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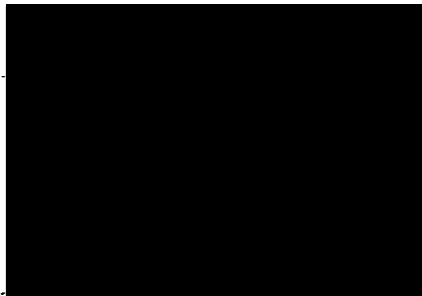
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FORM AND FUNCTION:
THE LEARNING OF YES/NO QUESTIONS
IN ENGLISH AS A SECOND LANGUAGE

by

Malerie Burton

B.A. (cum laude) University of Colorado 1974

THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF ARTS (EDUCATION)
in the Faculty
of
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Form and Function: The Learning of Yes/No

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ABSTRACT

Most research on the acquisition of yes/no questions in English as a Second Language (ESL) has disregarded the fact that a learner can produce a syntactic form without necessarily knowing the appropriate uses or functions of that form. Researchers who focussed exclusively on syntactic forms hypothesized that uninverted forms of yes/no questions would be acquired before the syntactically more complex inverted forms. According to the function-based hypothesis developed in this thesis, the prototypical information-eliciting function of yes/no questions should be learned before the confirmatory and expressive functions. Thus, inverted forms should be learned before uninverted forms.

Native and nonnative English speakers' ability to match functions and forms of yes/no questions was tested. Subjects listened to each of 33 passages designed to evoke the information-eliciting, confirmatory, or expressive function. For each passage, they chose one of three yes/no questions as the appropriate next response. The test was validated by 40 native English speakers. As predicted, the inverted form was used to elicit information, the uninverted form with normal intonation served a confirmatory function, and the uninverted form with stress-shifted intonation was used to express surprise or disbelief.

The form-based and function-based acquisition hypotheses were compared by analysing results for two groups of ESL

learners, 46 who spoke French as a first language and 46 from a variety of language backgrounds. A two-way analysis of variance with repeated measures was used to investigate the effects of sex and group, the two between-subjects factors. Function was the within-subjects factor, its three levels corresponding to subjects' scores on the information-eliciting, confirmatory, and expressive subtests.

Results favoured the function-based hypothesis. Participants scored better on the information-eliciting subtest than on the confirmatory or expressive subtests. Inverted forms were mastered before uninverted forms despite their syntactic complexity. The results of this study provide empirical support for function-based models in ESL teaching and research. The instrumentation developed here provides a model for controlling language functions as an experimental variable in discourse analysis.

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I. Problem Statement

General Problem and Rationale for Investigation

One important area of research and pedagogy for English as a second language (ESL) centres on developing methods for evaluating a learner's control of the target language. Much of this research has focussed on the acquisition of syntactic forms. The models for such studies are Brown's (1973) and his colleagues' (Brown, Cazden & Bellugi, 1971) investigations of the first language acquisition of 14 English morphemes, negative forms and interrogative forms. More recently, ESL researchers Dulay and Burt (1974a, 1974b) investigated the acquisition order of 11 English morphemes for nonnative speakers of English. Acquisition studies of this kind assume that a speaker's production of a form (to a specified criterion) is evidence that he has acquired that form.

However, as Wagner-Gough (1975) argued, evidence that a speaker can produce a form is not sufficient for concluding that the speaker knows the appropriate uses or functions of the form. A teacher or researcher must take a speaker's knowledge of linguistic functions as well as forms into consideration in order to evaluate language proficiency. Although this is a valuable proposal in theory, it is impractical given the current

state of grammatical description. Even if rule systems based on function as well as form could be identified for ESL learners, they could only be evaluated internally in terms of a particular stage of language or interlanguage. Further, external evaluation, or comparison with the target language, is inhibited because the target rule systems are not currently defined or understood in terms of both form and function.

The two major sources of information on the English rule system currently available to ESL researchers are the grammatical descriptions provided by structural linguistics and by generative-transformational linguistics. But because of the limitations imposed by their philosophies of language and their techniques of rule discovery, the major schools have not produced descriptions of English which are suitable for the purpose of ESL research into rule-governed behaviour. There are two problems with current grammatical description from the point of view of applied linguists in ESL.

First, the philosophy of language underlying linguistic descriptions in North America, whether empiricist or rationalist, has focussed mainly on linguistic form and ignored linguistic function. Formal or grammatical competence has been stressed at the expense of functional competence, the appropriate use of language. As argued above, a rule system suitable for ESL research and pedagogy would incorporate both form and function of linguistic structures (Wagner-Gough, 1975; Hatch & Long, 1980; Celce-Murcia, 1980).

Second, although generative grammarians claim that transformational rules represent native speakers' intuitions, the rules derived in most analyses are based on the logical inferences of linguists. These grammarians usually have a sophisticated metalinguistic awareness of the English language. Empirical investigations of transformational rules have shown that native speakers' intuitions do not always match linguists' intuitions (Greene, 1972; Celce-Murcia, 1980).

Thus, current formal descriptions of English fail to provide a model of language which can support a technology of ESL teaching. These descriptions ignore the appropriate contextual use of language, and the rules do not always stand up to empirical verification. Some progress is being made in evaluating the role of linguistic forms and functions under discourse conditions in the acquisition of English as a second language (Hatch & Long, 1980; Celce-Murcia, 1980). But until researchers and grammarians describe the English rule system in terms of form and function, it will not be possible to evaluate ESL learner rule systems based on form and function in terms of the target language.

The communicative and notional-functional approaches evolved in second language teaching mainly as a reaction against unsuccessful structural approaches. According to Wilkins (1976, p.42), "what people want to do through language is more important than mastery of language as an unapplied system." A functional approach to language teaching presupposes this

viewpoint. The communicative and notional-functional approaches concentrate on providing the learner with communicative competence, the ability to produce contextually appropriate language. This view of functional competence differs from Chomsky's formal view that competence is the ability to generate grammatical language.

Theoretical support for the emphasis on language use is provided by the work of Halliday (1964) in linguistics, Austin (1965) and Searle (1975) in philosophy, and Hymes (1971) in anthropology. Tough (1977) and Bates (1976) have undertaken empirical investigations of the development of functions in child language. In view of the growing recognition of the importance of both form and function of utterances, the teaching materials based on formal descriptions are quickly becoming obsolete in the sense that they are now mismatched with a new theory of what must be acquired.

Until we know a great deal more about the relation between linguistic forms and their function in speech we shall have difficulty in drawing up a 'functional' syllabus in formal linguistic terms. We may teach the learner to form interrogative sentences, and fail to teach him how to ask questions in an appropriate way. (Corder, 1975, p. 49)

Given the new support for a rule-oriented deductive-cognitive approach over an inductive-behaviorist approach to ESL instruction (Celce-Murcia, 1980) and the new emphasis on functional approaches to language learning (Wilkins, 1976; van Ek, 1976; Sampson, 1982), the lack of a linguistic description of English based on form and function is a serious impediment to

2
research and pedagogy in teaching English as a second language.

Specific Problem and Rationale for Investigation

A more concrete illustration of these highly controversial issues and a rationale for investigating them is provided by an examination of research on the acquisition of yes/no question forms. The so-called yes/no question forms are questions which require a yes or no answer as opposed to the wh- or constituent questions which require a who, what, when, where, why, etc. answer. Taken literally, the yes/no question seems to be eliciting a yes/no answer, but yes/no is not always an appropriate answer to one of these questions:

1) Are you going to school tomorrow? (Yes/no answer appropriate)

2) Can you pass the salt? (Yes/no answer inappropriate)

To complicate matters, applications of different intonation and stress patterns (stress-shift patterns) to the same syntactic form can result in quite different meanings:

3) Are you going to school tomorrow?

4) Are you going to school tomorrow?

5) Are you going to school tomorrow?

The description of yes/no question forms is further complicated by the existence of different syntactic forms. There are inverted forms like (1) through (5) above in which the subject and auxiliary verb are inverted. However, there are also

uninverted yes/no question forms which have a statement form but rising question intonation:

6) You're going to school tomorrow?

There are also a whole range of yes/no tag questions:

7) You're going to school tomorrow, aren't you?

8) You're going to school tomorrow, are you?

9) You aren't going to school tomorrow, are you?

In addition, a range of stress-shift patterns can change the meaning of the uninverted and tag questions.

Redefining the yes/no question forms to make a distinction between forms for which yes/no is an appropriate versus a literal answer is one objective of this thesis. The difference between inverted and uninverted forms and their relative order of acquisition will be discussed at length. At this point, it is sufficient to note that the literalness of yes/no questions, the complicated array of stress-shifts, and the different syntactic forms of yes/no questions are all potential sources of confusion for the ESL learner. It will be argued below that the different functions of yes/no questions also influence the learning of these forms.

The acquisition order of yes/no forms was initially raised as a research issue in studies testing the psychological reality of generative-transformational rules for interrogative formation (Brown, 1968; Klima & Bellugi, 1966) and in ESL studies modeled after these (e.g., Raven, 1978). Following the methodology established by the morpheme acquisition studies, ESL researchers

focussed on the acquisition of yes/no question forms and ignored question functions. As Vander Brook, Schlue and Campbell (1980, p. 56) observed:

The acquisition of a number of different morphemes has been studied in second language acquisition research... and it had been assumed that the acquisition of inversion in yes/no questions would follow lines similar to those for the acquisition of other morphemes.

Vander Brook et al. (1980) are referring to a study by Cancino, Rosansky and Schumann (1978) who investigated the acquisition of negative and interrogative structures in a longitudinal study of six Spanish speakers learning English. According to Vander Brook et al. (1980), in an original unpublished reporting of the Cancino et al. (1978) study, Cazden et al. (1975) failed to discover a hypothesized developmental progression from the uninverted to the inverted form of the yes/no question. Cazden et al. (1975) were unable to explain their results, but suspected that inversion might be contingent upon discourse variables such as context and function.

Vander Brook et al. (1980) undertook to explain why second language researchers encounter problems in evaluating the acquisition of yes/no question forms by determining discourse conditions for the Cancino et al. (1978) data. They answered this question by proposing what they called a more meaningful (insightful) analysis. The generative approach to describing the acquisition of yes/no questions in terms of a progression from the use of uninverted to the use of inverted forms was not sufficient to account for a discourse analysis of the ESL data.

Vander Brook et al. (1980) found that when context of utterance was taken into consideration, they could describe the data more completely and capture more significant generalizations about the data by placing the forms on a continuum defined by the speaker's presupposition of a yes answer. They discovered that the main factor involved in determining the speaker's selection of the "yes/no questions is not binary, but is best seen as a continuum" (Vander Brook et al., 1980, p.58). Vander Brook et al. (1980) found that an analysis of yes/no questions based on both form and function suggested a continuum approach rather than a binary approach. The continuum construct developed for the analysis might be expected to exhibit a certain psychological validity, because the analysis was based on a consideration of discourse conditions.

The discussion which follows will begin with a review of the studies which developed and tested the hypothesis that the acquisition of uninverted yes/no questions would precede the acquisition of inverted forms. The review will conclude with an evaluation of the validity and usefulness of the Vander Brook et al. (1980) construct which places yes/no questions along a continuum according to the strength of a speaker's presupposition that his listener's answer will be yes. The Vander Brook et al. (1980) analysis will be extended with evidence from the fields of psychology, philosophy and psycholinguistics. Similarities between the prototype theory of categorization (Mervis, 1980) and the continuum construct will

be pointed out. The psychological reality of the construct will be evaluated in terms of Grice's (1975) maxims of conversational implicature.

Evaluation of the Vander Brook et al. (1980) construct resulted in the formulation of a functional rather than a formal hypothesis for the acquisition of yes/no questions. It will be hypothesized that a speaker's selection of yes/no forms depends in part on that speaker's relevant knowledge of the subject of inquiry in a given speech context. A speaker with low relevant information will tend to use the information-eliciting function of yes/no questions; he will select inverted forms. A speaker with high relevant information will tend to use stress-shifted uninverted forms for the expressive and confirmatory functions. These predictions will be tested empirically with native speakers of English.

A different set of hypotheses will be used to examine nonnative speakers' acquisition of yes/no questions. It is predicted that nonnative speakers will acquire inverted forms before the uninverted forms, because the more prototypical information-eliciting function will be learned before the less prototypical expressive and confirmatory functions. This hypothesis contrasts with the generative position which suggests that the uninverted forms will be acquired before the inverted forms.

The implications of this study for ESL research, methodology and pedagogy will then be discussed. The methodology

used in this study is designed to control both functions and forms experimentally. This would be an important contribution to ESL methodology since discourse variables such as speaker intentions or functions must usually be inferred. Until now, support for the communicative and notional-functional approaches to curriculum design in ESL has been mainly practical or theoretical. Confirmation of the importance of form and function in this acquisition study would provide empirical support for the incorporation of language functions into curricular materials.

II. Literature Review

The Acquisition of Yes/No Forms in L1 and L2

Roger Brown is only one of several psycholinguists who studied language acquisition in the 1960's and 1970's. This review of the literature on the acquisition of yes/no questions for native and nonnative speakers of English begins with an examination of Brown's (1973) work for two reasons. First, Brown's work is the result of a thorough, longitudinal study which replicated findings of other developmental psycholinguists. Second, the hypothesis that ESL learners will acquire uninverted forms of yes/no questions before inverted forms seems to be based on Brown's evidence for this order of acquisition in first language learners. In fact, Cazden, originally the principal author of the ESL acquisition study which directly tested this hypothesis (Cancino, Rosansky & Schumann, 1978), helped to transcribe and analyse much of the data in Brown's long-term study.

According to Brown (1973) children learning English as a first language progress through five identifiable stages. At Stage I the child develops semantic roles similar to those described by case grammar. These are based on knowledge acquired during what Piaget (1952) called the sensorimotor stage. At

Stage II the child learns to modulate meanings within simple sentences. He learns the use of a number of grammatical morphemes including pronouns, inflections and prepositions. Many acquisition studies for both first and second language learning are based on the methodology and order of acquisition that Brown observed for 14 English morphemes at Stage II. At Stage III the child begins to acquire the major sentence modalities including yes/no interrogatives, constituent (wh-) questions, imperatives and negatives. At Stage IV the child learns sentence embedding. And at Stage V the child learns sentence coordination and certain propositional relations, e.g., and, but, if, then. Although Brown (1973) outlines each of the five stages in A First Language, only the first two stages are described in detail. More complete descriptions of the acquisition of the question modality appear in Brown (1968), Brown and Hanlon (1970) and Brown, Cazden and Bellugi (1973).

Brown (1973) states that children show some evidence of all four major sentence modalities as early as Stage I. However, while children at Stage I produce utterances identifiable as yes/no questions by intonation and context, they do not

utilize the rearrangements of order belonging to the adult forms. Our children, Adam, Eve, and Sarah in fact did not produce well-formed yes-no questions until Stage III or later. Probably what these results mean is that the yes-no semantic is available to Stage I children but that there is a difference of difficulty in expressive means such that intonation is more easily grasped than rearrangements of order or the affixation of particles (Brown, 1973, p. 180).

Brown's Stage III is the most relevant for the present

discussion; at this stage children begin to master yes/no questions.

Question development was discussed in detail by Brown and Hanlon (1970). The following table is composed of several tables describing yes/no question acquisition for children in the study (Brown and Hanlon, 1970, pp. 31 - 32):

Table 1

Number of Yes/No Questions Produced per 700 Utterances
at Five Stages of Language Acquisition

Stage	Adam	Eve	Sarah
I	0	1	0
II	0	0	0
III	12*	1	0
IV	11*	11	2
V	25	28	27

*All these questions began with D'you want.

The boxed figures represent "threshold of emergence" for yes/no questions, which the investigators set at six. (Six was the lowest number of any of the question types under investigation produced in a 2100-utterance sample of the mothers' speech).

Brown and Hanlon (1970, pp. 22 - 24) were working with a generative syntactic description of yes/no questions. According to this model, yes/no questions are derived by applying several transformational rules to a string produced by the base rules of the grammar. For example, the question 'Did we have a ball?' is derived by the application of (1) an obligatory rule which transposes the subject and auxiliary elements in questions, (2) an obligatory do-support rule which inserts do to support free-standing affixes, and (3) morphophonemic rules which produce the pronounceable surface string. Brown and Hanlon (1970, pp. 22 - 24) illustrate the derivation as follows:

Q - we - Past - have - a - ball
 Q - Past - we - have - a - ball
 Q - do+Past - we - have - a - ball
 Did - we - have - a - ball - ?

Brown and Hanlon (1970, pp. 18 - 19) investigated the order in which the following sentence types were acquired:

1. Simple, active, affirmative, interrogative (Q)
2. Simple, active, negative, interrogative (N)
3. Simple, active, negative, declarative (Tr)
4. Simple, active, affirmative, declarative, truncated (Tr)
5. Simple, active, negative, interrogative (NQ)
6. Simple, active, affirmative, interrogative, truncated (TrNQ)
7. Simple, active, negative, declarative, truncated (TrN)
8. Simple, active, negative, interrogative, truncated

(TrNQ)

The authors made a count of the number of transformations required to derive each of the forms. This gave an index of derivational complexity, a leading hypothesis in investigating the psychological reality of transformational rules at that time. Brown and Hanlon (1970, p. 14) then hypothesized that derivational complexity would be a good predictor of acquisition order:

Since a grammar formalizes adult knowledge, it is reasonable to hypothesize that the child's knowledge of the structure of his language grows from derivationally less complex grammar to derivationally more complex grammar.

Of the eight sentence types described above, four are yes/no questions:

Q: Did we have a ball?

NQ: Didn't we have a ball?

TrQ: Did we? (Also used as affirmative tag)

TrNQ: Didn't we? (Also used as negative tag)

The predictions concerning the relative order of acquisition for these types based on derivational complexity were:

SAAD < Q < NQ, TrQ, TrNQ

SAAD < NQ < TrNQ

SAAD < TrQ < TrNQ

These predictions were confirmed. However, Brown and Hanlon (1970) acknowledged that the relative frequency with which the forms occurred in the mothers' speech was also a good predictor of acquisition order. In retrospect, the frequency

of forms in the mothers' speech is the preferred explanation. Experimental evidence later failed to support the derivational theory of complexity.

Experiments to test the strong hypothesis that speakers use transformational rules when matching sentences (Miller and McKean, 1964), memorizing sentences (Savin and Perchonock, 1965, Mehler, 1963) and evaluating the truth value of sentences (McMahon, 1963, Slobin, 1966, Gough, 1965, 1966) failed to find an exact one-to-one correspondence between the complexity of transformation and performance, owing to the effect of semantic factors... (Greene, 1972, p. 138).

The hypothesis that the uninverted forms of yes/no questions will appear before the inverted forms did not come from Brown's data on yes/no questions that children uttered at Stage III. Rather, this idea seems to be based on Brown's (1968) remarks on the development of wh- questions. In another paper reporting the results of his longitudinal study of Adam, Eve and Sarah, Brown (1968) presents evidence that children often produce uninverted forms of wh- questions before they learn how to correctly transpose subject and auxiliary. The hypothesis that acquisition of yes/no question forms progresses from uninverted to inverted forms appears to be based on the evidence for wh- questions in conjunction with Brown's observation that children produced uninverted yes/no questions identifiable by intonation and context as early as Stage I. These observations formed the basis for a language acquisition universal proposed by Dan Slobin (1973, p. 199) "Universal D1: Structures requiring permutation of elements will first

appear in non-permuted form." The generative-transformational position, which assumes that the non-permuted form is the base for further transformations is apparent in this formulation.

Cancino, Rosansky and Schumann (1978) applied Brown's hypothesis to ESL learning in a study of the acquisition of interrogatives and negatives by native Spanish speakers. Despite the earlier discrediting of the theory of derivational complexity (Greene, 1972), Cancino et al. (1978) hypothesized that uninverted forms would be acquired before inverted forms. The researchers observed both spontaneous and elicited speech of six subjects during a ten-month longitudinal study. The subjects were two 5-year-olds, two adolescents and two adults. The authors claimed that the subjects' learning was "naturalistic", but since the four youngest subjects were enrolled in public school it is fair to question the claim that these subjects were untaught.

Cancino et al. (1978) investigated the acquisition of both wh- and yes/no questions. They wanted to determine whether uninverted forms appear prior to inverted forms for each of the two question types. They also wanted to discover whether inversion in yes/no questions would precede inversion in wh- questions. Klima and Bellugi (1966) observed such a progression in an analysis of data from the original Brown (1973) study. Ingram and Tyack (1979),

however, did not find evidence of this developmental order. Ingram and Tyack (1979, p. 337 - 338) reported that "the computation of percentages of inversion did not reveal any subjects inverting auxiliaries in yes-no questions but not in wh questions." Furthermore, the Ingram and Tyack (1979) data showed that even subjects who were only beginning to acquire auxiliaries still inverted them.

Cancino et al. (1978) reported two contradictory findings. They claimed that "uninverted y/n questions consistently appear prior to inverted y/n questions" (Cancino et al., 1978, p. 220). At the same time they maintained that "both y/n and wh-questions appear in the uninverted form, but there is no stage in which the uninverted form consistently appears and the inverted is not present" (Cancino et al., 1978, p. 220). The second statement is more representative of the complete data. It is only possible to discern a stage at which all yes/no forms are uninverted if the do forms are excluded from the data. "Excluding early do- inversion we see two stages in the development of the yes/no question: 1) in the first stage there is no inversion..." (Cancino et al., 1978, p. 228). The researchers argue that the preposing of do is not really inversion because it precedes the inversion of other auxiliaries. Instead they "speculate that do may simply be a question marker, a memorized chunk, or a production pattern observed in the input" (Cancino et al., 1978, p. 229).

Generative grammar describes the preposing of do as inversion of subject and auxiliary, followed by do- support of the free-standing tense marker (See derivation, p. 14 above). In order to produce a question containing do, both rules must be utilized; subject-aux inversion is a precondition for the operation of do- support. Yet evidence in the Cancino et al. (1978) study shows that do is inverted before other kinds of auxiliaries are inverted. This is unacceptable from the generative position because it is odd that subject-auxiliary inversion should be learned first in conjunction with do- support. It does not make sense that the derivationally more complex production of do questions (two rules) should precede the derivationally simpler production of questions involving simple subject-auxiliary inversion (one rule). Cancino et al. (1978) have forced a generative description on the data by disallowing the do forms. In doing so they overlook evidence of two possible acquisition strategies.

Like Brown's (1973) subject, Adam (see Table 1), the subjects in the Cancino et al. (1978) study use holophrases or memorized chunks as an early question-forming strategy. Several ESL researchers (Zobl, 1978; Sampson, 1982) have suggested that the learner subsequently analyses these prefabricated routines, breaking them into their constituent parts. Cancino et al. (1978) found both prefabricated do- patterns and single do's together at a stage before other

auxiliary forms appear. This indicates that the learner first uses memorized chunks such as

10) Do you want?

11) Do you like? (Cancino et al., 1978, p. 228)

and eventually notices, through comparison with forms such as

12) Do they want/like?

that do is a separable element. The learner could then hypothesize that do is a question marker, as Cancino et al. (1978) suggest. The learner would later have to modify this hypothesis to account for the preposing of other auxiliaries.

In other words, what generative grammar efficiently describes as inversion may not be inversion at all, but simple preposing of the sentence element which carries the sentence modality. This is just how Halliday (1970, pp. 161 - 162) describes this essential feature of yes/no questions:

If we ask a question, it is usually because we want to know the answer, so that the typical theme of an interrogative is a request for information. Hence, we put first, in an interrogative clause, the element that carries this request for information: the polarity-carrying element in a yes/no question...

Theme is a key word in this passage. According to Halliday (1970) preposing of the auxiliary is a kind of thematic topicalization, a manifestation of the textual function of language.

If the do forms are not eliminated from the Cancino et al. (1978) data there is no evidence for the claim that uninverted forms provide the basis for acquiring inverted forms; both are present at the early stages of acquisition. According to Vander Brook et al. (1980), in an original unpublished reporting of the Cancino et al. (1978) study, Cazden et al. (1975) failed to discover the hypothesized developmental progression from the uninverted to the inverted form of the yes/no question. Cazden et al. (1975) were unable to explain their results, but suspected that inversion might be dependent on discourse variables such as context and function.

The Acquisition of Yes/No Question Functions in L1

Function is currently a popular though ill-defined concept in second language teaching. Part of the difficulty in defining the concept lies in sorting out different theoretical perspectives and in distinguishing between general and specific language functions in order to establish a functional hierarchy. Another problem is differentiating among language functions, communicative functions, language uses, notions and speech acts. These terms are not usually defined at all but only applied to different taxonomies. Evaluating them is not a matter of comparing definitions but contrasting competing lists of notions, functions, uses and speech acts which overlap to some

extent in content and levels of generality.

Functions have been approached from anthropological, sociological, linguistic and psychological perspectives.

"Malinowski's ethnographic account of the functions of language was based on the distinction between 'pragmatic' and 'magical' (Halliday, 1970, p. 141). Jakobsen (1973) described six functions of language: the emotive, the referential, the conative, the poetic, the phatic and the metalingual. According to Halliday (1970), the structure of language reflects three of its general functions--the ideational, interpersonal and the textual. Tough's (1977) functions (the directive, interpretative, projective and relational) are based on the psychological approaches of Piaget (1960) and Vygotsky (1962). Like Halliday, Tough (1977) makes a distinction between function and use; but what Tough (1977) calls uses are called functions by almost everyone else.

Language function is a general label for a verbal behaviour which involves a personal or social use of language to achieve a certain purpose. A language function is a broad category of verbal behaviour, a general schema, while a language use is a particular realization or instantiation of the behaviour through the manipulation of language. As Tough (1977, p. 46) states, "If the functions of language are concerned with different kinds of meaning, or thinking, the means by which this will be made evident is through different uses of language." Vander Brook et al. (1980) use the term function to refer to uses of yes/no

questions. What Vander Brook et al. (1980) call functions, Tough (1977) would call either uses or strategies depending on the level of generalization. The need to differentiate among levels of functions arises because there appear to be macro and microfunctions of language. For example, a more general purpose of the confirmatory use of language appears to be a phatic communicative function. For the purpose of this thesis, the distinction between form and function is more important than the distinctions that can be made between function, use and strategy. Although the existence of a functional hierarchy is recognized, language function will be used as a general label for all levels of verbal behaviour which involve a personal or social use of language to execute an intended communicative purpose.

Van Ek (1976) and Wilkins (1976) have presented taxonomies of language functions for incorporation into ESL teaching syllabi. These taxonomies are intended to represent the basic level of functional competence in English. However, no special attention is given to question asking as a particular subgroup in these taxonomies. The list of functions is typically qualified with headings designed to cover question asking such as "imparting and seeking factual information", "expressing and finding out about emotional attitudes" etc. (van Ek, 1976, pp. 45 - 47).

In a review article on question asking Kearsley (1976) presented taxonomies of the forms and functions of yes/no

questions. In Kearsley's (1976) taxonomy of question forms, yes/no questions are described in the following manner, each characteristic corresponding to one of four branching nodes in a tree diagram of question forms. First, yes/no questions are verbal rather than nonverbal. Second, yes/no questions are main clause (direct) not embedded (indirect) questions. Third, yes/no questions are closed rather than open. That is, the response to a yes/no question is restricted to yes/no or a modal qualifier. Fourth, yes/no questions can be simple, tag or intonated in form. No mention is made of inverted and uninverted forms although Kearsley's (1976) intonated form example is inverted. It appears that only the second and fourth characteristics cited above pertain to the form of yes/no questions in the usual sense. The first and third characteristics in Kearsley's tree pertain to discourse.

According to Kearsley (1976), the overall function of questions is the elicitation of responses. The four major subfunctions are echoic, epistemic, expressive and social control. Echoic questions are syntactic echo questions. This form appears to be a syntactic type rather than a functional type. In fact, Kearsley (1976) admits to some problems with functional overlapping of confirmatory and expressive functions for this echoic question category. The epistemic questions serve the information-eliciting function. Expressive questions are used to convey attitudes. The social control questions are used to exert authority.

According to Kearsley (1976, p. 367) "there has been little empirical work done to test the existing ideas about question formation and selection, and there is a relative paucity of theoretical developments to encourage such efforts." Although several experimental studies have investigated yes/no question answering, few have treated yes/no question asking (Mikaye & Norman, 1979). This situation exists because, until now, investigators have focussed on the acquisition of grammatical competence rather than functional competence. Investigations of syntactic development have shed little light on the discourse conditions that must exist for the selection and formation of questions. However, investigations of the functions associated with question asking are beginning to identify these discourse conditions.

In the Brown and Hanlon (1970) study of the acquisition of yes/no question forms, uninverted yes/no questions were considered ungrammatical. The possibility that uninverted yes/no questions could be modeled on grammatical uninverted surface structures in the mothers' speech rather than abstract base structures was not considered. In this thesis the grammatical uninverted forms will be associated with the confirmatory and expressive functions. There are no grounds for ruling these out as functions utilized by adults in speaking to children. In fact, studies on the use of interrogatives in mother-child interactions by Holzman (1972) and Tamir (1980) have demonstrated that a variety of functions are represented in

mothers' and childrens' speech.

The Holzman (1972) study is particularly relevant, because it is a reanalysis of Brown's (1973) original data from a functional perspective. Holzman (1972) did not distinguish between yes/no questions, tag questions and wh- questions in her analysis, so unfortunately no direct links can be made between her study and the research on yes/no questions presented in this thesis. However, Holzman (1972) reported so much original data, that it was possible to determine that yes/no questions were represented in each of the five functional categories she outlined. Holzman's (1972, p. 313) interrogative functions for mother-child interactions are:

- A. Requests for information
- B. Requests for behavior
- C. Questions designed to display or test the knowledge of the hearer
- D. Interrogatives in which what is questioned is not in the verbalization
- E. Uses of the interrogative form for purposes other than questioning

Holzman (1972) illustrated each of these categories with data from both the mothers and the children in Brown's (1973) study.

The original data presented for the mothers represented two stages at which the mean length of the childrens' utterances was two morphemes and four morphemes. The first function discussed by Holzman (1972) is requests for information. According to

Holzman (1972, p. 316) "the essential conditions that a question must meet in order to fall in this category involves its sincerity. A sincere request for information asks from the hearer information the speaker does not have and believes the hearer to have."

The yes/no questions cited as examples of requests for behaviour are directives. In cases where the mother is in a teaching role, she uses yes/no questions to test the child's knowledge. According to Holzman (1972) these questions are not sincere, because the questioner knows the answer to her question and sometimes knows that the child knows the answer. Holzman (1972) relegates interrogatives like Huh?, What? and syntactic echo questions to the category of interrogatives in which what is questioned is not in the verbalization. She does not appear to identify echo questions with any confirmatory or phatic functions as Vander Brook et al. (1980) have done.

Purposes other than questioning for which interrogatives are employed are directives used to make suggestions about the child's behaviour, questions which evaluate a child's behaviour negatively, and questions which provide or report information. Examples of this category provided by Holzman (1972, pp. 319 - 321) are:

1. Did you tell Ursula what kind of train that is?
(suggestion)
2. Is that all you have to say all the time? (evaluation)
3. If it's hot, won't it burn you? (report)

The original data presented for the children represented the stage at which the mean length of their utterances was three morphemes. Even so, Holzman (1972) was able to identify all five categories of interrogative use in the children's utterances. Holzman (1972) observed that most of the interrogatives used in mother-child interactions were idiomatic. According to Holzman (1972, p. 335) "their force is learned by the child through their action, personal relation correlates." As Holzman (1972, p. 324) pointed out "there are two ways in which the child learns the various uses of the interrogative forms. The first is simply becoming aware of the uses by others. The second is by the response his interrogatives will elicit from others." This view of language development as the acquisition of functions through the social use of language is quite different from the generative position that acquisition is dependent upon the child's increasing knowledge of grammar.

Two key points implicit in Holzman's (1972) analysis will be further developed in this thesis. First, Holzman's (1972) results suggest that the transfer of relevant information is important in the use of interrogatives. In certain interrogatives information is sincerely requested, while in others knowledge is tested or even supplied. Second, Holzman's (1972) analysis suggests that the possession or nonpossession of information by either speaker or listener and the assumptions made by either about who possesses or does not possess that information are both important in determining the use of

interrogatives.

Tamir's (1980) study of question asking provides evidence which supports these observations. Tamir (1980) investigated the structure, content and function of mothers' questions in terms of a child's responses in a case study of a mother and child at 16, 17, 18 and 19 months of age. Tamir (1980, p. 418) isolated four main functions of questions: known-answer, information-seeking, request questions and other-function questions. Routines and naming were two subfunctions of questions in the known-answer category. Information-seeking questions in which the answer was unknown formed a separate category. Directives and confirmations were subfunctions in the request question category. Evaluative and didactic questions fell into an other-functions category. Tamir (1980, p. 418) reported that "relevant-appropriate responses do not vary systematically with the mother's functional strategies of questioning." In other words, children were making appropriate responses to numerous interrogative functions even at this early stage of development.

Since questioning is generally associated with information-seeking, it is interesting to note that the known-answer questions outnumber the information-seeking questions at all four stages of the child's development in Tamir's (1980) study. The following table was constructed by adding together the percentages of the routines and naming subfunctions to form the known-answer column; the unknown-answer

column contains the information-seeking function percentages (Tamir, 1980, p. 418). Other functions have been disregarded for the construction of the table.

Table 2
Percentages of Functions in
Mother's Interrogatives

Child's Age in Months	Known-answer Interrogatives	Unknown-answer Interrogatives
16	44.7	18.0
17	35.5	29.7
18	51.0	17.0
19	38.6	24.0

These data suggests that many of the mother's early questions are not sincere but test questions. Tamir's (1980) results also indicated that the information-seeking questions during this stage of development elicited a lower level of relevant-appropriate responses. According to Tamir (1980, p. 419)

The mother is apparently intent on maintaining [the information-seeking] question type at relatively high frequencies in spite of a generally low elicitation of relevant-appropriate responses. The low degree of response appropriateness may be due to the child's inability to recognize that the mother does not know before-hand all his needs, desires, and interests.

In other words, learning the function of this question type

depends on the child's ability to discover that he has information that his mother, the questioner, may not have.

The requests for confirmation in Tamir's data ranged from 9.9 to 17.5 percent of the mother's total interrogatives and paradoxically elicited "the highest overall frequency of both no-response and relevant-appropriate responses" (Tamir, 1980, p. 420). According to Tamir (1980, p. 420), "the high frequency of relevant-appropriate responses indicates the child's early recognition of the social quality of this question type, which requires no especially complex linguistic ability in order to respond." The child is frequently unresponsive to this kind of question since it really requires no informative or behavioural response. Again, it is important to note that the functional approach to acquisition research emphasizes the cognitive and social development of the child, while the generative approach deals with developmental complexity, not of a child, but of a particular theory of syntax.

The Acquisition of Yes/No Question Functions in L2

Vander Brook, Schlue and Campbell (1980) reanalysed the data gathered by Cancino et al. (1978) to determine whether discourse factors affected the subjects' acquisition and use of yes/no questions. Vander Brook et al. (1980) concentrated on two discourse factors--speakers' presuppositions and question functions. In their reanalysis of the Cancino et al. (1978)

data, Vander Brook et al. (1980, p. 57) initially argued "that if language is rule-governed behavior, the choice between inverted and statement forms should be systematic and therefore predictable." However, when they tried to systematically predict the speakers' selection of inverted and uninverted (statement) forms, they were unable to account for a portion of the data. It is unfortunate that Vander Brook et al. did not describe the characteristics of these data, since it was on this basis that they abandoned the two category (binary) approach in favour of the continuum approach.

According to Vander Brook et al. (1980), the inverted and uninverted forms distinction was not the major distinction underlying the differentiation among yes/no forms. Rather, forms could be better described by placing them along a continuum according to the speaker's strength of presupposition that his listener's answer will be yes. It is important to note that in this analysis, unlike most production-based analyses, the form is characterized in terms of its use by a speaker-listener dyad. Experimenters usually ignore the listener in production-based analyses.

The Continuum Construct and Prototype Theory

The notion of ordering linguistic forms on a continuum is extremely interesting in light of recent work on the prototype theory of categorization, according to which members of a

category also exhibit varying degrees of category membership. The prototype theory lends support from philosophy and psychology to the Vander Brook et al. (1980) claim that the continuum provided a more complete and reasonable description of the data. This claim is analysed in the following discussion where the traditional theory of categorization is presented first in some detail. Next, the proposed prototype theory of categorization is contrasted with the traditional theory. Finally, the similarities between Vander Brook's et al. (1980) continuum approach and the prototype theory to categorization are discussed.

The prototype or best-example theory represents a divergence from category theory which developed in the Aristotelian tradition. According to Mervis (1980), one of the first psychologists to discuss category theory was Hull (1920), who defined a category as a set of criterial attributes. "A criterial attribute is an attribute that all the members of the category being defined possess and that is not possessed by any nonmember of that category" (Mervis, 1980, p. 280).

This has two implications. First, since every member of the category is by definition a full and equal member in the category, there is no hierarchy of membership within a category. Second, since members do not share any criterial attributes with any nonmembers, category boundaries at the same level of classification are absolute. The different levels of classification can be ordered hierarchically, as in a decision

tree, but categories are disjoint at the same level of classification. A potential member of a category either meets the category definitions and is included or does not meet the definition and is excluded.

The traditional theory of categorization was employed by generative linguistics in the distinctive feature theories of phonology and later in generative descriptions of semantics. In generative treatments of semantics, for example, lexical entries were described as bundles of binary (+ -) oppositions. It is probably the traditional theory of categorization as employed in generative grammar which Vander Brook et al. (1980, p. 58) are addressing when they say "our work shows that the main factor involved in determining the form of yes/no questions is not binary but is best seen as a continuum."

The philosopher Wittgenstein is credited by Mervis (1980, p. 283) with first advancing the tenets of prototype theory.

Wittgenstein (1953) has claimed that categories may be structured as "family resemblances." According to Wittgenstein, a family resemblance occurs when members of a category are related by a series of overlapping attributes (e.g., member 1: ab; member 2: bc; member 3: cd) but do not all share a criterial attribute.

Empirical support for Wittgenstein's notion of "family resemblances" has been provided by Rosch and Mervis' (1975), Mervis, Catlin and Rosch's (1975) and Rosch's (1975) studies in the acquisition of colour and furniture category concepts. Through a series of experimental studies in which participants rated attributes for members of semantic categories for prototypicality, Rosch and Mervis (1975) were able to

demonstrate that family resemblance provides a viable alternative to criterial features for category definition. They were also able to demonstrate that for artificial categories, prototypicality was correlated with ease of learning. This finding has important implications for the present proposal, since it suggests that prototypicality of a form in representing a category may be a critical factor in its acquisition.

Recent research in ESL has applied the best-example theory to the investigations of syntactic categories.

Could we talk about degrees of membership in grammatical categories, with there being prototypical and peripheral members? The analogy between such a view and recent work in concept formation (e.g., Rosch and Mervis, 1975) is intriguing and has not escaped notice (de Villiers, in press; Bates and MacWhinney, 1978). It is a promising area for collaborative research between psychology and linguistics, since independently motivated linguistic evidence has been used by Ross (1973, 1974) to argue for nondiscrete grammars based on implicational hierarchies (Hakuta, 1981, p. 6)

The few studies of this type investigate syntactic categories like subject, but there is no apparent reason why categories of syntactic types cannot be investigated in light of prototype theory.

The construct proposed by Vander Brook et al. (1980) shares some important similarities with the notion of category employed by prototype theory. According to prototype theory, boundaries between categories are not absolute. When Vander Brook et al. (1980, p. 59) attempted to assign data to the two categories inverted and uninverted, they "noted a succession and overlap of one form to the next as they related to shared knowledge."

Prototype theory also predicts unequal degrees of category membership. This is implicit in the investigators' notion of a continuum based on different strengths of a speaker's presupposition of a yes answer and in their claim that

it is meaningful to speak of the behavior in question as systematic or predictable only when the factors are at the extreme ends of their continuums... When they are not at the extremes, a particular behavior does not necessarily reflect a quantifiable amount of the factors (Vander Brook et al., 1980, p. 58).

Another significant similarity between the Vander Brook et al. (1980) proposal and prototype theory is that both take function as well as form into consideration. Mervis (1980, p. 285) reports that

Smoke [1932] has again pointed out that the traditional theory has not considered the role function plays in determining categorization; in fact, the traditional theory experiments have almost always used "functionless" categories. Because real-world categories almost always have both form and function, it seems incumbent upon a categorization theory to consider both, at least until one might be shown to be irrelevant.

Converging evidence from philosophy, psychology and psycholinguistics has been used to substantiate the claim of Vander Brook et al. (1980) that, given an analysis of yes/no questions based on form and discourse function, a continuum analysis provided a more meaningful description of data than did the systematic approach. Now the correctness, validity and usefulness of their construct will be examined.

Literal and Appropriate Answers to Yes/No Questions

Evaluation of the Vander Brook et al. (1980) construct begins by defining its terms. By continuum, the investigators mean a series of degrees in the strength of presuppositions that the listener's answer will be yes. Yes/no forms are those questions for which the speaker anticipates a yes/no answer. Strength of presupposition refers to the magnitude of the speaker's probabilistic belief that the listener will supply a yes answer to his question.

In the Vander Brook et al. (1980) study, strength of presupposition ranges from low to high for a yes answer. The investigators do not indicate why they have chosen to represent the presuppositions along a yes dimension only, but perhaps the Cancino et al. (1978) data was limited to examples of this type. No provision is made for the presupposition of a no answer. The LOW point in their continuum is actually the NEUTRAL point, the point at which presuppositions are neutral as to whether a yes or no answer is expected. But it is possible to answer no to a yes/no question:

13) Are you a Liberal?

14) You aren't a Conservative, are you?

In order to extend their continuum to include a full range of presuppositions (NO - NEUTRAL - YES) their continuum can be redrawn as follows:

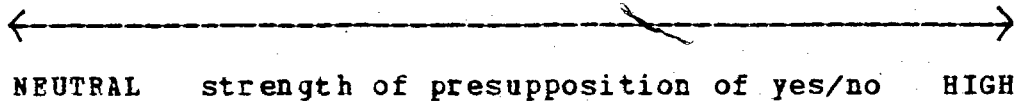


Figure 1
 Continuum Construct for Representation
 of Yes/No Questions

Their construct can then be restated in a more general fashion. The category of yes/no questions may be described by assigning the forms places along a continuum according to the speaker's strength of presupposition of a yes/no answer.

There is one more item in their construct that must be further defined. What counts as a yes or no answer? This is a problem for the Vander Brook et al. (1980) analysis, because they have failed to make a distinction between literal and appropriate yes answers. In the Vander Brook et al. (1980, p. 59) analysis, the high presupposition of a yes answer is typified by "echo" questions in which speaker B echoes A's utterance:

15) I'm studying poetry this term.

16) You're studying poetry this term?

According to the investigators, the near certainty of a yes answer frees the echo question to perform other (here the confirmatory) functions. These include the expressive functions indicated by the stress-shifted forms (Vander Brook et al.,

1980, p. 63) which include sarcasm, disbelief, encouragement, etc.

According to this line of reasoning, one might expect that yes/no questions like the following would also be considered to hold a high yes presupposition:

17) Can you tell me what time it is?

Since the form has high yes presupposition, it is freed to serve other (here the directive) functions. However, Vander Brook et al. (1980) regard questions of this type as having a low presupposition of a yes answer (neutral in the re-drawn model). The source of this confusion is the failure to distinguish clearly between yes/no answers which are literal as opposed to appropriate. Thus, Vander Brook et al. (1980) miss the more general observation that directives as well as syntactic echo questions are freed to perform other functions by virtue of their high yes presupposition.

In the present thesis, directives will be considered to hold high yes presupposition like the forms used for the confirmatory and expressive functions. These forms are used metaphorically in the sense that they require an extraliteral interpretation by the listener. In order for such questions to function metaphorically, the speaker must be able to assume that the listener will not supply the answer required by the literal question. The work of Searle (1975) and Grice (1975) is helpful in explaining how this could work.

The fact that all the sentences above--(1) through (17) except (15)--are considered by grammarians to be yes/no forms indicates that the presupposition of a literal yes answer is an important defining feature of the category. This is one of the very few definitions in grammar which designates a syntactic category by identifying listener's responses. The speaker-listener dyad is not generally the basis for grammatical description. The fact that this kind of definition exists for yes/no questions is compelling evidence for taking discourse factors such as speaker's presuppositions and listener's responses into consideration in investigations of yes/no questions.

The usefulness of the literal yes/no definition is supported by basic ideas in speech act theory. According to Searle (1975), an utterance has a direct locutionary (literal) meaning and may have an indirect illocutionary (pragmatic) meaning. Searle (1975, p. 62) says "a speaker performs the secondary illocutionary act by way of uttering a sentence the LITERAL meaning of which is such that its literal utterance constitutes a performance of that illocutionary act." The issuing of a directive like (17) is an example of an indirect speech act. In this case, the listener's compliance with the directive constitutes its answer/performance.

The literal yes/no definition provides a means of describing the yes/no forms syntactically, but it is unlikely that speakers operate on the presupposition of a literal yes or

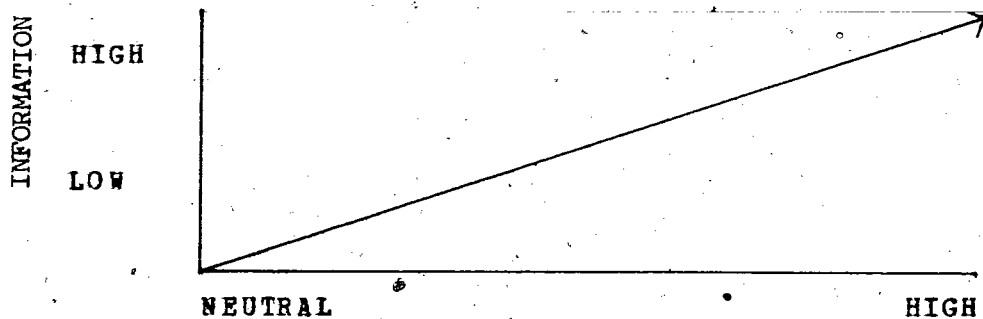
no answer. The literal yes/no hypothesis is discredited as a psychologically real construct by the problems posed in considering the required appropriateness of an answer. According to the literal yes/no definition, regardless of whether a yes answer to B's question would be appropriate, B is said to hold high presupposition that A's answer will be yes. This is potentially a source of confusion in the experimental setting where participants are likely to take appropriateness of an answer into consideration. For example, participants are not likely to supply yes as the answer to (16) or (17) above. Thus, it is unlikely that the psychological reality of the literal yes/no definition could be demonstrated empirically; subjects would respond appropriately rather than literally.

The literal yes/no definition provides a means for describing yes/no forms syntactically, but a psychologically plausible explanation of the link between speaker behaviour and linguistic form is missing. Could presupposition be something other than foreknowledge of a literal yes/no answer? It will be suggested below that the selection of yes/no forms is ultimately a function of the speaker's knowledge that the listener will obey certain conversational maxims, in particular maxims relating to levels of information shared by the speaker and listener. The distinction between literal and appropriate yes/no answers will also be further clarified.

Given the literal definition of yes/no questions, the model (see Fig. 1) says that as the strength of presupposition

increases, the chance of a literal yes answer also increases. But it has been argued above that as the strength of presupposition increases, the probability of actually eliciting a yes answer (i.e., the chance of yes being given as an appropriate answer) decreases. This follows because the literal yes is "understood". In question (17) above, for example, the speaker may be requesting the time because he has just seen the listener checking his watch. In what sense is the literal yes "understood"? In the sense that it is implied by specific prior knowledge (i.e., information) that the speaker has about the topic, about linguistic structures and about his listener's knowledge of these things, in addition to the listener's ability to make inferences about the speaker's intended meaning. If a literal yes is implied by specific prior knowledge, then selection of yes/no question forms is ultimately a function of speaker information. The importance of foreknowledge and relevance of shared information is acknowledged by Vander Brook et al. (pp. 58 - 59).

The model (see Fig. 1) can thus be redrawn to show the relationship between speaker information and the selection of yes/no forms:



Presupposition of a literal yes/no answer

Figure 2

Information and the Yes/No Question Continuum

According to the model (see Fig. 2), a speaker with low information would tend to select a yes/no form which is neutral in its presupposition. This is plausible since, if a speaker has limited information, he has no basis for presupposition and really is seeking information. The neutral question form is selected with the least information available, thus it should have the highest yes/no information-eliciting potential. Yes/no should be an appropriate answer to a neutral yes/no question, because low contextual information is the speaker's motivation for choosing the information-eliciting function.

In terms of the model, a speaker with an intermediate level of relevant information will tend to choose forms with a moderate presupposition of a literal yes/no answer. This is also plausible, since a speaker who only has a hunch based on an intermediate amount of information will not be quite sure that the listener's answer will be yes/no. Still, yes/no would be an

appropriate answer from the questioner's perspective.

The model (see Fig. 2) predicts that the speaker with a high amount of relevant information will tend to select forms with a high yes/no presupposition. In high information contexts the speaker will be less likely to request information and more likely to choose one of the non-information-eliciting functions of the yes/no forms. This makes sense, because the more information available to the speaker, the less information of the exact same type will be requested. This speaker is more likely to select a form which is nonliteral. A nonliteral form is one which is likely to elicit an answer other than yes/no in that context.

In terms of speech act theory, neutral yes/no questions are direct speech acts. They mean what they say. However, the high yes presupposition forms are usually indirect speech acts which serve a function other than eliciting a yes/no answer. These forms do not mean what they say. That is why the literal yes/no form is appropriate in the low information context, while the nonliteral yes/no form is appropriate in the high information context. This link between information and form is made through the mediating function. In an experimental design, it would be appropriate to say that the informational context is operationalized by the speaker's selection of a mediating function.

Presuppositions and Levels of Speaker Information

It is a basic tenet of speech act theory that quantity and relevance of information are primary considerations in the selection of speech forms (Grice, 1975). According to Searle (1975, p. 60)

In direct speech acts the speaker communicates to the hearer more than he actually says by way of relying on their mutually shared background information, both linguistic and nonlinguistic, together with the general powers of rationality and inference on the part of the hearer.

According to Grice (1975), speakers and listeners cooperate in a conversation by observing the four maxims quantity, quality, relation and manner. Grice (1975, pp. 46 - 47) describes these maxims as follows:

1. Quantity

- a. Make your contribution as informative as is required (for the current purposes of the exchange).
- b. Do not make your contribution more informative than is required.

2. Quality

- a. Do not say what you believe to be false.
- b. Do not say that for which you lack adequate evidence.

3. Relation

- a. Be relevant.

4. Manner

- a. Avoid obscurity of expression.
- b. Avoid ambiguity.

c. Be brief (avoid unnecessary prolixity).

d. Be orderly.

At first glance these maxims seem rather simplistic, but they prove rather powerful in explaining language behaviour including the selection of yes/no forms.

Grice's maxim of quantity is especially interesting in light of the hypothesis that speakers select yes/no question forms as a function of relevant (Grice's maxim of relation) information. According to the quantity maxim, a speaker's contribution should be neither more nor less informative than is required. This applies to questions as well as to statements: ask for neither more nor less information than is required. If this maxim is observed the speaker can ask an appropriate question and the listener can supply an appropriate answer. Furthermore, it is necessary that the speaker and listener both believe that the other is obeying the maxim.

According to the quantity maxim, a speaker should select a yes/no question appropriate to the amount of information he requires. For example, a speaker who requires a yes/no answer to a question should select a question form designed to elicit just that information. He should ask a question which will be interpreted literally by the listener. The speaker will select his form in accordance with Grice's maxim, knowing that the listener will also behave in accordance with the maxim. The listener's response will be based on a comparison between the information which he assumes the speaker knows and the

information which the speaker is requesting.

If a listener assumes that a speaker posing a yes/no question does not possess the information he is asking for (i.e., that the speaker is conforming to Grice's maxim), then a literal interpretation of the question is possible, rendering a yes/no answer appropriate. Consider the following example. A is a psychology student doing a survey on political affiliation. She wants to know if B, a man on the street, is a Liberal. She asks the literal yes/no question, "Are you a Liberal?" Since B has no reason to believe that A already knows his political affiliation, he believes A is operating in accordance with the quantity maxim. Or, as Holzman (1972) put it, B believes A is making a sincere request. Thus B gives a face-value or literal interpretation to A's question and responds appropriately with a yes/no answer.

But what happens when the speaker seemingly violates the quantity maxim? The listener tries to construct an interpretation of the speaker's utterance which would place the speaker in conformance with the maxim. If the listener knows that the speaker does possess the yes/no information he is literally requesting, the listener assumes that the speaker's request has another nonliteral meaning which does conform to the quantity maxim. This is how yes/no questions are able to serve functions other than the elicitation of a yes/no answer.

The evidence reported by Holzman (1972) and Tamir (1980) indicates that the incidence of known-answer questions is higher

than the incidence of information-eliciting questions in mother-child interactions. For the adult, however, the information-eliciting function seems to be prototypical. In order for yes/no questions to serve other functions, the speaker must rely on the listener's ability to make an inference about his intentional violation of the maxim. The following example illustrates how violation of the maxim might bring about a nonliteral response.

Suppose that A checks his watch for the time. B asks A, "Can you tell me the time?" A knows that B saw him checking his watch and can safely assume that B knows he is capable of telling time. A literal interpretation of B's request would place B in violation of the quantity maxim. However, A knows that B, as a proficient speaker of English, would probably not violate that maxim. Therefore, A selects a non-literal interpretation of B's question. In this case, since the form is highly routinized, A has no trouble inferring that B is requesting the time.

There can be no doubt that some nonliteral yes/no forms have become so highly conventionalized that their use and interpretation is automatic. For highly conventionalized or routinized yes/no questions, it is doubtful that the speaker/listener would have to engage in this kind of inferencing suggested by the theory of conversational implicature. However, speakers/listeners are capable of using and interpreting unconventionalized indirect speech acts as

well.

A recent study by Ackerman (1978) provided empirical evidence that children are able to extract extraliteral directive meanings for unconventionalized utterances as a function of context and speaker intent. According to Ackerman (1978), a sentence like

(18) Billy, I'm going to do my homework now.

may have either a literal or an extraliteral interpretation depending on context. Ackerman (1978, p. 317) constructed paragraphs to indicate either a literal or extraliteral reading. In the study, one of these paragraphs was read to a participant. The participant was required to determine whether any of three suggested events could happen next. The three events represented a literal reading, a nonliteral reading and a distractor.

Ackerman (1978) found that children as well as adults were able to assign correct interpretations depending on context. Ackerman (1978) reasoned that the participant had to make an inference from context to interpretation in order to select the correct answer. Thus, the study provided some support for the position that listeners can make inferences about speaker intent depending on contextual information. This is important in the investigation of yes/no questions, since the speaker's selection of a form depends on his presuppositions concerning the listener's ability to make such inferences and provide the desired response.

It is generally acknowledged that information-eliciting is associated with question asking. However, much psycholinguistic research in this area seems to have a limited perspective on the function(s) of yes/no questions. In a recent paper, Akiyama et al. (1979) investigated the applicability of several verification models to the answering of yes/no questions. This point of view assumes that every yes/no question contains a proposition which can be regarded as true or false. Answering a yes/no question involves the verification of that proposition. The Akiyama et al. (1979) study ignored all but one type of yes/no question, the type which begins with some form of the auxiliary BE. The study also neglected the yes/no directives, which fall into the performative (Austin, 1965) category and are not regarded as true or false. Despite the limited scope of the Akiyama et al. (1979) study, evidence linking information to question asking is provided, since verification must be based on information.

Mikaye and Norman (1979) investigated specifically the relationship between existing levels of knowledge and difficulty of learning task in an experimental study of question asking. The researchers observed the number and kind of questions asked by pre-trained and untrained subjects learning to use a computer text editor. Mikaye and Norman (1979, p. 358) hypothesized that

When there are two presentation levels of the same material, easy and hard, the learner with the ample knowledge structure should ask more questions on the harder presentation and fewer on the easier one; the learner with little knowledge should ask the most questions with the easier presentation and not many with

the harder presentation.

These predictions were confirmed. The data also revealed a tendency for confirmatory statements to increase with difficulty for the trained learners, but to decrease with difficulty for the novices. This would lend support to the proposal that confirmation would be associated with speakers possessing higher levels of information. However, this interaction was not statistically reliable at the .05 level. Mikaye and Norman (1979, p. 362) concluded that "a theory of questioning that suggests that people ask questions to fill in their knowledge structures is too simplistic. People do not appear to be able to cope with material too far beyond their present knowledge."

Prototypical Forms and Functions of Yes/No Questions

Thus far, the predictions about speaker behaviour which have been made have been based on a minimum of specific language data in order that the hypotheses would be formed on theoretical arguments rather than on a specific corpus of sentences. This will be important in determining whether language can be treated as a random effect in the empirical portion of this thesis. Real language examples will now be examined in order to identify aspects of form and function of yes/no questions. The predictions made earlier focussed on the expected behaviour of native speakers. Now the focus will be redirected toward predicting the acquisition behaviour of nonnative speakers. According to prototype theory, the prototypical members of a

category will be learned before the less prototypical members. Thus, the following examination of yes/no questions will be directed at determining the prototypical form(s) and function(s) of yes/no questions.

Several yes/no question functions have been identified in the papers reviewed above. Kearsley (1976) suggested four major dimensions underlying question asking: echoic, epistemic, expressive and social control. The echoic dimension is probably not a function but a syntactic type. However, Kearsley's (1976) remaining three dimensions are supported with evidence from the studies by Holzman (1972), Tamir (1980) and Vander Brook et al. (1980).

Transfer of information appears to be the basis for the first category of question-asking. All four of the papers agree on this function. The questioner may know the answer to his question, in which case the question becomes a test or known-answer question common in mother-child interactions (Holzman, 1972; Tamir, 1980). When the questioner does not know the answer, the question is sincere (Holzman, 1972; Grice, 1975). Questions requiring repetition or asking for confirmation probably belong to this information-based category. In mother-child interactions, some questions can even be used to provide information (Holzman, 1972).

A social control dimension appears to underlie the second category of question asking. Such questions are used to make suggestions (Holzman, 1972; Tamir, 1980), polite requests

(Holzman, 1972; Tamir, 1980; Vander Brook et al., 1980) and to issue commands or directives (Vander Brook et al., 1980).

The expression of attitudes underlies the third category of question asking. Holzman (1972) and Tamir (1980) identified evaluative question functions, while Vander Brook et al. (1980) identified questions which expressed surprise, sarcasm and disbelief.

There does not appear to be any one-to-one correspondence between function and form of questions at this general level of classification. However, at the next level down, there does appear to be such a correspondence. Vander Brook et al. (1980, p. 63) attempted to match specific syntactic forms to specific uses of yes/no questions.

Vander Brook et al. (1980, p. 63) have suggested that a number of specific functions are associated with each of the levels of presupposition. According to Vander Brook et al. (1980), the neutral form is used to elicit information. The neutral form is inverted and has the singular function of eliciting yes/no information. It is important to make a distinction between the more general term, eliciting information, and the specific notion of eliciting yes/no information which is a particular use of the neutral form. The neutral form is also used for topic changes. This seems reasonable; in the case of a topic change, the previous context will have no bearing on the selection of the yes/no form. Since previous context is not relevant, this will be a low-information

situation in which the neutral form would be expected. Vander Brook et al. (1980) indicated a further function of the neutral form--clarification of a previous yes/no question which has been answered inappropriately. The researchers also included asking a directed question (directive) in this category, but this has been challenged earlier. According to Vander Brook et al. (1980), forms with intermediate strength of presupposition of a yes answer are used to check an unstated assumption. These forms are also inverted. Forms with a high yes presupposition will be selected to confirm understanding, express disbelief, surprise or sarcasm, or to elicit information other than a yes/no answer. According to Vander Brook et al. (1980) these will typically be uninverted forms, particularly syntactic echo questions.

In summary, Vander Brook et al. (1980) suggest that forms with neutral presupposition will be used to elicit information, change topics and clarify. Forms with intermediate presupposition will be used to check an unstated assumption, while forms with high presupposition will be used for confirmation or expression. This classification differs from the one suggested above in which information-eliciting and confirmation are information-related functions, while expression appears as a separate category.

It is possible to identify certain phonological and syntactic features of the forms which mark membership in the neutral or high-presupposition groups. One way in which yes/no forms are marked is through constituent order. The more neutral

forms tend to have normal question inversion, whereas the high yes presupposition forms may have the statement (uninverted) form.

19) Are you taking poetry this semester? (question)

20) You're taking poetry this semester? (confirmation)

It is interesting that the question with high yes presupposition (20) is more statement-like than question-like. This is just what would be expected when the question is not really a question but a confirmation.

Another way in which yes/no forms are marked is through stress patterns. The more neutral forms tend to have normal question intonation, whereas the expressive forms tend to have stress-shifted intonation.

21) Are you taking poetry this semester? (question)

22) You're taking poetry this semester? (expression)

Another interesting difference in marking is the use of plain inverted forms versus tag questions. Neutral questions tend to use the plain inverted forms, while tag questions are used to express a range of biases concerning the listener's response:

23) Are you taking poetry this semester?

24) You're not taking poetry this semester, are you?

25) You're taking poetry this semester, aren't you?

Questions may be marked as negative, but this does not always assign a negative interpretation. In some cases, the specific lexical items used are the best clues to

interpretation:

- 26) Don't you agree? (You agree.)
- 27) Don't you hate snakes? (You hate snakes.)
- 28) Don't you love candy? (You love candy.)
- 29) Don't you like candy? (You don't like candy.)

However, the interpretation of some negative utterances depends on context. The following sentence can have either of two interpretations depending upon context:

- 30) Aren't you hungry? (You're hungry like I am.)
- 31) Aren't you hungry? (You don't act like you're hungry.)

It would be very difficult to handle the semantics of these sentences within current grammatical descriptions which focus on syntactic patterns and ignore context.

The use of particular lexical items may also indicate the speaker's knowledge of a situation. Compare:

- 33) Are you having a meeting with my husband?
- 34) Are you having an affair with my husband?

In (34) affair marks the form as being on the yes side of neutral. The higher information indicated by (34) is associated with high yes presupposition. Presumably the use of lexical items like maybe, possibly, surely, correctly, etc. would also mark forms.

There is also a tendency to use less specific lexical items with neutral questions, while more specific lexical items are reserved for use in contexts which presuppose higher amounts of information:

- 34) Are you going somewhere? (neutral - specific)
- 35) Are you going anywhere? (neutral - non-specific)
- 36) You're going somewhere? (high - specific)
- 37) *You're going anywhere? (high - non-specific)

This serves to reinforce the connection between less explicit (lower) information and inverted forms and more explicit (higher) information and uninverted forms.

A somewhat more subtle way to mark forms is through the use of definite versus indefinite articles. The neutral form will tend to use indefinite (or no) articles, while the high yes presupposition forms will use definite articles.

38) Can you pour coffee? (question)

39) Can you pour the coffee? (directive)

Recent investigations by Dale, Loftus and Rathbun (1978) indicated that children could be lead more easily to report that they had seen an item which they had not seen when they were asked yes/no questions containing definite articles. This provides evidence of a link between the use of definite articles and listener expectations.

The various functions and forms of yes/no questions have now been discussed. All of these ideas will be incorporated into the design of test items for investigation of the predictions made in this thesis. The preceding discussion also provides a basis for hypothesizing the prototypical forms and functions of yes/no questions. Two aspects of the question form must be considered, stress (normal or stress-shifted) and constituent

order (inverted or uninverted).

The evidence for the prototypicality of the information-eliciting function of yes/no questions is essentially usefulness as indicated by frequency of occurrence. However, syntactic and functional exponents of yes/no questions also played an important part in determining prototypicality. According to prototype theory, the best example of a category should share the most features with other category members and share the least features with competing categories. This eliminated the uninverted forms from consideration as best examples because they share the statement form with the category of ordinary declaratives. The inverted question also qualified as a best example in the sense that its use was more easily identified; it was the "neutral" form (Vander Brook et al., 1980) most likely to be used for the purpose of requesting a literal yes/no answer. The other functions of confirming, expressing, or eliciting behaviour overlap with competing categories of use.

It seems reasonable to assume that the prototypical yes/no question form is inverted with normal question intonation. This conforms to our general concept of questions. Stress-shifts indicating emphasis are not restricted to use with yes/no questions in English. And, asking questions is not the typical function of an utterance with statement word order.

It is a little more difficult to determine the prototypical function of yes/no questions. It is probable that eliciting

yes/no information is a more typical function than the confirmatory or expressive functions, as their name implies. However, issuing directives is also a very typical use of the yes/no questions. In fact, their use is so typical that a number of directives have become routinized. Directives will not be considered in this thesis because of the discrepancy between Vander Brook's et al. (1980) and my view on their placement on the continuum. However, some suggestions for investigating the acquisition of directives will be discussed in the section describing the limitations of this thesis. Gibbs (1981) is currently investigating the discourse factors involved in the selection of directive forms.

Hypotheses for Investigation

Several testable predictions have been made in the course of the preceding review and discussion. Vander Brook et al. (1980) have suggested that speakers with low presupposition of a yes answer will use neutral yes/no questions for the purpose of eliciting information. Inverted yes/no question forms are associated with this information-eliciting function. Vander Brook et al. (1980) have suggested that speakers with high presupposition of a literal yes answer will use yes/no questions for confirmatory and expressive functions. Uninverted yes/no forms are associated with these functions. The confirmatory questions have normal rising question intonation, while the

expressive questions have stress-shifted intonation. These predictions will be tested in an empirical study which is designed to match forms and functions of yes/no questions.

It has been argued above that it is unlikely that speakers operate on the presupposition of a literal yes or no answer. It is unlikely that the psychological reality of the literal yes/no definition could be demonstrated empirically; subjects would respond appropriately rather than literally. Relevant information has been suggested as a substitute for literal yes/no answer presuppositions. A speaker with low relevant information will use yes/no questions for the purpose of eliciting information. He will use the inverted forms. A speaker with high relevant information will use yes/no forms for confirmatory and expressive functions. He will use the statement forms.

Following an argument based on prototype theory, it is assumed that native English speakers will exhibit the most similar (i.e., statistically predictable) behaviour for the prototypical members of a category. The inverted information-eliciting yes/no question was selected as prototypical in adult English. Thus, speakers are expected to show the least individual variation for the selection of the normal stressed, inverted yes/no form serving the information-eliciting function.

If these hypotheses are confirmed, the native speaker data will provide a reference point for the evaluation of nonnative

speaker acquisition data. The same experiment will be used to evaluate a different set of hypotheses concerning L2 learner behaviour. Two hypotheses will be compared. According to the original hypothesis based on generative presuppositions, the acquisition of yes/no forms should show a progression from the uninverted (statement) form to the inverted form. According to the position developed in this thesis, the prototypical yes/no question form(s) and function(s) should be acquired first. Thus, inverted forms should be acquired before uninverted forms.

In fairness to the generative position, it is conceded that these hypotheses are not necessarily incompatible, because they are based on a different interpretation of what is learned in language acquisition. The generative position requires only that the statement form is produced, regardless of whether it is used correctly. Since the generative grammatical description is form-based, this theory of acquisition is also form-based. In hypothesizing a progression from the inverted form of yes/no questions, the researchers were suggesting that the statement forms of all utterances would be mastered first, without consideration of functions. In other words, the form of utterances determines the learner's order of acquisition. The present experiment treats acquisition as the acquisition of linguistic forms and functions.

III. Methods

Participants

The native speakers of Canadian English who participated in the study were all unpaid volunteer undergraduates at Simon Fraser University. The 20 female participants were enrolled in education courses. The 20 male participants were enrolled in education, beginning foreign language and beginning linguistics courses. Since participants were tested at the beginning of the semester, it was assumed that students enrolled in linguistics classes had not yet acquired a knowledge of linguistics that would have provided an advantage in taking the test. The 40 native speakers ranged from 19 to 41 years of age with an average age of 28.

The 92 nonnative English speakers who participated in the study were all unpaid volunteers enrolled in ESL classes at Capilano College, Kwantlen College and the University of British Columbia Language Institute. Two main types of ESL learners were represented. One group spoke French as a first language. The other group came from mixed language backgrounds.

The French sample was readily accessible and represented a major class of ESL learners in Canada. Of the major non English first languages spoken in Canada (French, Chinese and Punjabi)

French is the most similar to Spanish, the first language of the subjects in the Cancino et al. (1977) and Vander Brook et al. (1980) studies. The French sample could be expected to represent a student population that was relatively homogenous in social, cultural, education and financial background. However, there was some doubt that the results for the French college students learning English could be replicated for learners from other language backgrounds. Thus, a second group of nonnative speakers from mixed language backgrounds was tested in order to make the results more generalizable without directly addressing the problem of first language interference. The possibility remains that first language interference could cause learners from different language backgrounds to behave differently on the test.

The French speakers who participated in the study were all undergraduates from Quebec enrolled in French Language Summer Bursary Programs. The 46 participants, average age 21, were enrolled at the beginning level. The 23 females and 23 males had received an average of five years of secondary and post secondary instruction in English. The participants reported that they had lived in an English speaking community an average of less than a year. The 46 participants were selected from a total sample of 54 composed of 30 females and 24 males. To establish the sample of 46, 26 females and 17 males who had been assigned to the beginners' level on the basis of the same test were selected. An additional 6 males were selected at random from a

class in which a different placement test was used. Then three of the 26 females were randomly deleted.

The nonnative speakers from mixed backgrounds were all enrolled in intermediate and advanced ESL classes at Kwantlen College. The decision to test students at these levels was based on the recommendations of the classes' instructors. The 46 participants, average age 27, had received an average of three years of formal instruction in English. The 23 females and 23 males had resided in English speaking communities an average of three years. The 46 participants were selected from a total sample of 47 tested. The results of all 23 males were used. One female's results were dropped after she experienced extreme difficulty in completing the consent form and questionnaire.

The mixed group reported a wide variety of language backgrounds. The females spoke Chinese (5), Punjabi (4), German (3), Korean (2), Hungarian (2), Polish (1), Czech (1), Spanish (1), Filipino (1), Croatian (1), Japanese (1) and Armenian (1). The males spoke Chinese (8), Punjabi (5), Korean (3), Vietnamese (2), Polish (1), Czech (1), Spanish (1), Portuguese (1) and French (1).

Instrumentation

This study used a relatively new type of analysis called contextual analysis. Celce-Murcia (1980) recently wrote an article justifying and describing contextual analysis in which

she set guidelines for research in this area. Her recommendations provided the basis for the control of variables in developing the methodology for this study. The methodology was designed to control the discourse variable language function, in this case the intent of the speaker in producing a yes/no question. Usually the speaker's intent must be inferred from context, and this has been one disadvantage in discourse analysis. The methodology developed for this study attempted to correct this weakness. The development of instrumentation is described in detail for the benefit of researchers who may wish to explore language functions in further research.

Construction of the Questions and Contexts

The major problem encountered in designing the test instrument was selecting particular forms to represent the potentially infinite number of possible yes/no questions. Every effort was made to ensure that language could be treated as a random effect in this study (Clark, 1973). Thus, it was important that the test include representative yes/no question types so that the conclusions drawn would be generalizable beyond the specific corpus used. However, this objective had to be balanced with a consideration of the relative difficulty of potential questions. Introducing too much diversity could add sources of confusion for the nonnative participants which might be unrelated to the problem under investigation. The test had to

include the maximum variety of essential yes/no question features while minimizing other kinds of syntactic and semantic variation.

The selection of particular lexical items, noun and verb phrase types and kernel sentence types to be used for yes/no questions and contexts presented a problem because it is difficult to evaluate the relative complexity of the possible structures. Some considerations in evaluating complexity are (1) frequency of the structures in the target language, (2) the number of morphemes at the deep or surface structure level, (3) the semantic complexity of particular lexical items and (4) the difficulty of tense concepts. A discussion of all such possible metrics is beyond the scope of the present paper if not modern linguistics. Although a more intuitive approach to sentence complexity was adopted, the problem of test construction was approached systematically. The test was written in four stages.

At the first stage of test construction, four essential categories of sentence-initial auxiliaries were identified. The primary syntactic feature marking questions in English is the inversion of auxiliary and subject. In constituent questions a wh- word precedes the auxiliary. Conjunctions and preposed adverbials or noun phrases may also occupy sentence-initial position, but these are not essential features of yes/no questions. A distinguishing feature of inverted yes/no questions is what occupies initial position as an auxiliary. There are

five main varieties of initial auxiliary constituents. They are:

1. Forms of BE
2. Forms of DO
3. Modal verbs
4. Forms of HAVE
5. Transitive and intransitive verbs

Of these, the first four categories were included in the test to ensure representativeness. The fifth category contains only archaic forms and fragments.

Unfortunately, there is not a one-to-one correspondence between these four categories and verbals in English. The category (1) Forms of BE, for example, may derive from sentences in which BE is (1) copular, (2) perfective or (3) progressive:

- 1) Are you Mr. Brown? (BE + NP)
- 2) Are you married? (BE + V + -EN)
- 3) Are you going? (BE + V + -ING)

Modals can occur in initial position (4,5), but transitive and intransitive verbs must be supported by a form of DO (6,7):

- 4) Can you fly?
- 5) Will you come?
- 6) Do you walk to work?
- 7) Did you wreck your car?

Thus, in addition to representing each of the surface forms, some attention had to be given to the types of verb phrases of which the auxiliary is just one part.

The second step of test construction focussed on verb phrase types. By specifying a limit of three elements per verb phrase of the uninverted question form (or the base string of the question in a generative analysis) it was possible to represent the four types of initial auxiliaries described above and to represent the major simple tenses and aspects of English.

1. TENSE + BE + (completer)
2. TENSE + MODAL + V
3. TENSE + (HAVE + -EN) + V
4. TENSE + (BE + -ING) + V
5. TENSE + V(trans) + (completer)
6. TENSE + V(intrans)

In the third phase of test construction, complements were developed for the BE and transitive verbs, modals were selected, tenses were assigned, and three verb types were duplicated. The following inventory of 15 verb phrase types was constructed:

1. PRES + BE + NP
2. PRES + BE + ADJ
3. PAST + BE + ADV
4. PRES + CAN + V(trans)
5. PRES + WILL + V(intrans)
6. PRES + (HAVE + -EN) + V
7. PRES + (BE + -ING) + V(intrans)
8. PRES + (BE + -EN) + V(intrans)
9. PRES + V(trans) + NP
10. PRES + V(intrans)

11. PAST + V(trans) + NP
12. PAST + V(intrans)
13. PRES + (BE -ING) + V(trans) + NP
14. PRES + V(intrans)
15. PRES + V(trans) + NP

There are several kernel sentence types which can be constructed around a copular BE. BE was combined with a noun phrase, an adjective and an adverb (items 1,2,3).

The modals can and will were selected to represent the modal category (items 4,5). The modal will (with the meaning of intention) was chosen because it also represents the simple future tense of English. However, in the uninverted form, will contracts obligatorily with a preceding pronoun unless special emphasis on the modal is required:

10) Will you lend me your car?

11) You'll lend me your car?

For this reason, can was selected as a noncontractible modal. The other modals were excluded because they were archaic, polite, slang, contained particles or were indistinguishable as clearly present or past tense without supporting context.

The progressive and perfective aspects of English were also represented (items 6,7,8). Both regular and irregular participle forms were represented when the actual lexical items were selected. Though the productive form is by definition the regular form, the irregular forms are more frequent in ordinary usage; the frequency of their use helps to preserve them without

change.

It did not seem necessary to produce two sets of constructions contrasting past tense and present tense. Past tense was assigned to just one of the BE forms (item 3). The past tense of transitive and intransitive verbs was represented (items 11,12) along with their present tense (items 9,10). Modals were not converted to past tense, because past tense modals are subjunctives (could, would), a likely source of confusion for the nonnative participant. Similarly, the past perfectives and progressives were not represented in past tense because of time reference complexity. It would have been difficult to construct simple three line contexts for these tenses.

Three additional test items (13,14,15) were selected by determining that the present progressive, the transitive and intransitive verbs were less likely to create difficulty for ESL learners than other verb constructions. The present progressive (ING) is one of the first grammatical morphemes acquired in L1 and L2 as Brown (1973) and Burt and Dulay (1978) demonstrated. Cancino et al. (1978) showed that yes/no questions beginning with do (used with transitive and intransitive verbs) are acquired first in the acquisition of English as a second language.

In the fourth stage of test construction, the 15 patterns identified above (p. 5) were used for the construction of 15 sets of contexts and blocks of yes/no questions. An effort was

made to use only these verb constituent types in constructing contexts. However, a few embeddings were also allowed. Most of the sentences were simple, affirmative, declarative, but a few negatives and questions were used within the contexts. Contexts consisted of three lines of three to five sentences. The initial test consisted of 45 items representing 15 themes. Each of the themes was developed into the three functions, information-eliciting, confirmatory and expressive. For example, the following passages represented the MIKE JONES theme:

Mary wants to see Mike Jones.

She does not know Mike Jones. Information-eliciting 4

A stranger says hello to Mary.

Mary wants to see Mike Jones.

A man says: Let me help you. Confirmatory

I'm Mike Jones.

Mary wants to see Mike Jones.

Mary thinks that Mike Jones is a man. Expressive

A woman says: Hello, I'm Mike Jones.

Evaluation of the Testing Instrument

The test was evaluated in four stages. At Stage 1, 20 participants evaluated the original 45 test items representing the information-eliciting, confirmatory and expressive versions of 15 themes. At Stages 2 and 3, 20 participants evaluated rewritten items. At Stage 4, 20 subjects evaluated the final version of the test. Thirty-three items representing the three functions and 11 themes were chosen for the final version. The criterion for inclusion of an item was 80% or better subject agreement with the predicted function. The 33 test items were randomized in order to hinder comparisons among theme-related passages.

Participants in the test evaluation were required to read each of the short passages designed to elicit one of the three functions and answer two multiple choice questions. A sample validation task is presented below. This passage was designed to elicit high judgements of certainty and the confirmation function:

John and Bob are at a party.

John is wearing a wedding ring.

John is talking about his children.

How certain is Bob that John is married?

- 1) Very certain.
- 2) Fairly certain.
- 3) Not at all certain.

Bob speaks next. Bob is likely to:

- 1) ask John whether he is married.
- 2) confirm his understanding that John is married.
- 3) express surprise or disbelief that John is married.

The first multiple choice question in each test item was designed to link level of information with the functional tenor of the passage. It was hypothesized that low levels of relevant information would be associated with the information-eliciting function, while higher levels would be associated with the confirmatory and expressive functions. It was assumed that high certainty would be an indication of high information. Participants were expected to choose answer number (3) whenever the information-eliciting function was predicted; they were expected to choose answer (1) or (2) when the confirmatory or expressive functions were predicted.

For analysis of the certainty judgements, the 33 item test was divided into three subtests of 11 items each, representing

the information-eliciting, confirmatory and expressive functions. Subjects received a point for choosing a predicted answer; a perfect score was 11 for each subtest. The means, standard deviations and standard errors of the scores for the 20 subjects were calculated for each subtest.

Table 3
Descriptive Statistics for Certainty Judgements
by Native English Speakers

	Subtests		
	Information	Confirmatory	Expressive
M	10.50	10.80	2.50
SD	1.15	.41	1.43
SE	.26	.09	.32

The hypotheses for the information-eliciting and confirmatory functions were confirmed. Participants chose answer (3) an average of 95% of the time for items designed to represent the information-eliciting function. Participants chose answer (1) or (2) an average of 98% of the time for items designed to elicit the confirmatory function. The results show that the information-eliciting and confirmatory functions belong

to an information-based family of yes/no functions.

In accordance with this finding, adjusting the level of information proved to be an effective rewriting strategy for these items. Decreasing explicitness was an effective way of improving the tendency of subjects to select the predicted information-eliciting function. Function agreement for confirmatory items was improved by increasing explicitness to raise information levels. The importance of confirmation for phatic communicative purposes was also noted. Rewriting passages to establish communication between speaker and listener proved to be an effective rewriting strategy.

The expected connection between high information (certainty) and the expressive function was not confirmed. Participants chose answer (1) or (2) in only 23% of the instances where the expressive function was predicted. Subjects chose answer (3) in 77% of the items written to elicit the expressive function. But this does not necessarily indicate a link between low information and the expressive function.

In some cases where subjects agreed that disbelief or surprise would be expressed, they could not be "certain" about the information provided in the passage. For the following item, 90% of the subjects agreed that Susan would express surprise or disbelief that Billy was married, and 95% said that Susan was not at all certain that Billy was married.

Susan is a teenager.

Billy says: I'm four years old.

I'm already married.

In such passages, certainty no longer measured information per se, but indicated truth or falsity of the information provided. False information was not considered to be information in terms of certainty. This would seem to indicate a connection between uncertainty and the expressive function.

However, the expressive function was not always associated with uncertainty.

John and Mary are students. Mary hates math.

John and Mary register together.

Mary registers for a math class.

For this item, 90% of the subjects agreed that John was likely to express surprise or disbelief that Mary was taking a math class, and 95% said that John was fairly or very certain that Mary was taking a math class.

Since the predicted connection between high information and the expressive function was not supported, it is not surprising that adjusting information levels failed to be an effective rewriting strategy for these items. Subjects were particularly reluctant to express surprise or disbelief in cases where (1) expressing surprise or disbelief seemed out of keeping with a

particular professional role, (2) where a person of lesser age, authority or social status might be considered impolite, or (3) where strangers were involved. Adjusting the social roles and circumstances to eliminate these problems was effective in rewriting these items.

The second multiple choice question in each test item was designed to determine whether the passage as written would evoke the intended function of eliciting information, confirmation or expression. Subjects were expected to choose answer (1) for items designed to represent the information-eliciting function. They were expected to choose answer (2) for items written to elicit the confirmatory function. They were expected to choose answer (3) for items designed to elicit the expressive function.

For analysis of the function judgements, the test was again divided into three subtests of 11 items each representing the three functions. Subjects received a point for choosing a predicted answer; a perfect score was 11 on each subtest. The means, standard deviations and standard errors of the scores for the 20 subjects were calculated for each subtest. A t test was performed to determine whether the passages as written had evoked the intended functions. The observed mean was evaluated against the claim that subjects would score an average of 10 points or better (average score 91%) of the possible 11 points.

Table 4
 Descriptive Statistics for Function Judgements
 by Native English Speakers

	Subtests		
	Information	Confirmatory	Expressive
M	10.75	10.00	9.85
SD	.55	1.26	1.42
SE	.12	.28	.32

The hypothesis was supported. The means for information and confirmation met the 10-point criterion. A t test revealed that the mean of 9.85 for the expressive items failed to differ reliably from the criterion mean of 10, $t(19) = .47, p > .50$. Subjects scored an average of 90% or better on each of the subtests. This was taken as evidence that all 33 passages could be included on the actual test.

Construction of Final Test

The final test consisted of 33 items representing 11 themes. The test was divided into three sections for construction. One of the passages (information-eliciting, confirmatory or expressive) representing each theme was assigned

to each section in order to prevent participants from making comparisons among theme-related passages. This procedure also helped to equalize the number of information-eliciting, confirmatory and expressive passages in each portion of the test. Within each section the order of items was randomized with the constraint that no more than two passages in succession could represent the same function. This randomization order was applied to each section of the test, helping to maintain maximum distance between theme related passages.

Since 11 themes were represented, 11 different answer blocks were required. The three theme-related passages were matched with an answer block containing three yes/no questions. Each answer block contained an inverted question form with normal intonation, an uninverted form with normal intonation and an uninverted form with stress-shifted intonation. The following answer block was paired with each of the passages representing the Mike Jones theme:

- 1) Are you Mike Jones?
- 2) You're Mike Jones?
- 3) You're MIKE JONES?

Normally the intonation differences between (2) and (3) above would be represented with intonation contours and diacritics as follows:

2) You're Mike Jones?

3) You're Mike Jones?

However, this kind of marking would probably have created additional confusion for the test participants. Instead, the confirmatory statement forms with normal intonation were left unmarked, and capital letters were used to indicate the stress-shifted intonation for the expressive statement forms. This eliminated the need for a pre-training session to explain the diacritic marking system. The order of yes/no questions was randomized within each block. Then each of the 11 answer blocks were combined with each of the three appropriate theme related passages.

The entire test including directions was tape recorded by an adult male native speaker of Canadian English. The recording was done on a cassette recording system in a sound proof recording room. The 11 answer blocks were recorded first to ensure that the set of answers would be the same for all three theme related passages. This also ruled out the possibility of the speaker providing clues about the correct answer since he had not yet read any of the function passages.

The speaker was coached into producing the desired intonation for each question with the help of drawn intonation contours, hand signals designating rising and falling pitch and voice models. No instructions pertaining to functions were

given. The speaker was deliberately not asked to produce sentences as if he were confirming or expressing surprise or disbelief. However, the speaker soon adopted a functional strategy of his own devising.

The stress-shifted intonation patterns produced on tape were clearly exaggerated. This was done intentionally so that there would be no doubt that the nonnative participants could perceive the difference between the statement form with normal intonation and the form with stress-shifted intonation.

Procedures

The native speakers of English who participated in the study were tested individually and in small groups. For group testing the taped test was played for the entire group in a classroom setting. Individual testing was done in Simon Fraser University language laboratories where participants listened to the taped test through headphones. The test directions were taped to ensure standardisation of administration.

Participants simultaneously heard and read each of the 33 passages designed to evoke one of the three functions, information-eliciting, confirmatory or expressive. For each passage, subjects also heard and read each of the three yes/no questions. Then they chose one of the questions as the appropriate next response and circled the number of that question on their answer sheet.

5

During a pilot test of 19 native English speakers it became apparent that too much information regarding the matching of the uninverted stress-shifted forms with the expressive passages had been disclosed during the test introduction and fielding of questions. In subsequent testing the taped directions were played before any verbal instructions were given. Then the tape was stopped, the volume was adjusted and questions were answered. Very few subjects had difficulty understanding the directions. Native speakers were advised that long spacing had been left between items and that intonation had been exaggerated for the benefit of nonnative speakers. The entire procedure including the signing of consent forms took about 30 minutes for native speakers.

The nonnative participants were tested in small groups in their classrooms. Participants signed a consent form and filled out a short questionnaire prior to testing. Since the test was originally designed for administration to university students learning English, it was necessary to clarify a few vocabulary items for the mixed group. The following vocabulary was introduced prior to testing: appropriate response, first impression, hostess, psychiatrist, terrified, instructor, stranger and Sahara Desert.

Following the introduction of vocabulary the test directions were played, and the tape was stopped for clarification of directions. Most participants had no trouble understanding the directions. When problems did arise,

instructors were helpful in clarifying instructions, and in a few instances a classmate provided clarification in the participant's native language. Participants were advised that they could stop taking the test at any time if the English became too difficult. The entire procedure took 30 to 45 minutes for nonnative speakers.

Design

Different designs were used for the studies of native speakers and nonnative speakers since different hypotheses had been proposed for each group. Native speakers were expected to score very high on the test because their role in the experimentation was to confirm the predictions that had been made concerning the matching of functions and forms. If the predictions were confirmed, the distribution of the native speakers' scores would be necessarily skewed toward the high end of the scale and they would exhibit little variance. The scores of nonnative speakers were not expected to be as high nor as uniformly distributed as the native speakers, and they were expected to exhibit more variance. Combining the native and nonnative speakers' results in an analysis of variance would violate two basic assumptions for parametric tests---normality of distribution and homogeneity of variance.

The native speaker study was a one-factor experiment with repeated measures (Ferguson, 1981, p. 317). The single factor

was functions with three levels. The three repeated measures were the subjects' scores on the information-eliciting, confirmatory and expressive subtests. There were 11 items in each of these subtests. Sex was not used as an experimental variable since it played no theoretical role in the study. When the Friedman test is used to analyse the results, this design is called a two-way analysis of variance in ranks design (Ferguson, 1981, p. 410).

The nonnative speaker study was a two-factor experiment with repeated measures. The between groups factors were SEX with two levels and GROUPS with two levels. The two GROUPS were subjects who spoke French as a first language and subjects who came from mixed language backgrounds. The within subjects factor was FUNCTION with three levels. The three repeated measures were the participants' scores on the information-eliciting, confirmatory and expressive subtests.

IV. Results and Discussion

Native Speakers of English

The native speaker data was analysed in order to evaluate specific predictions made about the matching of yes/no question functions and forms. For preliminary analysis, the 33 item test was divided into three subtests of 11 items each representing the information-eliciting, confirmatory and expressive functions. The first step in the analysis was simply to tally the frequencies with which each of the three yes/no forms was selected for each yes/no question functions. The results for 40 native English speakers answering 11 items each on the three subtests are reported in Table 5. Question 1 was the inverted form with normal intonation, question 2 was the uninverted form with normal intonation, and question 3 was the uninverted form with stress-shifted intonation.

In accordance with the prediction, the inverted form (question 1) was the most frequent selection for the information-eliciting contexts. The 428 responses represented 97% of the total responses. As expected, participants chose the uninverted form with normal intonation (question 2) as the most frequent response for the confirmatory contexts. The 345 responses represented 78% of the total responses with the

remaining 22% split between questions 1 and 3. Participants chose the uninverted stress-shifted form (question 3) with the highest frequency for the expressive contexts as predicted. The 401 responses represented 90% of the total with the normal-stressed uninverted form accounting for 8% of the remaining responses.

Table 5
Frequencies of Yes/No Form Selection
by Native English Speakers

Question	Subtests		
	Information	Confirmatory	Expressive
1	428	40	4
2	10	345	35
3	2	55	401

Individual test items 9 and 28 were examined to determine whether they were sources of difficulty on the information--eliciting subtest. In yes/no questions with transitive and intransitive verbs, the auxiliary do does not appear in the confirmatory form. Word initial do is also dropped from the informal inverted form. Thus, the informal inverted and confirmatory uninverted forms are the same. Participants might

have mistaken the confirmatory form for an informal inverted form given the information-eliciting contexts in items 9 and 28. However, all 40 participants chose the inverted form for item 9, and 38 participants responded correctly on item 28.

The frequency tally indicated that while the data tended to support the predicted matches of function and form, problems did exist with the confirmatory items. The individual items on the confirmatory subtest were examined to determine whether the lower agreement of native speakers on these items was due to problems with individual items or problems with the predicted match of form and function.

Inspection of the confirmatory items revealed that eight of the items had elicited the expected match between form and function with 90% or better subject agreement. However, items 5, 6 and 18 fell short of the 90% mark with 79%, 58% and 82% subject agreement respectively. The confirmatory context for test item 5 appeared as follows on the test:

John and Bob are at a party.

John is wearing a wedding ring.

John is talking about his children.

On item 5, 10 participants selected question 1, 26 participants selected the expected question 2, and four participants selected question 3. In rewriting items during the test development, it

was discovered that confirmatory judgements were easier to elicit when conversation had already been initiated and when confirmation would produce an echo question. Neither of these conditions was satisfied by item 5, explaining why 10 participants chose the conversation-initiating question 1 instead of the confirmatory question 2 for this item.

The confirmatory contexts for items 6 and 18 appeared as follows on the test:

John and Mike are at the zoo.

John says: I like snakes.

John is a biologist.

Mary wants to see Mike Jones.

A man says: Let me help you.

I'm Mike Jones.

On item 6, four participants chose question 1, 19 participants chose question 2, and 17 participants chose question 3. On item 18, one participant chose question 1, 27 participants chose question 2, and 12 participants chose question 3. The tendency of participants to infer the expressive function for these items was unexpected, particularly because surprise was so difficult to elicit at the test development stage. On the final validation, subject agreement with the predicted confirmatory

function was 100% for item 6 and 90% for item 18.

This unexpected tendency toward expressing surprise in confirmatory contexts is attributed to the exaggerated intonation for the stress-shifted yes/no forms on the taped test. This exaggerated intonation apparently emphasized the role of surprise or disbelief on the test, leading subjects to be less reserved in inferring the expressive function. Both items 6 and 18 appeared in the test prior to their counterparts designed to elicit expression. It is not entirely unreasonable that subjects should express surprise that someone likes snakes (item 6) or express disbelief that someone is Mike Jones (item 18) if they are on the lookout for items which express surprise or disbelief.

The problematic items 5, 6 and 18 and their theme-related information-eliciting and expressive contexts were deleted from the test before further analysis was undertaken. There is a problem with excluding these three items since all items had previously met an 80% criterion of subject agreement with the predicted function. However, the task of overtly determining functions on the validation was probably less difficult than the task of matching inferred functions with specific forms on the final test. The differences between the validation task and the final test could conceivably produce differences in function judgements on certain items. The problem with item 5 has been attributed to its faulty construction. The problems with items 6 and 18 have been attributed to differences in the test task and

test procedure. Including these items in the analysis of nonnative speaker data would prejudice the results in favour of the hypothesis that inverted forms would be acquired before the uninverted forms, since their presence could lower the confirmatory scores. In fairness to both hypotheses, only the trouble-free items should be included in the analysis.

For further evaluation, the remaining 24 items were divided into three subtests of eight items each representing the information-eliciting, confirmatory, and expressive functions. Participants received a point for choosing a predicted answer; a perfect score on each subtest was eight. The means, standard deviations and standard errors for the 40 participants' scores are reported in Table 6.

Table 6
Descriptive Statistics for Native Speakers' Scores
on Three 8-item Subtests

	Subtests		
	Information	Confirmatory	Expressive
M	7.83	6.83	7.28
SD	.50	1.38	1.22
SE	.08	.22	.19

The observed subtest means were evaluated against the strong claim that participants would score an average of seven points or better on each eight-point subtest. The information-eliciting mean of 7.83 and the expressive mean of 7.28 exceeded the seven-point criterion. The confirmatory mean of 6.83 failed to differ reliably from the seven-point criterion; $t(39) = .77, p > .40$. The predictions concerning the matching of form and function are supported by these results. Subjects chose the inverted form with normal intonation to elicit information. They chose the uninverted form with normal intonation to express confirmation. Surprise or disbelief was expressed by the uninverted form with stress-shifted intonation.

Performance on individual themes was also measured. Subjects received a score of 1, 2, or 3 depending on the number of items which they had correctly answered for a given theme. The descriptive statistics for subjects' scores on each theme were then calculated. The means of these scores ranged from 2.63 for the MATH theme to 2.88 for the FLY theme, indicating that participants had correctly completed at least two out of three items for each theme. A paired t test revealed that the .25 difference between the means was reliable; $t(39) = 2.51, p < .02$. However, it is questionable whether this is an important difference between the means. Only one t test of the maximally different means was performed since variances for the remaining means did not vary appreciably.

Since the information-eliciting function was considered prototypical, native speakers were expected to score higher and show less variation on the information-eliciting function than on the confirmatory or expressive functions. The results reported in Table 6 indicate that native speakers performed to a specified criterion on all three functions; no important differences between means should be expected. The use of t tests to compare the means is questionable since the data violate the basic assumptions of distribution of normality and homogeneity of variance. For these reasons, Friedman's two-way analysis of variance by ranks was used to evaluate this final prediction concerning native speakers.

Friedman's test is appropriate because it is nonparametric and because it preserves information about each participant's performance on the three subtests that is lost in calculating an overall mean across subjects. The Friedman analysis assigns ranks according to performance for each subject, sums the ranks, and determines whether the differences in mean rank sums are reliably greater than chance expectation. So, the Friedman test would reveal whether participants consistently scored higher on one subtest than on the others even though the overall subtest means might not differ in an important way.

The scores for each of the 40 participants were calculated and each subjects' scores were ranked 1, 2, or 3 according to his relative performance on the three subtests. Midranks were assigned in the case of ties. The ranks were input as data to an

SPSS program which performed a Friedman's two-way analysis of variance by ranks. The analysis produced a mean rank of 2.38 for the information-eliciting subtest, 1.65 for the confirmatory subtest, and 1.97 for the expressive subtest. A .005 level of significance was reported for the chi-square of 10.55 indicating that at least two of the mean ranks differed reliably.

Planned comparisons and post hoc procedures can be used with the Friedman analysis. Marascuilo and McSweeney (1977, p. 369) recommend the use of multiple matched-pair Wilcoxon tests in place of the Friedman analysis "provided that one is willing to restrict the analysis to planned comparisons only." Multiple Wilcoxon matched-pair signed-ranks tests were performed to evaluate the native speakers' scores on the three subtests. Participants scored reliably higher on the information-eliciting subtest than on the confirmatory subtest; $z = -3.91, p < .01$. Participants also scored reliably higher on the information-eliciting subtest than on the expressive subtest; $z = -2.51, p < .01$. The scores for the confirmatory and expressive subtests failed to differ reliably; $z = -1.38, p < .08$. All probabilities were calculated for a one-tailed test. The results supported the prediction that participants would score better on the prototypical information-eliciting function than on the confirmatory and expressive functions.

Nonnative Speakers of English

Preliminary analysis of the nonnative speakers' results began with a tally of the frequencies with which each of the three yes/no forms was selected for each question function. The results for 92 participants answering eight items on each subtest are given in Table 7. Question 1 was the inverted form with normal intonation, question 2 was the uninverted form with normal intonation, and question 3 was the uninverted form with stress-shifted intonation.

Table 7
Frequencies of Yes/No Form Selection
By Nonnative English Speakers

Question	Subtests		
	Information	Confirmatory	Expressive
1	616	297	221
2	100	307	88
3	20	132	427

For the information-eliciting subtest, nonnative speakers agreed with native speakers in choosing question 1 as the most frequent response. The 616 responses represented 84% of the total. Question 2 accounted for 13% and question 3 accounted for

3% of the remaining responses.

Like the native speakers, the nonnative speakers favoured question 2 for the confirmatory subtest. However, the 307 responses made up only 42% of the total with question 1 accounting for a close 40% of the total responses. Question 3 represented the remaining 18%.

Nonnative speakers selected question 3 most frequently on the expressive subtest. The 427 responses accounted for 58% of the total with question 2 representing 30% and question 3 accounting for the remaining 12%. This pattern of results provides preliminary support for the hypothesis that inverted forms would be acquired before uninverted forms.

For further analysis, the 24 item test was divided into three subtests of eight items each. Participants received a point for choosing a predicted answer. Three scores representing performance on the information-eliciting, confirmatory and expressive subtests were calculated for each participant. A two-way analysis of variance with repeated measures was performed on these scores. The two between-groups factors were sex and group with two levels. The first group was composed of 23 females and 23 males who spoke French as a first language. The 23 females and 23 males in the second group came from a variety of language backgrounds. The within-subjects factor was function with three levels. The repeated measures were the participants' scores on the three subtests. The UBC ANOVAR (1978) program was used to perform the analysis. This program

treats the between-subjects factors and the within-subjects factor as fixed effects. The results of the analysis are reported in Table 8.

Table 8
Analysis of Variance of Nonnative Speakers' Scores
on Three 8-item Subtests

Source of variation	Sum of Squares	Degrees of Freedom	Mean Squares	F Ratio	P
A (Sex)	0.230	1	0.230	0.035	.852
B (Group)	63.132	1	63.132	9.560	.003
AxB	4.189	1	4.189	.634	.428
S-within	581.145	887	6.604		
C (Function)	527.546	2	263.773	67.795	.001
AxC	7.962	2	3.981	1.023	.362
BxC	14.538	2	7.269	1.868	.157
AxBxC	9.231	2	4.616	1.186	.308
CxS-within	684.773	176	3.891		

The F of .035 for the main effect sex was not reliable, indicating that sex differences played no independent role in the study. Further, the interaction of sex and group was not reliable, indicating no sex differences within or across the French and mixed groups. The F of 9.56 for the main effect group was reliable at less than the .01 level indicating that one

group had performed better than the other on the test. The reliable F of 67.795 for the main effect function indicated differences in the participants' performance on the subtests. However, the F of 1.87 for the first-order interaction of group and function was not reliable. While one of the groups outperformed the other overall, the pattern of their performance on the subtests was the same.

The means, standard deviations, and standard errors for the two groups were calculated. The descriptive statistics for the French speakers are reported in Table 9.

Table 9
Descriptive Statistics for French Group Scores
on Three 8-item Subtests

	Subtests		
	Information	Confirmatory	Expressive
M	6.87	4.07	5.17
SD	1.47	2.03	2.32
SE	.22	.30	.34

The statistics for participants from mixed language backgrounds are given in Table 10.

Table 10

Descriptive Statistics for Mixed Group Scores
on Three 8-item Subtests

	Subtests		
	Information	Confirmatory	Expressive
M	6.52	2.61	4.11
SD	1.50	2.35	3.03
SE	.22	.35	.47

While the French group scored higher than the mixed group on all three subtests, the pattern of results for both groups was the same. The following *t* tests were calculated using the Bonferroni *t* test statistic for repeated measures designs (Myers, 1979, p. 301 - 302). The error term for this statistic is based only on the two functions undergoing comparison. For the French group, the information-eliciting mean of 6.87 was reliably greater than the confirmatory mean of 4.07; $t(45) = 7.12, p < .01$. The information-eliciting mean was also reliably greater than the expressive mean; $t(45) = 4.15, p < .01$. For the mixed group, the information-eliciting mean of 6.52 was reliably greater than the confirmatory mean of 2.61; $t(45) = 8.61, p < .01$. The information-eliciting mean also reliably exceeded the expressive mean of 4.11; $t(45) = 4.56, p < .01$. The better

overall performance of the French group is probably due to their academic abilities as university students and to their English training. The French students reported an average of five years of English instruction compared to an average of three years reported by the mixed group.

Although the French group outscored the mixed group, the difference in results for the two groups was quantitative rather than qualitative. In both groups, participants performed better on the information-eliciting subtest than on either the expressive subtest or the confirmatory subtest. The results for these very different groups of ESL learners are surprisingly similar. The results provide support for the hypothesis that the prototypical inverted information-eliciting form would be acquired before the less prototypical uninverted confirmatory and expressive forms.

For both the French and mixed groups, the expressive subtest mean exceeded the confirmatory subtest mean. For the French students, the expressive mean of 5.17 was reliably greater than the confirmatory mean of 4.07; $t(45) = 3.15, p < .01$. For the mixed group, the expressive mean of 4.11 reliably exceeded the confirmatory mean of 2.61; $t(45) = 5.15, p < .01$. The difference can be explained by comparing the yes/no forms. The information-eliciting form is inverted with normal intonation. The confirmatory mean is uninverted with normal intonation. Since both forms have normal intonation, the only feature distinguishing them is word order. The expressive form

is uninverted with stress-shifted intonation; it differs from the neutral form in both intonation and word order. This extra difference would serve to distinguish it more clearly from the inverted form in the language learning setting. In addition, the exaggerated intonation called attention to this form in the testing situation, helping to distinguish it from the other forms. Both factors probably facilitated the better performance of participants on the expressive items.

V. Discussion

Implications of the Research

This thesis challenged a basic assumption of ESL acquisition research. The assumption that language learning is tied mainly to the development of syntactic complexity persists in acquisition research despite the discrediting of the derivational theory of complexity. Acquisition studies typically focus on the learning of syntactic forms, and syntactic complexity is still a major factor in hypothesizing acquisition order. The results reported in this thesis show that the focus on the developing complexity of syntactic forms is not justified. Both form and function must be taken into consideration in analysing the learning of English as a second language. The results shows that it is important to consider the usefulness of a form as well as its syntax.

This study is not the first to demonstrate the importance of function in acquisition studies. There is a growing trend in ESL research toward discourse or contextual analysis. Such analyses are mainly descriptive because very little theoretical basis exists for forming hypotheses about the acquisition of functions. In this thesis, prototype theory was used to formulate an acquisition-order hypothesis for functions. It was

hypothesized that prototypical forms and functions would be acquired first. Prototype theory was successful in explaining the results of this study, and it provides a viable alternative to hypotheses based on syntactic complexity.

The research reported here can also serve as a model for the controlled study of functions. In previous studies language functions had to be inferred from context. In this study the functions were a controlled variable, validated prior to testing. Admittedly, the level of language used in the test required a somewhat accomplished learner. However, the technique could conceivably be developed for beginners by using nonverbal contexts such as pictures or sounds for eliciting functions.

Development of the testing instrument was reported in detail to emphasize the problems that can arise in test construction. In this test, syntactic complexity of the verb phrase, time reference of the verb, and vocabulary were important considerations. Other factors emerged during the rewriting of items at the various stages of validation. Social factors such as age, sex, and the relative social status of speaker and listener influenced the responses of native speakers on the validation. The role of forms in initiating and maintaining conversations was also noted. Thus, in addition to form and function, social factors must be considered in constructing instrumentation for ESL acquisition studies.

The thesis results have general implications for the teaching of ESL. Many teachers have been using a functional

approach to ESL despite the lack of empirical support. The results reported in this thesis provide experimental evidence that function is important in language learning.

The thesis results also have specific implications for the teaching of yes/no questions in English. The results indicate that the syntactic features which differentiate yes/no questions signal functional differences among the forms. The two syntactic devices examined in this study were intonation and word order. Insights gained about the meaning of these syntactic devices in discourse are presented in the following paragraphs. The information presented can easily be incorporated into a lesson on the use of yes/no questions.

Intonation may be rising or falling. Rising intonation with yes/no questions signals that a response is required. Rising intonation may signal a request for information or for behaviour as in a directive. Falling intonation indicates that a response is not necessarily required. ESL students who have not mastered English intonation may frequently be asked whether they are asking or telling their message. If the student understands the basic meaning of rising/falling intonation, he will avoid this problem.

Intonation in yes/no questions can be normal or exaggerated. Normal intonation indicates a socially neutral attitude toward the propositional content of the question. Thus, normal intonation is appropriate for making sincere inquiries, confirming hunches or previously-stated information, and for

making polite requests. Exaggerated or stress-shifted intonation indicates a nonneutral attitude like surprise, sarcasm, or disbelief. Stress-shifted intonation should be restricted to use in very informal situations with social equals. A speaker will be perceived as impolite if he uses stress-shifted intonation in speaking to a listener superior in age or social status.

Word order in yes/no questions can be inverted or uninverted. The inversion is related to the amount of new information contained in the question. If a speaker seeks information which is new to him, he will use the inverted order. If the request is genuine, it will be a request for information. If the request is not genuine, it will be a request for behaviour. Grice's (1975) work on conversational implicature shows how listeners may determine whether requests are genuine.

If the information in the question is not new to him, the speaker will use the uninverted statement form. The uninverted form may be used to confirm hunches or to check understanding of information that has previously been supplied. The ESL learner who has mastered the confirmatory use of the yes/no question would probably employ it frequently to check his understanding of the English he hears. The syntactic echo question, which repeats previously-supplied information, is uninverted. Rising intonation used with a statement form indicates that a response is required. However, it is unlikely that a yes/no answer would be appropriate given the speaker's relationship to the propositional content of his question.

The role of various forms as conversational devices should also be noted. The inverted form is used to initiate conversations or to change topics (Vander Brook et al., 1980) in conversations already initiated. The confirmatory form is used when conversation is underway. The syntactic echo question is particularly useful as a device for maintaining communication. If an ESL student masters this use of the uninverted yes/no question, he will be better able to sustain conversations in English.

Limitations of the Research; Unanswered Questions

The main faults with the test validation by native speakers have to do with the generalization of results. It could be argued that college students are not a representative sample of native speakers. It is quite possible that they have a greater facility for attending to the literality of language forms. This is important because the target English for the ESL learners may not match the experimental target. Thus, the native speaker data may not provide the best reference point for evaluating their learning. An attempt could be made to identify a more suitable target population for future testing.

The main problem with the nonnative speaker study is also the choice of subjects. The subjects' formal training in English makes it impossible to rule out an alternative explanation of the results. The subjects might have scored higher on the

information-eliciting function because they are taught only that form in English classes. If this is true, the reason that the inverted form is taught becomes important. Salama (1973) collected data on the frequency of yes/no questions in student/teacher interactions and found that inverted forms were used more frequently than uninverted forms. She recommended that only the inverted form be taught in ESL classes. If the ESL teachers based their decision to teach the inverted form on some criterion of usefulness, their decision is in line with the functional hypothesis developed in this thesis. Inverted questions may be mastered first because teachers recognize the prototypicality of the form. It is likely that the teacher at least recognizes the usefulness of the yes/no question as a teaching technique. However, this is speculative. The proper way to determine the confounding effect introduced by the teaching of the inverted form is to test subjects with no formal English training.

Another problem is trying to determine whether subjects made errors in matching functions and forms or in inferring the functions themselves. For the present experiment, it is not critical that this be determined, since it has been argued that part of the complexity of using the less prototypical forms correctly is the ability to make more complicated inferences. For future research, however, it would be fascinating to discover whether and how the ability to infer functions transfers across languages.

Another difficulty with the nonnative speaker study is the use of a cross-sectional rather than a longitudinal study. The use of a cross-sectional study presupposes that learners at certain stages of proficiency (as measured on standardized tests) will exhibit similar learning strategies. This has yet to be demonstrated conclusively for ESL.

It is always important to justify the use of elicited language data as opposed to naturalistic language data in a psycholinguistic study. Elicited language data is used in this study because of the problems involved in attempting to control for relevant information and function in a natural language setting. Vander Brook et al. (1980) reported that it was extremely difficult to infer speaker intent or language functions from naturalistic language data. However, Ackerman (1978, p. 312) pointed out that caution must also be exercised in inferring language behaviour from elicited data.

It should be pointed out that these procedures focus on children's reflective knowledge of language use and context in that the children were asked to make interpretive judgements about a speaker's intended meaning. The tasks do not measure immediate comprehension of intent, and, thus, are not a direct measure of children's ability to comprehend spontaneously the conveyed meanings of indirect speech acts in a natural discourse setting.

It was important to control functions in the present study in order to confirm predictions about the matching of forms and functions. Now that this has been done, future research may infer such matching in naturalistic language data.

Another problem with the study is its restricted scope. The study does not account for tag questions. Nor does it describe in any detail the vastly complicated array of stress-shifts and intonational patterns which may be used with yes/no questions. The greatest weakness of the study is its inability to account for directives. However, some suggestions will be made here for a possible investigation of directives.

It is predicted that the high supposition of a literal yes answer for directives enables them to take on the directive function. It has also been suggested that issuing directives is a prototypical use of yes/no questions. In fact, some of the forms have become so highly conventionalized that a speaker would not have to make any inferences about whether or not a literal interpretation is required. On the other hand, the unconventionalized directives require a complicated inference for their interpretation as illustrated in the discussion of Grice's maxims above. It would seem reasonable to predict that ESL learners would acquire the routinized forms before the nonroutinized forms. It would also be interesting to determine whether the directive function is acquired prior to the information-eliciting function. This question could be investigated in a study comparing the acquisition order of these forms for adults and children. Although the information-eliciting function may be prototypical for adults, the evidence presented by Holzman (1972) and Tamir (1980) indicates that the behaviour-eliciting function may be

prototypical in the speech children hear.

Many extremely interesting questions for further research are suggested by the results of this study. Since the predictions made in the study were supported, the study provides indirect evidence for the theory of conversational implicature. This is because Grice's maxim of quantity was used to explain the process of inferencing, linking context and the selection of forms. If inferencing is involved, there are potentially some very great differences between the child's and the adult's ability to learn ESL. A learner could only learn the forms for which he is capable of making the required inferences.

Searle (1975) has suggested that the same rules of inferencing apply across languages, but this is a highly controversial claim. Does language background affect the learner's ability to discover patterns of inferencing in English? This suggests a contrastive analysis of language functions to discover whether the same maxims of conversational implicature hold across languages.

Some interesting possibilities for the investigation of foreigner talk are also raised. Will a native speaker behave as if a nonnative speaker is capable of following the maxims of conversational implicature? Will he tend to use more literal forms or more routinized forms of yes/no questions in speaking to a learner?

In short, the issue of conversational implicature in ESL raises the same issues that have traditionally been raised in

ESL acquisition studies. But here the link between metacognitive development and language development is particularly important.

Are children restricted in the kinds of language that they can learn by the types of inferencing they can perform? How are the rules of conversational implicature acquired?

Finally, the analysis of conversational implicature and the acquisition of prototypical forms could shed some light on the viability of the Language Acquisition Device (LAD) theory.

According to this theory as used in ESL, learners learn the way they do because of an innate second language learning ability.

However, the justification of the LAD hypothesis consists largely of the inability of researchers to explain their results

on any other basis. In this thesis, two suggestions have been made for explaining the acquisition order of yes/no

questions--the acquisition of prototypical forms and functions and the learning of conversational implicature. Further research

strengthening these alternative explanations of language

acquisition will help to weaken the catch-all LAD hypothesis.

References

- Ackerman, B.P. Childrens' understanding of speech acts in unconventional directive frames. Child Development, 1978, 49, 311 - 318.
- Akiyama, M., Brewer, W., & Shoben, E. The yes-no question answering system and statement verification. Journal of Verbal Learning and Verbal Behavior, 1979, 18, 365 - 380.
- Austin, J.L. How to do things with words. New York: Oxford University Press, 1965.
- Bates, E. Language and context: the acquisition of pragmatics. New York: Academic Press, 1976.
- Bates, E., & MacWhinney, B. Functionalism and grammatical categories. Paper presented at Language acquisition: the state of the art. Philadelphia: University of Pennsylvania, 1978.
- Bolinger, D.L. Interrogative structures of American English (the direct question). Publication of the American Dialect Society, No. 28. Alabama: University of Alabama Press, 1957.
- Brown, R. A first language. Cambridge, Mass.: Harvard University Press, 1973.
- Brown, R. The development of WH questions in child speech. Journal of Verbal Learning and Verbal Behavior, 1968, 7, 279 - 298.
- Brown, R., Cazden, C., & Bellugi, U. The child's grammar from I to III. In A. Bar-Adon & W.F. Leopold (Eds.), Child language: a book of readings. Englewood Cliffs, N.J.: Prentice-Hall, 1971.
- Brown, R., & Hanlon, C. Derivational complexity and order of acquisition in child speech. In J.R. Hayes (Ed.), Cognition and the development of language. New York: Wiley, 1970.
- Cancino, H., Rosansky, E., & Schumann, J. The acquisition of English negatives and interrogatives by native Spanish speakers. In E. Hatch (Ed.), Second language acquisition: a book of readings. Rowley, Mass.: Newbury House Publishers, 1978.
- Cazden, C., Cancino, H., Rosansky, E., & Schumann, J. Second language acquisition sequences in children, adolescents and adults. Final report, National Institute of Education (Grant NE -6-00-3-0014), 1975.

- Celce-Mucia, M. Contextual analysis of English: application to TESL. In D. Larsen-Freeman (Ed.), Discourse analysis in second language research. Rowley, Mass.: Newbury House, 1980.
- Clark, H.H. The language-as-fixed-effect fallacy: a critique of language statistics in psychological research. Journal of Verbal Learning and Verbal Behavior, 1973, 12, 335 - 359.
- Corder, S.P. Introducing applied linguistics. Great Britain: Penguin Education, 1975.
- Dale, P.S., Loftus, E.F., & Rathbun, L. The influence of the form of the question on the eyewitness testimony of preschool children. Journal of Psycholinguistic Research, 1978, 7, 269 - 277.
- Dulay, H. C. & Burt, M.K. Natural sequences in child second-language acquisition. Language Learning, 1974, 24, 37 - 53. (a)
- Dulay, H.C. & Burt, M.K. A new perspective on the creative construction process in child second language acquisition. Language learning, 1974, 24, 253 - 278. (b)
- Ferguson, G.A. Statistical analysis in psychology and education (5th ed.). New York: McGraw-Hill, 1981.
- Gibbs, R.W. Your wish is my command: convention and context in interpreting indirect requests. Journal of Verbal Learning and Verbal Behavior, 1981, 20, 431 - 444.
- Gough, P.B. Grammatical transformations and speed of understanding. Journal of Verbal Learning and Verbal Behavior, 1965, 4, 107 - 111.
- Gough, P.B. The verification of sentences: the effects of delay of evidence and sentence length. Journal of Verbal Learning and Verbal Behavior, 1966, 5, 492 - 496.
- Greene, J. Psycholinguistics: Chomsky and Psychology. Great Britain: Penguin Education, 1972.
- Grice, H.P. Logic and conversation. In P. Cole & J. Morgan (Eds.), Syntax and Semantics, 3. New York: Academic Press, 1975.
- Hakuta, K. Some common goals for second and first language acquisition research. In R.W. Anderson (Ed.), New dimensions in second language acquisition research. Rowley, Mass.: Newbury House Publishers, Inc., 1981.

Halliday, M.A.K. Language structure and language function. In J. Lyons (Ed.), New horizons in linguistics. Great Britain: Penguin Books Ltd., 1970.

Hatch, E., & Long, M.H. Discourse analysis, what's that? In D. Larsen-Freeman (Ed.) Discourse analysis in second language research. Rowley, Mass.: Newbury House, 1980.

Holzman, M. The use of interrogative forms in the verbal interaction of three mothers and their children. Journal of Psycholinguistic Research, 1972, 4, 311 - 335.

Hull, C.L. Quantitative aspects of the evolution of concepts. Psychological Monographs, 1920, 28.

Hymes, D. On communicative competence. In J.B. Pride & J. Holmes (Eds.), Sociolinguistics. Great Britain: Penguin Books Ltd., 1972.

Ingram, D., & Tyack, D. Inversion of subject NP and Aux in children's questions. Journal of Psycholinguistic Research, 1979, 8, 333 - 341.

Jakobsen, J. Functions of language. In J.P.B. Allen & S.P. Corder (Eds.), The Edinburgh course in applied linguistics (Vol. 1). London, Oxford University Press, 1973.

Kearsley, G.P. Questions and question asking in verbal discourse: a cross-disciplinary review. Journal of Psycholinguistic Research, 1976, 5, 355 - 375.

Klima, E.S., & Bellugi, U. Syntactic regularities in the speech of children. In J. Lyons & R. Wales (Eds.), Psycholinguistic Papers. Edinburgh: Edinburgh University Press, 1966.

Larsen-Freeman, D. (Ed.) Discourse analysis in second language research. Rowley, Mass.: Newbury House, 1980.

Marascuilo, L.A. & McSweeney, M. Nonparametric and distribution-free methods for the social sciences. Monterey, California: Brooks/Cole Publishing Company, 1977.

McMahon, L.E. Grammatical analysis as part of understanding a sentence. Unpublished doctoral dissertation, Harvard University, 1963.

Mehler, J. Some effects of grammatical transformations on the recall of English sentences. Journal of Verbal Learning and Verbal Behavior, 1963, 2, 346 - 351.

- Mervis, C. B. Category structure and the development of categorization. In R. J. Spiro, B. C. Bruce, & W. F. Brewer (Eds.), Theoretical issues in reading comprehension. Hillsdale, N. J.: Erlbaum, 1980.
- Mervis, C. B., Catlin, J., & Rosch, E. Development of the structure of color categories. Developmental Psychology, 1975, 11, 54 - 60.
- Mikaye, N., & Norman, D. To ask a question, one must know enough to know what is not known. Journal of Verbal Learning and Verbal Behavior, 1979, 18, 357 - 364.
- Miller, G. A., & McKean, K. E. A chronometric study of some relations between sentences. Quarterly Journal of Experimental Psychology, 1964, 16, 297 - 308.
- Myers, J. L. Fundamentals of experimental design (3rd ed.). Boston: Allyn & Bacon, Inc., 1979.
- Piaget, J. The origins of intelligence in children. New York: International Universities Press, 1952. (originally published 1936.)
- Piaget, J. The language and thought of the child. London: Routledge, 1960. (Originally published, 1923.)
- Raven, R. Two Norwegian children's acquisition of English syntax. In E. Hatch (Ed.), Second language acquisition: a book of readings. Rowley, Mass.: Newbury House Publishers, 1978.
- Rosch, E. Universals and cultural specifics in human categorization. In R. Brislin, S. Bochner, & W. Lonner (Eds.), Cross-cultural perspectives on learning. New York: Halsted Press, 1975.
- Rosch, E. & Mervis, C. Family resemblances: studies in the internal structure of categories. Cognitive Psychology, 1975, 7, 573 - 605.
- Ross, J. R. Nouniness. In O. Fujimura (Ed.), Three dimensions of linguistic theory Tokyo: TEC Company, 1973.
- Ross, J. R. Three batons for cognitive psychology. In W. B. Weimer and D. S. Palermo (Eds.), Cognition and the symbolic processes. Hillsdale, New Jersey: Erlbaum, 1974.
- Salama, N. An analysis of the occurrence of the statement question form in spoken English. English Language Teaching, 1973, 27(3), 261 - 265.

- Sampson, G.P. Converging evidence for a dialectical model of function and form in second language learning. Journal of Applied Linguistics, 1982, 3(2), 1 - 28.
- Savin, H.B., & Perchonock, E. Grammatical structure and the immediate recall of English sentences. Journal of Verbal Learning and Verbal Behavior, 1965, 4, 348 - 353.
- Searle, J.R. Indirect speech acts. In P. Cole and J. L. Morgan, (Eds.), Syntax and semantics, 3. New York: Academic Press, 1975.
- Slobin, D.I. Grammatical transformations and sentence comprehension in childhood and adulthood. Journal of Verbal Learning and Verbal Behavior. 1966, 5, 219 - 227.
- Slobin, D.I. Cognitive prerequisites for the development of grammar. In C.A. Ferguson and D.I. Slobin (Eds.), Studies in child language development. New York: Holt, Rinehart and Winston, Inc., 1973.
- Smoke, K.I. An objective study of concept formation. Psychological Monographs, 1932, (Whole No. 191).
- Tamir, L. Interrogatives in dialogue: case study of mother and child, 16 - 19 months. Journal of Psycholinguistic Research, 1980, 4, 407 - 424.
- Tough, J. The development of meaning: a study of children's use of language. New York: John Wiley, 1977.
- UBC ANOVAR: Analysis of Variance and Covariance. Computing Centre: The University of British Columbia, 1978.
- Van Ek, J.A. The threshold level for modern language learning in schools. Great Britain: Butler & Tanner Ltd., 1976.
- Vander Brook, S., Schlue, K., & Campbell, C. Discourse and second language acquisition of yes/no questions. In D. Larsen-Freeman (Ed.), Discourse analysis in second language research. Rowley, Mass.: Newbury House, 1980.
- Vygotsky, L.S. [Thought and language] (E. Hanfmann and G. Vakar, Eds. and trans.). Cambridge, Mass.: The M.I.T. Press, 1962.
- Wagner-Gough, J. Comparative studies in second language learning. CAL-ERIC/CLL Series on Languages and Linguistics, 1975, 26.
- Wilkins, D.A. Notional syllabuses. Oxford: Oxford University Press, 1976.

Wittgenstein, L. Philosophical investigations. New York:
MacMillan, 1953.

Zobl, H. Confronting structural skills with second language
acquisition data. SPEAQ Journal, 1978, 2, 5 - 20.

Appendix: Testing Instrument

Test directions:

This usage test consists of 33 short items. For each item, you will first hear a short passage. Then you will decide what someone will say next. Please choose what you feel to be the most appropriate response. Do not refer back to a previous page or change an answer after you have turned a page. I am interested in your first impression.

Here is a sample question. You should listen to the introductory passage and then decide what the hostess will say:

Mary is at a party.

A new man is at the party.

Mary wants to meet him.

The hostess says: (circle 1, 2, or 3 to indicate your choice)

- 1) You know Sam?
- 2) You know SAM?
- 3) Do you know Sam?

Here is another example:

John and Mary have a new fireplace.

John says: The new fireplace works, Mary.

I started a fire in it.

Mary says: (circle 1, 2, or 3 to indicate your choice)

- 1) You started a fire?
- 2) Did you start a fire?
- 3) You started a FIRE?

1. Mary visits Dr. Jones.

Dr. Jones is a psychiatrist.

Dr. Jones wants to talk about Mary.

Dr. Jones says:

1) You're happy?

2) Are you happy?

3) You're HAPPY?

2. John goes to his first flying lesson.

John says: I'll fly home today.

The instructor is terrified.

The instructor says:

1) You'll fly home TODAY?

2) You'll fly home today?

3) Will you fly home today?

3. Mary lost a pencil in class.

John said: I found your pencil, Mary.

John gave the pencil back to Mary.

Mary said:

1) You found my pencil?

2) You found my PENCIL?

3) Did you find my pencil?

4. Mary said: I went to the Sahara desert.

It rained every day.

John knows that it never rains in the Sahara desert.

John says:

1) Did it rain?

2) It rained?

3) It RAINED?

5. John and Bob are at a party.

John is wearing a wedding ring.

John is talking about his children.

Bob says:

1) You're MARRIED?

2) You're married?

3) Are you married?

6. John and Mike are at the zoo.

John says: I like snakes.

John is a biologist.

Mike says:

1) You like SNAKES?

2) You like snakes?

3) Do you like snakes?

7. Mary wants to see Mike Jones.
She does not know Mike Jones.
A stranger says hello to Mary.

Mary says:

- 1) Are you Mike Jones?
- 2) You're MIKE JONES?
- 3) You're Mike Jones?

8. Mary came across the Atlantic ocean.

John said: Did you fly across the Atlantic ocean?

Mary said: No, I swam.

John said:

- 1) Did you swim?
- 2) You SWAM?
- 3) You swam?

9. Mary is a student.

Mary visits the doctor.

Mary is a new patient.

The doctor says:

- 1) You smoke cigarettes?
- 2) You smoke CIGARETTES?
- 3) Do you smoke cigarettes?

10. John and Mike are new students.
They are in the pub.
They begin talking about school.

Mike says:

- 1) You're taking MATH?
- 2) Are you taking math?
- 3) You're taking math?

11. Mary applies for a job as a translator.
Mary's application says that she can speak three languages.
The director reads her application.

The director says:

- 1) Can you speak three languages?
- 2) You can speak THREE LANGUAGES?
- 3) You can speak three languages?

12. Mary and Jane are new friends.

Mary says: I'm very happy.

I have a wonderful family.

Jane says:

- 1) You're happy?
- 2) Are you happy?
- 3) You're HAPPY?

13. John is a businessman.

John is on a business trip.

John telephones Mary.

Mary says:

- 1) You'll fly home TODAY?
- 2) You'll fly home today?
- 3) Will you fly home today?

14. Mary dropped a pencil.

The pencil fell into a deep lake.

John said: I found your pencil, Mary.

Mary said:

- 1) You found my pencil?
- 2) You found my PENCIL?
- 3) Did you find my pencil?

15. It was morning.

John went to the window.

John looked out.

Mary said:

- 1) Did it rain?
- 2) It rained?
- 3) It RAINED?

16. Susan is a teenager.

Billy says: I'm four years old.

I'm already married.

Susan says:

- 1) You're MARRIED?
- 2) You're married?
- 3) Are you married?

17. John and Mary are at the zoo.

Mary says: Snakes are my favourite animal.

John knows that Mary hates snakes.

John says:

- 1) You like SNAKES?
- 2) You like snakes?
- 3) Do you like snakes?

18. Mary wants to see Mike Jones.

A man says: Let me help you.

I'm Mike Jones.

Mary says:

- 1) Are you Mike Jones?
- 2) You're MIKE JONES?
- 3) You're Mike Jones?

19. Mary and Susan are students.

Mary is a psychology student.

Mary came home.

Susan said:

1) Did you swim?

2) You SWAM?

3) You swam?

20. John visits the doctor.

John says: I have a bad cough.

I smoke cigarettes.

The doctor says:

1) You smoke cigarettes?

2) You smoke CIGARETTES?

3) Do you smoke cigarettes?

21. Mike and Bob register together.

Mike registers for a math class.

Mike buys four math textbooks.

Bob says:

1) You're taking MATH?

2) Are you taking math?

3) You're taking math?

22. Mary is three years old.

Mary says: I am quite smart.

I can speak three languages.

John says:

1) Can you speak three languages?

2) You can speak THREE LANGUAGES?

3) You can speak three languages?

23. John sees Mary. Mary is crying.

John says: You look very sad.

Mary says: No, I'm happy.

John says:

1) You're happy?

2) Are you happy?

3) You're HAPPY?

24. John telephones his secretary.

John says: My business is completed.

I will fly home today.

John's secretary says:

1) You'll fly home TODAY?

2) You'll fly home today?

3) Will you fly home today?

25. Mary lost a pencil at school.
She went back to her classroom.
A man was cleaning the classroom.

Mary said:

- 1) You found my pencil?
- 2) You found my PENCIL?
- 3) Did you find my pencil?

26. The weatherman predicted rain.

John forgot his umbrella.

John came home. *John* was very wet.

Mary said:

- 1) Did it rain?
- 2) It rained?
- 3) It RAINED?

27. John and Bob are on a bus.

They are strangers.

Bob wants to talk.

Bob says:

- 1) You're MARRIED?
- 2) Ycu're married?
- 3) Are you married?

28. Mary and Susan are at the zoo.
They are looking at the animals.
They look at the snakes.

Susan says:

- 1) You like SNAKES?
- 2) You like snakes?
- 3) Do you like snakes?

29. Mary wants to see Mike Jones.
Mary thinks that Mike Jones is a man.
A woman says: Hello, I'm Mike Jones.

Mary says:

- 1) Are you Mike Jones?
- 2) You're MIKE JONES?
- 3) You're Mike Jones?

30. John and Mike are on the swim team.
John said: I had a good practice today, Mike.
I swam very fast.

Mike said:

- 1) Did you swim?
- 2) You SWAM?
- 3) You swam?

31. Billy is talking to Mrs. Jones.

★ Billy says: I am three years old.

I smoke cigarettes.

Mrs. Jones says:

- 1) You smoke cigarettes?
- 2) You smoke CIGARETTES?
- 3) Do you smoke cigarettes?

32. John and Mary are students.

Mary hates math.

John and Mary register together.

Mary registers for a math class.

John says:

- 1) You're taking MATH?
- 2) Are you taking math?
- 3) You're taking math?

33. Mary wants to be a translator.

She applies for a job as a translator.

The director says: Good translators can speak three languages.

The director says:

- 1) Can you speak three languages?
- 2) You can speak THREE LANGUAGES?
- 3) You can speak three languages?