) 1.0	5) 0.0	9) 0.0
	2) 0.5	6) 0.0	10) 1.0
	3) 0.0	7) 0.5	11) 0.0
	4) 0.5	8) 0.5	12) 1.0
Females:	13) 0.5	17) 0.5	21) 0.0
	14) 0.0	18) 0.0	22) 1.0
	15) 0.5	19) 0.0	23) 0.5
	16) 0.0	20) 0.0	24) 1.0
TOTAL	**3.0**	**1.5**	**4.5**

No strategies on T2

	Active-Active Dyad#	Active-Passive Dyad#	Passive-Passive Dyad#
Males:	1) 0.0	5) 3.0	9) 3.0
	2) 3.0	6) 0.0	10) 3.0
	3) 0.0	7) 2.0	11) 1.0
	4) 1.0	8) 1.0	12) 3.0
Females:	13) 2.0	17) 1.0	21) 1.0
	14) 0.0	18) 1.0	22) 3.0
	15) 2.0	19) 0.0	23) 1.0
	16) 0.0	20) 2.0	24) 2.0
TOTAL	**8.0**	**10.0**	**17.0**

Total no strategies on both tasks

	Active-Active Dyad#	Active-Passive Dyad#	Passive-Passive Dyad#
Males:	1) 1.0	5) 3.0	9) 3.0
	2) 3.5	6) 0.0	10) 4.0
	3) 0.0	7) 2.5	11) 1.0
	4) 1.5	8) 1.5	12) 4.0
Females:	13) 2.5	17) 1.5	21) 1.0
	14) 0.0	18) 1.0	22) 4.0
	15) 2.5	19) 0.0	23) 1.5
	16) 0.0	20) 2.0	24) 3.0
TOTAL	11.0	11.5	21.5

Order of task solution for native speakers

The order of solution is presented for the discrimination and attention task problems by 16 NS dyads,

Each entry in the table refers to the total number of pairs solving that problem in the order given.

Discrimination task

	airplane helicopter	stop sign traffic lt	main street one way	3 birds 4 birds	purse umbrella
Order					
1st	6	4	2	1	0
2nd	5	2	2	3	1
3rd	1	3	4	3	2
4th	0	2	0	2	5
5th	2	1	3	2	0
6th	1	3	1	1	2
7th	0	1	[illegible]	3	4
8th	1	0	2	0	2
9th	0	0	0	0	0
10th	0	0	0	1	0

Attention task

	fire hydrant	squirrel	mountains	car lignts	boots
Order					
1st	2	0	1	0	0
2nd	3	0	0	0	0
3rd	0	2	0	1	0
4th	3	1	1	1	1
5th	4	1	1	1	1
6th	2	4	1	0	1
7th	1	2	1	1	1
8th	0	2	6	2	1
9th	1	2	4	5	4
10th	0	2	1	5	7

Order of task solution for non-native speakers

The order of solutuion is presented for the discriminatio and attention task problems by NNS dyads. Each entry in the table refers to the total number of psairs solving that problem in the order given.

Disrimination task

	airplane helicopter	stop sign traffic lt	main street one way	3 birds 4 birds	purse umbrella
Order					
1st	5	4	5	1	5
2nd	4	3	1	5	7
3rd	2	3	3	7	0
4th	1	5	4	3	3
5th	3	1	5	2	2
6th	0	0	4	1	3
7th	0	2	1	2	3
8th	0	0	1	0	0
9th	0	0	0	0	0
10th	0	0	0	0	0
NOT SOLVED	**9**	**6**	**03**	**1**	

Attention task

	fire hydrant	squirrel	mountains	car lights	boots
Order					
1st	0	2	2	0	0
2nd	0	1	3	0	0
3rd	2	1	1	4	1
4th	1	1	4	1	1
5th	2	3	4	1	1
6yh	4	3	2	0	3
7th	3	3	1	1	0
8th	2	3	2	2	1
9th	2	0	2	2	1
10th	1	0	0	0	2
NOT SOLVED	**7**	**7**	**3**	**15**	**14**