THE ROLE OF QUESTIONING IN THE COMMUNICATION OF NURSERY SCHOOL CHILDREN

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CONTENTS

ABSTRACT

Children's questions have been studied for a variety of purposes.
First, in an attempt to infer from them, the children's knowledge of
logical relations (Piaget, 1959) or to infer their ability to use questions
in solving problems of classification (Mosher and Hornsby, 1966).
Secondly, children's questions have been studied to determine the order
of acquisition of WH- terms (Ervin-Tripp, 1970; Tyack and Ingram, 1977;
Labov and Labov, 1978).   Thirdly, there is the issue of pragmatics or how
children respond to, and use questions to construct and direct social
activities (Ervin-Tripp, 1977; Dore, 1977).

The focus of this thesis falls within the last perspective, although
it is not restricted to this.   It is concerned with the use of questions
as a tool for inviting another mind to share, with the questioner, exper-
iences, knowledge and orientations about the world in which both live.
The thesis is also concerned with the use of questions to argue, persuade,
reject and clarify meanings.   In short, it deals with the relation between
questioning and understanding.

Our basic premise was that social activities become possible, partly
because participants actively try to make sense of each other's contribu-
tions, aspirations and purposes in communication.   They proceed to do so
by asking themselves, or their co-participants, questions (possibly in the
form of general propositions) concerning the inferences and interpretations
that their respective contributions would suggest.   The participants make
the assumption that each is obliged to attend to questions, in order to
further the course of interaction and attain mutual understanding.   In
other words, co-operation between co-participants in which questioning is
a powerful tool, is essential to human social activities.

The use to which 3-, 4-, and 5-year-old nursery school children put
questions in three different kinds of social activities, was explored.   In
the first of these, a group of 21 children listened to stories read to them
by their teacher.   It was hypothesized that the novelty of some items in
the stories would stimulate questions seeking clarification of intentions,
meaning of words, identification of actors, recipients of actions, location
of events, and so on.   It was also expected that the children would
provide answers to questions for one another.   The second activity in
which the children were engaged was one in which pairs of children were
given a puzzle-box task.   One member of each pair hid some mutually-

desirable objects (biscuits) in a box with a key. There were six boxes differing in size and colour. Having hidden the biscuits in one of the boxes, the hider then had to instruct his partner where to find them. It was possible to retrieve the biscuits only through co-operation, that is, through attending to the essential messages of one another. In the third activity, a child was requested to describe one picture out of four to an adult-listener sitting opposite him. The objects portrayed in the pictures (cups) were distinguishable only by their spatial orientation, i.e. by the position of the handle relative to the subjects. The listener responded to the child's description by giving implicit information meant to signal non-comprehension, that the message was not getting through to him.

The findings in the story-telling situation suggest that children asked questions to regulate interpersonal relationships and to seek information. The evidence procured for the latter function was tenuous mainly because the sample of questions available was small. The meagre production of questions was probably due to the size of the group of children. It was therefore decided to contrive situations where pairs of children would work on tasks designed to elicit a larger sample of information-seeking questions.

In the second task above (the 'hide-a-biscuit' situation), the findings suggest that on a simple joint enterprise, older children were more capable than the 3-year-olds, in teasing out the relevant aspects of the task, and in focusing the attention of their partners on them. Older subjects also demonstrated an awareness of the limitations of their younger partners by asking simpler Yes/No questions from them.

In the third situation, in which the child's description of cups was given implicit feedback to signal non-comprehension, our findings suggest that whereas both 3- and 5-year-old children interpreted both the verbal and non-verbal implicit feedback as indications of a failure in their descriptions, only the older children gave evidence of having asked themselves why this was so.

It was concluded that although the 3-year-olds used questions to initiate and sustain social interactions, with a view to gaining more and more understanding of their world, this skill was best employed in the more natural situation of story-telling. It was argued that the young children's performance resulted from the freedom they enjoyed in asking about whatever topic they found surprising, novel or interesting. In contrast, they did not spontaneously ask questions in the second and third

contexts.   It was argued that in a task set and defined by another, it takes initiative and some confidence to ask questions about it.   This, coupled with a lack of group support such as they had in the story-telling context may have been responsible for the poor performance of the young children.   In contrast, the 5-year-olds were able to employ their questioning skills with more flexibility and control, in all three situations.   It was argued that they realised, more than the younger children, the reciprocity of the relationship between co-participants, and were at the same time able to exploit this relationship to achieve their objectives.

ACKNOWLEDGMENTS

TABLES

CHAPTER 1

INTRODUCTION

This thesis is about the role of questions in the communication of nursery school children. Specifically, it is concerned with the issue of the relation between questions and understanding. The treatment of this relation will necessitate a consideration of the motive-structure underlying the act of question asking, a description of the bond between a questioner and an answerer, as well as the procedures whereby this bond is maintained, especially with regard to the satisfaction of the questioner's motive. It is hoped that the treatment will shed some useful light on a set of assumptions that we feel people make among others, when they interact socially. These assumptions are as follows:

(a) That participants in interaction engage in an active search for meaning and understanding.

(b) This search often proceeds in a rational manner in the sense that 'appropriate' means for achieving the goal of interaction (understanding) are employed. These involve the making of interpretations and inferences.

and (c) The conduct of this search is governed by social prescriptions to which participants are mutually expected to subscribe.

Question-asking would seem to be a device whose role in the communication of pre-school children rests firmly on the above assumptions. That is, a question can be used to function as a collaborative and rational tool for understanding the child's

universe. This is not to say that questions cannot be used for purposes other than the one stated, nor that question-asking is the only communicative device that is rational and co-operative. The argument is that to make sense of how children achieve mutual understanding of each other's intentions about events in the world, assumptions a - c appear <u>a priori</u> to be necessary. And question-asking seems an obvious choice in an inquiry into how understanding is sought and obtained in communication. But how are questions to be recognised?

In the grammatical treatment of interrogatives, two types of questions are recognised, the Yes/No and the WH-questions. The former requires 'yes' or 'no' answers and the latter type of questions contains 'wh-' words. In traditional grammatical treatment, both are considered to owe their interrogative status to a set of four transformations of the declarative base structure sentences. These transformations are: Inversion, wh- Fronting, do- Replacement and do-Deletion. This is summarised thus:

> "The first (ie. Inversion) captures the generalization that the sequence of verbal elements in questions is identical to that in declarative sentences, the only difference being that in the former case part of the verbal sequence appears before the subject NP. The second captures the generalization that the wh- word appears in sentence-initial position regardless of its syntactic function in the sentence. The last two transformations are required to account for the distribution of 'do' in questions and in declaratives." (Culicover, 1976: p. 85)

This approach to question identification, though useful in formal linguistic analysis, is inadequate to cope with the problem of the psychological recognition of questions. There are several reasons why this is so. Firstly, it posits that questions are derived from declaratives. This assumes that developmentally, question-production should follow the acquisition of declarative sentences. Studies of

language development do not bear this out. In fact, interrogative forms appear alongside declaratives, though in a smaller proportion. (Smith, 1933; McCarthy, 1930; Stern, 1924; McShane, unpublished.)

Secondly, it does not account for the use of non-linguistic features in indirect question-sentences, eg. a rising intonation on the declarative "You are washing" may turn it into a question. Neither does it account for what constitutes a functionally appropriate response to a question. For example, can the sentence "I wonder if it has any meaning" be said to be a question? And when is the sentence of the sort, "Could you please pass the salt?" to be taken literally as a question in which case the answer "Yes" would be appropriate, and when is it to be regarded as a request to which a mere "Yes" would be in-appropriate. Clark (1979) has described six sources of information that are used in deciding whether such sentences as above are intended literally or seriously as a request. These sources divide into two main kinds - one, based on linguistic properties of the sentence itself (e.g. the use of special markers like 'please', conventionality of form and means, and transparency of indirect meaning). The other consists of the expectations prevailing in virtue of the context in which the sentence is uttered (e.g. the speaker's imputed plans and goals, and the implausibility of the literal meaning).

Thirdly, the scheme offers no prescription for identifying implicit non-verbal signals like the raising of the brows which may, and does, function as a question in certain contexts.

In order to define questions, one must separate functions from their linguistic forms, since, as shown briefly above, there is no direct one-to-one relationship between the two. This distinction has been accomplished with some success by Speech Act theorists such as Austin (1962) and Searle (1969). They distinguished between the

referential or propositional function of a message and its performative function. The former corresponds to the denotative or "report" aspect of a message (Watzlawick Beavin and Jackson, 1968), whereas the performative function corresponds to the effect the message carries - the "command" aspect, to use the terminology of Watzlawick et al. The propositional content is further thought to have an illocutionary force, defined in terms of the speaker's intention as well as a perlocutionary force construed in terms of the effect it has on the addressee. Because this approach promises to relate the formal properties of language to its function, the speech act theory has been used to treat the problems of meaning and intention in communication analysis. Robinson and Rackstraw (1972) used it to analyse the relations between the form and function of questions which they defined thus:

"Questioning is a behavioural activity manifestly related to the acquisition of knowledge. The existence of the possibility of questioning seems to depend upon two conditions:

1. A gap in a framework of knowledge or belief, and

2. The availability of alternatives for filling that gap.

1. Regardless of whether the answer is already known to the questioner or not, the possibility of questioning requires that he has (a) a framework of knowledge and belief, and (b) either has a gap in this framework or can conceive of one. The parameters of a particular framework are defined by a questioner when he specifies the size and function of the gap.

2. The second prerequisite of questioning is that of holding a set of possible ideas as answers not all of which empirically are, or even logically could be, true. A question is posed signifying a gap (1) which may be filled by one or more from a set of possible entries. If the questioning person could not conceive of the possibility of an entry different from that presently given, there could not be a question. This is not to say that the alternative can be specified, but only that any present entry is capable of being denied" (pp.16-17).

We adopt this definition in this thesis even though it is recognised that it does not cater for various other functions that questions can be made to serve. Restricted as the adopted definition appears, we would like to claim that in using questions to satisfy the motive-structure of the self through an attempt to fill gaps in the knowledge system of the questioner, it allows at the same time, for some other functions like seeking and maintaining the attention of others, controlling and regulating the actions and behaviours of other persons.

We shall return to the issue of the promise of the speech act theory in relating the form and functions of questions in our review of the literature (this Chapter). We shall also give a more detailed account of the recognition of questions in Chapter 3 when we come to offer a category system based on the referential functions of questions. For the moment, it may be sufficient to reiterate that the major concern of this thesis is to clarify the relation between questioning and understanding. Another concern is to delineate the role questioning plays for children in their pursuit of understanding and meanings of events in their world.

Now, there is a related issue of how question-asking ability develops. Although we shall not be directly concerned with this problem, it may be profitable to give a brief account of current ideas and conjectures. An examination of caretaker speech to infants has shown that it is characterised by syntactically simple statements which tend to be short and repetitive (Snow, 1972). These statements are frequently of the interrogative form (McShane, unpublished; Ervin-Tripp, 1977). In talking to infants and pre-verbal children, caretakers impute meanings and intentions to their actions and vocalizations, even though these infant behaviours are largely unclear and unintelligible (Ryan, 1974). Since questions constitute a large part of such caretaker speech, the

functional significance they may have for both participants becomes an issue. Why do they use the interrogative when they cannot possibly expect a meaningful response? In fact, initially, the caretakers supply answers to their own questions. No doubt, the caretakers believe questioning to be a useful strategy for initiating and sustaining this apparent one-way conversation.

Trevarthen (1979) believes that not only do many of the vocal and non-vocal acts of infants have perfectly clear motives, but also they constitute appropriate responses to the non-linguistic aspects of their mothers' questions. Furthermore, he believes that the most important communicative function of questions is to acknowledge and deliberately seek to understand the motive, experiences, interests, intentions, etc. of another. This is why they are used even with infants. Another reason which has been suggested for the frequent use of questions by caretakers, is to "teach" the infants the fundamentals of conversational exchange, that is, reciprocation of action or turn-taking. Questioning, as an activity that demands answering, thus becomes a prime device to be used in establishing the basis for turn-taking. This suggestion has been backed up with some interesting observations. Snow (1977) has shown that mothers' speech to infants is at first about the infants basic body needs like hunger, (Are you hungry?) and fatigue, (You're bored aren't you?), etc. When the baby is about seven months old, the mother' speech changes from concern for bodily needs to a presumed interest in objects and things in the infant's environment. The infant's vocalizations, arm-movements, visual regards, etc. are taken both as responses to questions and as cues for his desires and wants. "What is it you're looking at?" is a typical question at this stage. "Oh! you want X" would be a usual remark to the infant's vocal, but non-linguistic, response to the mother's question. "X" may then be

brought for him to play with. Similar patterns of change have been observed by Sylvester-Bradley (forthcoming). Other changes have been recorded in caretaker speech to young children indicating the use of "training" questions as a device to help them acquire the ability to answer those questions later.

At about the age of 2 years, the dominant caretaker questions are "what-is", "what-object", "where", and "what-doing". Some question forms are not used at all at this stage, e.g. "which", "why", "when" and "who-object". As the child grows, some question-forms are used by its mother with increasing frequency while some start to appear. In short, caretakers appear to consider the difficulty level of questions in using them to talk to children (Ervin-Tripp and Miller, 1977). Could it be that caretakers use linguistically age-appropriate frames for the questions they direct to children perhaps because they know which question-forms are heuristically useful at each age? This suggestion is plausible, especially with the observation that mothers use gestures to augment their question-directives to young children (MacNamara, 1972). The pointing that accompanies "what's that? It's a ball" directs the child's attention to the relations between the ball as an answer predicated on the linguistic question form "what is ...." One would not expect a temporal question such as "When is ...." to achieve understanding with the aid of gestures simply because the "object" to which time refers cannot be pointed at for the child.

From the above, two consequences appear to follow from the high frequency of questions in mothers' speech to infants.

1. Infants become increasingly sensitive and responsive to their mother's questions which acknowledge, follow and vindicate the motives

of the infants, as do the exclamatory and non-verbal questioning acts
of infants for the mothers' motives.

2.   This mutual responsiveness to questions and other forms of
address and invitation expands the framework for the sharing and
negotiation of meanings and knowledge.

We turn now from the issue of the assumed role of caretaker speech
on children's comprehension of question-answer relation, to another
aspect of questioning - production of questions.   It has been shown
that pre-school children not only hold 'collective monologues' (Piaget,
1959), but also hold coherent conversations during play activities
(Garvey, 1974).

Piaget (1959) in his analysis of children's verbal exchanges made
insightful observations on the quantity and quality of coherent
dialogue and information exchange among children and between children
and adults.   We shall dwell briefly on two of such observations that
are relevant to this thesis.   These are:

1.   The age of the listener in relation to the child's
egocentrism,

and 2.   The role of questions in relation to the waning of egocentric
thought.   At the age of three years and up until the age of 4 years,
children engage less in dialogues and give _less_ information to adults
than to other children.

> ".... between 3;1 and 3;4 dialogue with children is 23% as
> against 16% with the adult, which is to be expected as the
> co-efficient of egocentrism at this age is 71% with the
> adult and 56% with children.   But, at the end of the year
> (3;11 - 4;1) when the co-efficients of egocentrism with the
> adult and with children have become practically equal (43.5
> and 46%), dialogue is found to represent only 14% of speech
> with the adult whereas it rises to 35% with children!   At
> the end of the year, dialogue with children is therefore
> nearly twice as important as dialogue with the adult.
> This point is significant and we must try to work out the
> reason for this." (p. 245)

Piaget further observed that not only are child-child dialogues more numerous, but also that they are "of a more evolved type" which constitute an initial attempt to construct and contract a dialogic exchange "in which statements are no longer merely static or descriptive, but form part of discussions or of active collaboration ...." (p. 246). The reason why this happens more with children than with adults is because unlike the adult, who is seen as an authority and all-knowing figure, the different and conflicting viewpoints of other children in a dialogue can be contributed to. At the very least, attempts can be made in this direction. However, such attempts insofar as they did not lead to mutual understanding, failed to convince Piaget that they were true dialogue contributions based on reciprocation and negotiation. This is not to say that Piaget completely discounted co-operative attempts to satisfy each other's needs and reach understanding in discussion, only that cognitive egocentrism to the extent that it still existed, disallowed the successful realisations of such co-operative efforts.

Piaget's second observation concerns the functions of questions, and its relation to the concept of egocentrism in the conversations among children and between children and adults. Piaget noted that during each successive pre-school year, the proportion of questions to adults contain a high proportion of queries about causality and explanation, whereas questions to children relate largely to "daily and immediate activity and not to problems involving theoretical explanation" (p. 249).

It would thus seem that children are aware of the differential benefits from these two sources of knowledge, strive to exploit them through the use of questioning, but are let down by the weight of their egocentric burden. Blank and Allen (1976) noted that the early

appearance in children's speech of these causally-related questions pose some problems. For one, such questions ask about objects and events that are not immediately present. Secondly, they are produced long before it can be said that children understand them. Blank and Allen studied the development of "Why" questions as an example of a causally-related question-category and identified three age-related strategies of usage. The first is characterised by avoidance - the child simply avoids attending to the "why" questions of others. The second strategy is to treat "why-" as though they are "what" or "where" questions - that is, as identification questions. The third strategy approximates to the adult's treatment - that is, "why" questions are now given causal answers, characterised by the use of "Because ....". They concluded that children's early production of "why" questions are based on inappropriate assumptions of usage. Be that as it may, we still have the fact of early production of questions (of which causal ones are only a part) unexplained. Why do children ask questions and why are the specialised "why" questions directed mainly at adults? What can we learn from children's causal and non-causal questions about their motives and their present understanding of social relations?

Garvey's study of "the contingent query" in the conversation of pre-school children indicated that they employ query-forms in ways that are pragmatic and appropriate. In so doing, they reveal their knowledge of the structure of a coherent discourse. She (Garvey, 1977) classified queries into two types, the solicited and the unsolicited queries. The former is defined as that which follows "on a speech act that has at its intended perlocutionary effect (IPE) just the elicitation of the query". The latter is that which follows "on a speech act that has some intended effect other than the elicitation of the query". She found that

solicited queries were used to promote mutual attention and initiate
sympathetic relationship whilst unsolicited queries were used to
achieve mutual understanding of intentions.   Unsolicited queries were
so powerful that they succeeded in eliciting their IPEs 80-85% of the
time.   Garvey concluded that the children's competence in the produc-
tion and fulfilment of these two types of queries as "dependent acts
in conversation" evince an understanding of the structure of discourse.
It should be made clear that she regarded as dependent (and therefore,
appropriate) acts, not only successful understanding of, and responses
to intended acts, but also evidence suggesting that attempts are being
made in this direction.   This is an important criterial departure
from Piaget's definition of appropriate responses to questions which
is stringently set on success.

> "Obviously, these discussions between children are still
> strangely 'primitive'.   Sometimes the questioners are
> not speaking about the same thing.   Sometimes their
> knowledge of the terms of relationship is not sufficient
> to establish reciprocity in points of view, sometimes
> they have different numbering-systems.   But, functionally
> the usefulness of these exchanges cannot be overestimated
> just because they show an effort towards mutual under-
> standing and the sharing of viewpoints.   Thus, if there
> is still egocentrism structurally, co-operation is already
> present functionally".   (Piaget, 1959: pp. 247-248).

The differences in the studies cited above not withstanding, it
is clear, that question-asking and by implication question-answering
must play a fundamental part in how children acquire or develop their
world view.   Although we shall have very little to say about the
development of questioning per se, an excursion into how they are used,
together with a description of the conversational environment that
promotes their use, may illumine some areas of psychological function-
ing in the child.   For example, it may be of value in Piagetian
research because questions may be thought of as expressions of an
intention or motive to resolve conflicting viewpoints arising from

problem-solving situations or communication contexts. It would be interesting to speculate on whether question-asking children who receive answers and those that do not, would differ from one another in planning their own "moves" or turns to accommodate the view of their partners.

In researching into the postulates of the Speech Act theory, questioning may be thought of as a speech act. It would be interesting to explore how the intentions underlying such acts are realised and satisfied. In fact, one of the proponents of the theory (Grice, 1967) has put forward a condition which is regarded as a sine qua non for the performance and realisation of speech acts. This condition, called the CO-OPERATIVE PRINCIPLE allows the subjective nature of knowledge about the world, and intentions based on such knowledge to be shared and communicated according to a common set of expectations. We shall now take an excursion into the literature to see what the various approaches have been on the issue of the motivation for understanding, the expression of such motives and how they are achieved.

THE SPEECH ACT THEORY - its contribution to the theory of understanding.

We find two concepts fundamental to the theory[1] of the speech act, particularly attractive in our attempt to develop the idea that questioning, as a psychological activity, constitutes the kernel of a

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1. We recognise that the theory of speech acts does not fully resolve the problem of how and with what interactive constructs mutual understandings are achieved. The notion of conversational implicature (as inferential and interpreting tools), and the environment of co-operation that nourishes it, were borrowed from Grice and they help only partially in explaining the thorny issue of how speakers derive the illocutionary force of the proposition in an utterance that permits more than one meaning. We are suggesting that, in addition to the interactive methods of inference and interpreting, there is that of QUESTIONING, which we characterise as epistemic and whose function is to allow speakers to ask for explicit illocutionary-force-indicators or a ratification of the one assumed to be in operation. As a construct it can take any form, (verbal or non-verbal).

unique socio-cognitive bond, the analysis of which is likely to be instructive in our understanding of social structures, communication processes and acquisition of knowledge. One of these concepts is embodied in the Gricean Co-operative Principle. The other is encapsulated in the relation between the three componential aspects of a speech act - locutionary, illocutionary and perlocutionary acts (Austin, 1962).

Austin developed the idea that language is used in communication to refer to things as well as to do things. The first function, referential, he labelled the "locutionary act" and the other the "performative act". Locutionary acts are characterised by their being testable on a factual criterion. That is, the locutionary function of an utterance can be identified simply by asking if its true or false.

E.g. "John is crying" is verifiable by asking if it's true that John is crying.

Performative acts are those which describe the effects they have, and these are not identifiable by appealing to their truthfulness or falsehood. Two types of performatives were distinguished. There are those governed by explicit linguistic and or non-linguistic conventions. These, by definition, take unambiguous meanings if employed within the framework established by tradition.

The linguistic conventions pertaining to the marriage ceremony are, for example, clear and predictable:

Q: "Do you take this woman .... to be your wife?"

A: "I do."

Notice that no other answer, however, linguistically equivalent to A, is considered appropriate in this setting. The non-linguistic

conventions regarding the procedure for standing, procuring the ring, etc. are also clear and unequivocal. Performatives of this type are conventional or ritualised. The other type of Performative acts, the so-called non-conventional, derives its name from the fact that its form cannot be predetermined linguistically or non-linguistically. The -acts of promising or warning, for example, can be performed by anybody, anywhere and in a great variety of forms. Consider utterances (a) and (b):

(a) "There is a bull in the field"

(b) "I warn you that there is a bull in the field"

Now (a) and (b) can both be taken as acts of warning although only in (b) is the act semantically explicit and unambiguous. But not all speech acts can be expanded into their explicit forms as in the case of (a) to (b). How then are such performatives recognised and categorised by the hearer? Austin distinguished three components of the speech act to deal with this problem:

1. Locution or the act of saying something,

2. Illocution or the act performed by saying something,

and 3. Perlocution or the intended consequence or effect of saying something in a particular manner.

Thus, for utterances to cohere, that is, for them to constitute a conversation, they must be related on the basis of locution (reference) illocution (intention, beliefs, expectations, etc.) and perlocution (compliance, obedience, understanding, etc.). The relations between these three components are extremely complex and interesting. But there are certain difficulties. For example, what is it in a speech act that guarantees its achieving its intended consequence? In order to cope with this question, Austin refined his characterisation of the Perlocutionary act into those which attain accidental or unintended

secondary effects (sequels) and those whose primary intended effects
are realised.   Of course, one act can have both effects.   Another
problem concerns the locutionary and the illocutionary acts.   How are
ambiguous or unintended acts resolved?   He argued that the speaker has
control over the lexicon and other linguistic entities which constitute
his locutionary acts and this ought to guarantee or secure an "uptake"
of his intentions, by the listener.   But, unfortunately, this does not
solve the problem.   For one, control is a matter of degree that must
relate to the speaker's linguistic knowledge as well as to his prior
experience of language usage in similar communication context.
Secondly, even if it were a matter of control, the listener's maximum
uptake could still not be secured because his capacities to comprehend,
infer and interpret illocutionary intent from locutionary acts, could
not be within the province of the speaker to control.   On this, Brown
(1958) has remarked, a word can have more than one reference and a
reference codified in more than one word.   Also, the communicative
intent underlying the choice of a word in an utterance can deviate from
normal use as is the case in stylistics, jokes, metaphors, etc.

In any case, the role of control in the choice of lexicons has yet
to be demonstrated.

Austin concentrated his analysis of speech acts on conventional
performatives.   Searle (1969) extended this analysis to cover non-
conventional performatives of the explicit type.   Explicit performatives
contain illocutionary-force-indicating-devices (Ifid) but the non-
explicit type are primary, that is, they lack Ifids, although some can
be translated into their explicit forms by prefixing them with Ifids.
He has recently (Searle, 1975) tried to generalise his analysis of
explicit non-conventional performatives to explain primary performatives
which he labelled indirect speech acts.   But we shall come to this

later on.

Searle took Austin's dichotomy of locutionary and performative acts and refined it. The locutionary act according to him is not just composed of a sense and reference but has a modality or a 'function indicating device' which marks its illocutionary force. The modality or devices which function as such include stress, intonation, word-order, mood of verbs, hesitations, etc. Now, taking the illocutionary act "I promise ..." as a prototype of explicit performatives, he was concerned to establish the conditions that are necessary in order for it to achieve the illocutionary effect it is meant to have, that is, to secure uptake as a promise. He proposed four conditions which are as follows:

Types of Conditions

Propositional — the hearer H is to do the future act A

Preparatory — H is able to do A

— the speaker S believes that H can do A

— it is not obvious to both S and H that H will do A without the request, promise, etc.

Sincerity — S wants H to do A

Essential — the promisive, requestive, etc. utterance counts as an attempt to get H to do A.

These conditions are premised on Searle's conceptualisation of illocutionary force as something that is determined by both the speaker and listener and not just what the speaker intended, as suggested by Austin. Thus, to issue a request successfully, it must be understood that the listener is to meet the request, that he is able to and would not do so otherwise, that he is really required to and the issuing of the request amounts to an attempt to get him to meet it. Thus far, two broad kinds of knowledge have been suggested by the speech

act theory as necessary for understanding the meaning of utterances:

1. Knowledge (and control) of grammar and

2. Knowledge of the conventions governing the locutionary/ illocutionary/perlocutionary acts.

But there is a problem mentioned earlier on, concerning how these two forms of knowledge relate in natural conversation. Suppose a speaker wants to issue a request for salt whilst at table. Suppose he <u>knows</u> the following grammatical forms:

(a) "Can you pass the salt?"

(b) "There is not much salt in this food"

(c) "Pass the salt?"

(d) "Can I ask you to pass the salt?"

Suppose he chooses (a), which, grammatically, is an interrogative. How does the listener decide whether the speaker intends (a) as a question or as a request? Searle (1975) called utterances of this kind "Indirect speech acts", and in order to deal with the problem raised by them, used the concept of co-operation.

> "In indirect 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
> non-linguistic, together with the general powers of
> rationality and inference on the part of the hearer. To
> be more specific, the apparatus necessary to explain the
> indirect part of indirect speech acts includes a theory of
> speech acts, certain general principles of co-operative
> conversation and mutually shared factual background
> information of the speaker and the hearer, together with an
> ability on the part of the hearer to make inferences". (p. 60)

Grice (1967) stated the general Principle of co-operation under-lying the conduct of conversation as follows:

> "Make your conversational contribution such as is required,
> at the stage at which it occurs, by the accepted purpose
> or direction of the talk exchange in which you are
> engaged". (p. 45)

In other words, the Principle obliges conversationalists to arrange their contributions in such a way that they share common goals and purposes in order to come to an understanding of each other's intentions.   In doing this, Grice suggested that speakers and hearers observe and assume that the contribution of each is governed by the following maxims:

Maxims	Dictates
Quantity	- Make your contribution as informative as is required for the current purpose of the talk exchange
Quality	- Do not say that for which you lack adequate evidence, i.e. that which you believe to be false
Relation	- Be relevant
Manner	- This relates simply to perspicuity. It is sub-divided into four submaxims:-
	Avoid obscurity Avoid ambiguity Be brief Be orderly.

Now, it is not always possible or even desirable, to adhere to the maxims.   Some are violated and, indeed, deliberately exploited as when one issues an understatement or a metaphor.   In such cases, the non-literal meaning is derived by assuming the following:

1.   That the semantic content expressed in the proposition is not part of the semantic intent underlying the speaker's utterance.

2.   That what is meant non-literally is derivable by assuming that the issuing of an indirect speech act is governed by the co-operative principle and its maxims.   Consider this example from Searle.   It is about two students, X and Y:

X: "Let's go to the movies tonight."

Y: "I have to study for an exam."

If the utterance of X is taken by Y to be a proposal, Y's

utterance would be regarded by X as having a "Primary illocutionary force" as well as a "secondary" one. The latter concerns what Y intends to do about a forthcoming exam, which implicates the former — the primary effect that amounts to a rejection of X's proposal.

Searle's recognition of the illocutionary effect as a product of the listener's inference and his adoption of the co-operative framework as a structure within which a speaker and listener strike a chord of understanding represents a significant contribution to the speech act theory.

Criticism of the Speech Act Theory

Although there is nothing in the theory of the speech act that rules out the use of non-verbal signals as determinants of illocutionary forces (Lyons, 1977), much of its data base has been linguistic. It is true that some of the modality component of the speech act are non-linguistic, e.g. intonation, stress, etc. and these are taken to contribute to the force (intended meaning) of the illocutionary act.

But these are vocal features of linguistic entities. What about non-vocal signals? Surely these are important aspects of human communication, as shown by Abercrombie (1968). Non-verbal features of communication represents a large area of behaviour spanning facial expressions, postures, orientation, nods, gaze, intonation, stress, gestures, etc. The importance of the role they play has been stressed by Argyle and his associates (1970) and Ekman and Friesen (1975). And they have been employed as useful guides to the understanding and expansion of the meanings and intention of children's holophratic communications (Greenfield and Smith, 1976; Brown, 1973).

The relevance they can have in determining the meaning of an act can be demonstrated quite simply by noting that a head-shake or a nod

can functionally replace 'no' and 'yes' in conversation. Our interest
in them, however, shall be restricted to those which are functionally
equivalent to the verbal act of questioning, as for example, a
quizzical look and a worried expression following a piece of
information.

The theory does explain how illocutionary forces are recognised by
appealing to the co-operative context of conversation. This we find
attractive but inadequate, because it does not specify how and with
what tool this co-operative framework is 'worked'. We would like to
suggest that an inferential behaviour such as the one that allows
speakers to realise connectedness in their utterances must be preceded
by a quest or motive for understanding.

This motive may express itself in a verbal or non-verbal question-
form, and it is this that constitutes the basic tool for exploiting
the co-operative context of conversation. The search for understanding,
truth, progress, etc. implies a fundamental quest. The environment
that best satisfies this quest is a co-operative one.

Co-operation as a Consequence of Cognition

Piaget (1959) placed the development of the language and thought
of the child within the psychological framework of co-operation.
According to him, co-operation is made possible by two distinct, yet
related changes at two levels. First at the intra-individual level,
the child undergoes certain necessary cognitive changes which essentially
are the co-ordination of his own actions in relation to objects. This
co-ordination of actions on objects yields mental operations which
have the property of reversibility. This quality permits:

(a) a return to the starting point,

(b) changes in direction,

and (c) a combination of pairs (transitivity).

These operations, according to Piaget, must be prior to and indeed usher in the changes which are to occur at the other level of mental activity - the plane of inter-individual actions. Here, the co-ordination of actions yields reciprocal mental operations which can then be used in meaningful co-operative relations with other persons for:

> "Obviously the individual could not act with any logical sequence without taking the actions of others into account" (p. 281).

Piaget characterised co-operation as the inter-individual reciprocation of mental operations. But, if there are these two levels of mental functioning, the objective dealing with mental actions on objects, and the subjective dealing with the inter-personal or social, the question arises as to the relationship between these two, with particular respect to language use. The development of language-use for purposes of communication and co-operation is intricately related to the waning of the child's egocentricity. For Piaget, egocentrism is more or less a unitary concept pervading the under-eight year old's actions on both the physical and the social plane as the following quote attests.

> "Generally speaking, intellectual and social forms of ego-centrism are one and the same thing, because both are linked at their source to the conditions of initial activity and both vanish in correlation with one and the same factor; gradual co-ordination of actions, which is the common root both of the systematic operation of reason and of inter-individual co-operation, or the system of communal activities"
> (p.278).

Perhaps the "conditions of initial activity" in the quote refers to the initial quality of the child's adaptive process of assimilation and accommodation. These are the processes by which the child adapts to various aspects of his environment. That the development of

co-operation is tied to the underlying processes of intellectual growth certifies at least one thing - that co-operation proper is seen as a consequence of cognition in the sense that the child's egocentric thought must subside before he can be able to enter into co-operative relations.

But how does egocentrism decline? What motivates or 'causes' the decline of cognitive egocentrism on which co-operation depends? Piaget hypothesises a state of cognitive readiness that responds to a perceived pertubation or conflict in the child's environment. For example, an infant has a set of cognitive structures characterised by sucking, grasping, etc. These structures are used to construct his environment as being suckable, graspable, etc. His world, at this 'stage' of development is therefore limited to objects that can be assimilated through sucking and grasping - these then make possible the enlargement and differentiation of his already existing structures (Schemata). That is, his schemata become accommodated to these new objects. But, sooner or later, the child runs into the "resistance of objects to assimilation". A conflict ensues which perturbs his present schemata arrangements. This stage of disequilibrium engenders and forces a re-organisation of the child's schema system to deal with the disturbance. The process of development thus "consists of reactions of compensations to perturbation (relative to previous schemas) which make necessary a variation of the initial schemas".

But what is perturbation and what is its source? During the process of perturbation, what makes one set of solutions more probable and acceptable than another? What constraints the choice that has to be made? Piaget has not seriously addressed himself to these questions, but, fortunately, some of his competent disciplies have. For example, Inhelder, Sinclair and Bovet (1974), took Piaget's notion of conflict and tested its role in the progress from one stage of

development to another.

They showed that children who were just about to conserve, i.e.
children in whom a cognitive readiness to compensate could be said to
exist, profited more than children who were not in transit, if they
were given conservation problems in which they were asked to predict
the outcome of some transformations and then shown that their predic-
tion was wrong.   Indeed, the authors stated the problem thus:

> "The problem is .... to determine which psychological
> mechanism is responsible for the progressive improvements
> in the successive forms of equilibrium, improvements and
> perfections that Piaget refers to today as equilibration
> majorante - 'heightening equilibrium'.   The source of the
> progress is to be sought in the disequilibrium which
> incites the subject to go beyond his present state of
> search of new solutions.   But, as this motive cannot, in
> itself be sufficient to explain the construction of
> novelties, we must try to analyse the actual formation
> process, which is revealed in the attempts the child makes
> to find a new equilibrium and which progressively lead him
> to go beyond the former limits of his knowledge". (p. 264)

Inhelder and her associates observed and noted the children's
reactions when their predictions were violated:

> "The children's amazement is often expressed in their
> exclamations: 'Oh! how come? - I don't get it.'   They
> appear astonished and intrigued.   This 'surprise' element
> can be introduced into training procedures in more varied
> situation, and in a more rapid succession than the child
> is likely to encounter in his usual occupations.   It
> induces the need to take account of all aspects of a
> problem, and to question first impressions and outward
> appearances.   However, ... the 'surprise' element has
> no effect if the child does not yet posess the cognitive
> equipment which enables him to fit the unforeseen phenomena
> into a deductive or inferential framework" (p. 267).

These workers appear to have momentarily grasped what for us is
the fundamental motive-structure for development - the child's quest or
search as revealed in the children's question in the above quote -
'Oh! how come? - I don't get it'.   But they seemed to lose their grip
on it when they fell back on the cognitive-equipment explanation to

account for the zero effect of the conflict environment on some of the children. We should like to suggest that the child who asks questions may, in fact, be cognitively ready whether we diagnose him as such or not. The act of question-asking may be an expression of his intention to cope with his ever-changing world and indeed be:

1. Either an invitation to solicit the co-operative assistance of others in finding a solution/answer, etc. to his problem.

and 2. A guide to his own re-thinking about the problem.

Our position on the relation between co-operation and cognitive development is this. We accept that a situation of conflict, surprise or incongruity may orient the child toward a search for resolution, but we cannot define <u>a priori</u> for the child, that which constitutes a conflict. Nor can we usefully rely on the errors he makes when we ask him to justify his judgments or reasoning on the tests we set him. On the contrary, we ought to let him tell us through his spontaneous questions and seize on such queries as requests for a co-operative venture. It is within this co-operative framework that we think it is viable to explore the child's growing understanding and knowledge of the inter-subjective world.

From this perspective, cognitive development becomes a consequence rather than an antecedent of co-operative or communal activities. To rely only on the child's mistakes in his answers to the questions we pose for him on our tests is perhaps risky methodologically, for we do not know what his attitudes are, to such questions. Neither do we know fully how he processes such questions. Studies about children's comprehension of some relational terms like "All", "More", "Some" which feature in some of our questions to children indicate that their understanding of such terms may be very different from the adults'

(Donaldson and Wales, 1970; Donaldson and Balfour, 1968; Donaldson
and Lloyd, 1974; Donaldson and McGarrigle, 1974).

For a child, much of his knowledge and understanding is mediated
by the actions of other children and adults in his world. He must
therefore, very early in life, recognise potential sources of knowledge
distinct from the self and develop skills of invitation, address,
request and questioning in order to solicit the help and co-operation
of others in his pursuit of meaning. Adults in naturalistic setting
have been observed to volunteer their co-operation by drawing children's
attention to areas of inconsistency and conflict. We should quote
from Isaacs (1933) to emphasise the contrast and similarity of approach
between her and Inhelder et al.

> "Without the enlarged vision which the adult can bring them,
> such young children (3 ; 5) rarely achieve (a) reciprocal
> imagination; but when she lends them her eyes, they
> respond to the new point of view surprisingly often.
>
> "Dan again gives us ready instance of this, when the
> children were taking turns at opening and shutting the
> skylight window with a rope. When Dan (3 ; 5) had had
> his turn, he insisted on holding the end of the rope while
> Tommy was using it. Tommy asked him to let go, but at
> first Dan would not. Mrs L asked him 'If you were doing
> it, would you want Tommy to hold the rope?' He replied
> 'No' and let it go ....". (p. 275).

Here, in contrast to the Inhelder study, it is the adult who
remarked on the 'conflict'. It is quite possible that the child did
not perceive the conflict until his attention was drawn to it. It
is also possible that the adult's intervention had a directive function
which guided him to recognise the point of view of Tommy. It is also
noteworthy that the adult chose to intervene by posing a question.
In fact, we examined all of Isaacs' examples of such intervention and
found that they were of an interrogative form!

We hope that we have succeeded in arguing a case for the study of

children's questions as an important expression of a fundamental
motive to seek understanding within the framework of co-operation.

Co-operation and Language Development

Speech, it has been said, has one objective function that it
performs in human life. It "is the great medium through which human
co-operation is brought about. It is the means by which the diverse
activities of men are co-ordinated and correlated with each other for
the attainment of common and reciprocal ends.

Men do not speak simply to relieve their feelings to air their
views, but to awaken a response in their fellows and to influence
their attitudes and acts". (deLaguna, 1927: p. 19). If human co-
operation is served via the medium of speech, might it not itself
develop within this medium? The view of Macnamara (1972) bears on
this question. He suggested that "infants learn their language by
first determining, independent of language, the meaning which a
speaker intends to convey to them, and then working out the relation-
ship between the meaning and the language" (p. 1) and continuing, he
claims that "It seems clear that there must be a set of universal signs
of face, physical gesture, and bodily movement which the child interprets
correctly and thus among other things, comes to distinguish among speech
acts" (p. 8). The position taken in this thesis is that "working out
the relationship between the meaning and the language" for the child,
entails an inferential as well as a negotiation process. The child
draws inferences on the basis of what is made available by the environ-
ment, including the perception of what others are doing. In the case
of utterances (statements about states-of-affairs, requests to do or
not to do something, questions about the child or his actions), the
adult's linguistic structure is frequently accompanied by non-linguistic

aids such as gaze, smiles, rising intonation, pointing and various other facial and bodily expressions. This rich and redundant environment allows inferences about meanings to be drawn. Of course, the child's judgements may be in error.

The occurrence of errors may set in motion the process of exploration whereby the pre-linguistic child may frown, appear confused, hesitate, or perhaps stop the flow of interaction by doing something apparently unconnected with the 'topic' at hand. The linguistic child on the other hand, while he may ask a question, may also frown or look worried, etc. In both cases, the co-actor (Adult or Caretaker) is thereby invited to re-examine his own earlier contribution with a view to effecting clarity or understanding of what was meant. So far, two important points which have been raised are these:

1. An inferential process that allows the child to get from the meaning and context to the language, and

2. The existence of a joint and co-operative relationship between the child and his caretaker that permits a correction of errors and the negotiation of intended meanings. These two points need to be discussed in some detail, especially as they seem to be in accord with the fundamental assumptions of the speech act theory of Searle (1975).

The Inferential Process

Donaldson (1971) proposed a model of inference in which she pointed out that, amongst other things "a fundamental requirement for any system that is capable of inferential activity is that it should be able to operate in terms of relationships of compatibility and incompatibility".

Such a system "... can, given information about situation X (or X
and Y, etc.), survey a further situation Z about which relevant direct
information is not available and can classify values of attributes of
Z as compatible or incompatible with known values for X and Y" (p. 81).
She claimed that the demonstration of this ability in very young
children on formal tasks has in the past met with difficulties.
Several reasons may be responsible for this - these include the
cognitive complexities of the task, the requirement that the child
allows his judgement to be constrained only by the given premises;
and the requirement that he considers his relationship with the Adult
or the Experimenter on a par with respect to knowledge-status.
Donaldson however, noted that observations of children's spontaneous
language behaviour in natural settings have yielded some evidence
favourable to children's inferential capacities.

She suggested, for example, that children's use of interrogative
sentences to ask information amounts on their part to a confession of
ignorance and this implies some awareness of "the existence of a
situation in which more than one possibility is open, so far as this
information goes" (p. 89). This line of reasoning allowed her to
devise a credible situation where children are requested to "help" a
talking doll who is liable to make sentences containing errors. The
performance of the children (the youngest were 3 years 7 months, the
oldest 5 years) revealed that not only did they supply information to
the doll when the doll "did not know", they also recognised and
corrected him when he made statements that were incompatible with the
global "reality" of the task, although they experienced difficulties
with the precise meaning of linguistic qualifiers like "All" and "Each".
(Donaldson and Lloyd, 1974).

Further support for children's inferential abilities have come
from recent research into children's understanding of Indirect Speech
Acts. Shatz (1978) showed that children as young as two years of age
did not respond literally to directives such as "Is the door shut?".
Instead, they inferred the intended meaning of the speaker and
responded appropriately by carrying out the desired action. Similar
evidence have come from Dore (1977) and Ervin-Tripp (1977). This is
achieved partly through linguistic processing of the utterance itself,
and partly through the supportive non-verbal context as suggested by
Macnamara. As mentioned in the introduction to this thesis, caretaker
speech to children learning language appears to be supportive,
repetitive, and syntactically simple, thereby making the task of
learning by inference relatively easy for the child. This heuristic
function of caretaker speech has been demonstrated by Ervin-Tripp and
Miller (1977). They showed that the amount of questions directed to
children increases as the age of the child increases. For example,
at around 2 years of age, the dominant questions from Adults to
children are "what-is", "what-object", "where" and "what-doing". The
frequency of "why" and "who-subject" questions, increased at around
three years of age. Some questions did not occur at all for two year
olds, only to appear when the children turned three years and about five
months. Such questions are "when", "why-not", "which" questions.

It is possible that adults and even other children, select and
vary speech styles relative to the age and the inferred interests in
objects and activities of their listeners (Snow, 1977; Gelman and Shatz,
1977; Shatz and Gelman, 1973; Sachs and Devin, 1976).

It is likewise possible that they deploy question-forms on the
basis of inferred response-capabilities and growing interests of their
child-listeners perhaps because they:

1. Do not want to antagonise the child and

2. Want to secure the co-operation of the child so as to accomplish the 'goal' set for the child or the 'goals' presumed to be established by the child himself through looks, questions, frettings, etc.

The advantage of the simple model described above is that it recognises the agency of both the child and adult and allows for each to act contingently on one another (i.e. co-acting) within a co-operative (supportive) bond. In other words, the development of language is conceived as being, initially at least, inter-personal. And it is this inter-personalisation of relationship that serves as the scaffold upon which language is built. Bruner (1975) put the point accross convincingly thus:

> "If there is one point that deserves emphasis, whether one
> is searching for syntactic, semantic or pragmatic precursors
> of early language, it is that language acquisition occurs
> in the context of an 'active dialogue' in which joint action
> is being undertaken by infant and adult. The joint
> enterprise sets the deictic limits that govern joint
> reference, determines the need for a referential taxonomy,
> establishes the need for signalling intent and provides a
> context for the development of explicit prediction" (p. 284).

Similar views have been expressed by Joanna Ryan (1974) and Greenfield and Smith (1976) who have urged that the pragmatic or functional base structure of grammar be considered as determined by joint action; and also that the child learns the elaborated forms of the relational categories of Agency, Location, Possession, Vocatives, etc. initially in situations of praxis and joint action and that these may even serve as precursors of what will later emerge as their linguistic case grammar equivalents.

Co-operation and Communication

Cazden (1970) commended research efforts geared toward the description of the child's grammatical competence, but warned that it is not enough.

> "We have to describe what Hymes calls 'communicative competence' - how the child perceives and categorises the social situations of his world and differentiates his ways of speaking accordingly ... At any one moment a child decides to speak or be silent, to adopt communicative intent A or communicative intent B, to express idea X or idea Y, in form 1 or form 2. The options the child selects will be a function of characteristics of the speech situation as he perceives it on the basis of his past experience"
>
> (pp. 84-86).

Becoming an effective communicator as suggested by Cazden, implies not only the possession of a set of adequate linguistic skills, but also certain extra-linguistic ones, for example the assessment of one's communication needs or that of another, the formulation of a message based on that assessment, and the reformulation of that message in the face of feedback.

The point to be made is simply that in using language to communicate, one's main quest is to be most effective in co-operating with those with whom one is in contact. And the motive force behind this quest is the need to understand and be understood as a conscious and intending person. In an ideal two-person communicative set-up, the need to understand, or show understanding may propel the production of feedback (e.g. a question, a request ...) contingent on the first speaker's message. This feedback together with the need to share and be understood, may in turn force a reformulation by the first speaker of his earlier message. In learning to use language, children must not only learn new words to widen their vocabulary, they must learn to

select from this vocabulary, words which may then be used in construct-
ing messages that are maximally sensitive to the needs and capacities
of their listener. Brown (1958) in proposing the "Principle of level
of usual utility" and Olson (1972) in his proposal of "Sentences as
descriptions" have both pointed out that a word can have many referents
and a referent can have many words or names. In selecting a name or a
word to describe an object or event for a listener, the speaker's
choice is normally constrained by the requirement for understanding.

Co-operation and Questioning

> "... the desire to answer for himself the questions - what
> for?, why?, in what way? - is a most important aspect of
> /the child's/ psychological development. This search for
> causal relationships is the basis of culture; it is the
> guarantee of the progress of human thought" (Chukovsky,
> 1963: p. 24).

Chukovsky is here suggesting that the child is an active agent
tirelessly making observations about events in the world and seeking
answers to questions based on such observations. Implied also is the
notion of construct, that is, organising answers into some form of a
coherent body of knowledge from which the child's cultural group may
benefit; or in terms of which the child can build his world view by
taking advantage of the existing body of knowledge provided by his
culture.

The view that the child is actively searching for meaning appears
currently to enjoy considerable acceptance by the principal theories of
child development. It is apparent in Isaacs' (1933) attempts to unravel
the functions of what he called "epistemic questions" and Piaget's
(1959) thought and language. It underlies Bruner's (1972) brilliant
essay on the "Nature and Uses of Immaturity", and appears to be the
basis of Robinson and Rackstraw's (1975) study of questioning and answering.

The personal construct theory of Bannister and Fransella (1971) to the extent that it employs the model of man as an Inquirer and construes behaviour as an experiment, also shares this view. The source of this motive to acquire knowledge though, is not open to direct examination and analysis by an observer, but it is amplified by events in the world of the child - the world of language, beliefs, objects, etc. It is translatable into speech and action, e.g. verbal and non-verbal questions. Such questions deriving from the epistemic motive have a direction which may be toward the self or toward others.

From this then, it should be possible to examine children's speech with a view to discovering its purpose and direction. To speak is to engage in a purposive act. Whether social or egocentric, speech has the function of constituting a medium whereby diverse activities are co-ordinated in the pursuit of a goal. Piaget and those who have followed in his tradition claim a functional distinction between social and egocentric speech. To social speech they ascribed the function of the co-ordination of diverse activities, but to egocentric speech a lack of direction or purpose. Vygotsky contended the issue of non-directedness and non-purposiveness given to egocentric speech. He insisted that for the child, egocentric speech serves to guide his behaviour on a problem, and he supported this claim by observing that:

(a) Its co-efficient increased if the child (while engaged in a problem) met with some difficulty

(b) The child's action on the problem took a different direction as a consequence of the egocentric speech

and (c) That if the child was put in the midst of children who spoke a foreign language (and hence cannot be expected to be influenced through speech) the co-efficient of egocentric speech decreased. Hence, even egocentric speech serves a cognitive as well as a social

function for the child.

We take the position in this thesis, that speech, all speech (except perhaps that uttered in one's sleep) is purposive in the sense that it purposefully structures the thoughts and perceptions of the speaker for the listener.   That is, it is aimed so that it may serve as an aid to direct the listener to those features of objects and events to which the speaker refers (Olson, 1970).   In disagreement however, with Olson, we also hold that language structures (co-ordinates) the thoughts or mental activities of the speaker for the speaker.   Evidence for this has come from Blank and Bridger (1964) who demonstrated that pre-school children readily perceived and distinguished between stimuli that are clearly defined in space (e.g. between one and two circles). This they did regardless of whether they used the relevant verbal labels. However, they could not perceive or distinguish between vague and unbounded stimuli such as light of one second duration flashed once and then flashed twice with "half a second interval between the two success- ive flashes".   However, when taught to use the relevant verbal labels, they very soon made the discrimination.   Now, this is not to claim that thought cannot be structured without language.   The claim is that, if thought is to benefit from the contribution of others and to be of benefit to others, then it is bound to be structured by the medium in which it is carried.   We may also suggest that language as a communicative medium has evolved to serve this function and has come to excel at it over other structuring modes.   But this is a slight digression.

The point to be returned to is that as individuals we suffer daily, new experiences.

Some of these experiences yield understandings which are predictable

while some are so incongruous with our past experience that they yield
no predictable reactions.   Nevertheless, they are the building blocks
of our world view.

As beings highly motivated to depend on one another, the world
picture that we build has to be cross-checked and legitimised through
acceptance by those with whom we enter into social relation.   This may
entail talking about how we have come to erect such a world view in the
first place.   It may also entail a readiness and willingness to be
queried about the observations, reflections and inferences from which
a particular view derives.   Reactions to our world view from others may
lead to a validation or a reconstruction of it.   And this we would
suggest is the benefit to the individual who submits his picture for
scrutiny by others.

It is now clear we hope, that the young child can be taken to be
an active agent in the pursuance of the meaning of his observations.
In the process of seeking meaning, he draws inferences from his
observations.   Some of his inferences will be in accord with the
knowledge of the world he has gathered from past experience.   Some
clearly will be at variance with it.   As a consequence of the latter,
he may be inclined to ask questions concerning such odd and incongruous
events.   He may himself be disposed to being queried.   As psychologists,
we capitalise on this disposition when we subject children to interroga-
tion in our experiments.

We often ask them to explain and justify what they think or say.
In so doing, we are appealing to their knowledge of the basic tool of
achieving understanding - questioning.   Occasionally though, we are
surprised by the poverty of their knowledge of this tool.   We write
some of them off as "unco-operative during testing".   Fortunately, we

have recently been reminded that using this tool appropriately is a complex activity which demands paying attention to both the linguistic content and the communicative intent of the questioner. And as these two components are not always in perfect agreement with each other, it may be necessary for the child to make some fine discrimination of attention in favour of text rather than context (Campbell and Bowe, 1976) or sometimes in favour of context rather than text (Donaldson and Lloyd, 1974; McGarrigle and Donaldson, 1975).

To recapitulate, a fundamental problem for developmental psychology concerns the nature of understanding. Now, there is a sense in which to understand is to know. We have not attempted to offer a rigorous definition of knowledge. But we have tried to deal with an aspect of the general problem of knowledge, that is, knowing what people mean or intend when they communicate. This led to a discussion of the speech act theory in which we highlighted the concepts of illocutionary forces and co-operation. We discussed the idea that the illocutionary force of indirect speech acts can correctly be inferred only by participants assuming that the respective contributions of each other are guided by adherence to the co-operative principle. We suggested that this idea although essentially correct, is inadequate because it does not explain why participants draw inferences, nor how they come to validate them within the co-operative framework of conversation.

We suggested a basic motive for understanding that manifests itself in an active search for meanings in the acts of others. We suggested further that this search may be expressed linguistically or non-linguistically in question-forms. That such question-forms may precede the drawing of inferences from observations ("What does X mean? Perhaps it means such and such"). Or it can be used as a validating

tool for inferences drawn ("Let's see if such and such was what X really meant?"). We hypothesized that understanding may be sought and gained through the use of questioning. And that this is made possible because questioning invites a co-operative bond between the questioner and the answerer.

We set out in the chapters which follow to investigate whether children do, in fact, utilise questioning as a device for negotiating mutual understanding. And, if so, what constraints operate upon its use.

In the pilot test in Chapter 2, we arranged the power/authority relation between the questioner and the answerer in favour of the child. This, we hoped to achieve by employing a situation in which the child was to instruct a subordinate being – a doll chimp, wired up to speak. We were concerned to see if the child would confer agency on the chimp, that is recognise him as an agent with a motive to seek knowledge. Would the child 'move' to satisfy the motive of the chimp by attending to his questions?

Chapter 3 represents an attempt to describe a natural talking situation full of surprises and uncertainties – a story telling situation. Would this context provoke questioning in children? If so, what would this reveal to us concerning the issue of questioning as a tool with which understanding can be achieved within a group?

The "Biscuit-in-the-box" game, to be described in Chapter 4 was basically an attempt to engage pairs of children on a task that required joint effort. The game demanded that each child attended to the needs and purposes of the other, as the realisation of his own purposes was tied to the co-operative efforts of his partner.

In Chapter 5, we explored the role that <u>questioning oneself</u> plays

in understanding implicit information.   And in Chapter 6, we
summarised our findings and drew some general conclusions which were
then discussed in the light of our theoretical assumptions.

CHAPTER 2

TEACH THE MONKEY - A PILOT STUDY

INTRODUCTION

Children between the ages of 3 and 5 years engage more in dialogues with peers than with adults, but their verbal exchanges with adults are considerably richer in questions. Furthermore, questions in child-to-adult dialogues are qualitatively superior to those in child-child dialogues - the former being frequently of the causal type (Piaget, 1959; McCarthy, 1954). Two conclusions may be drawn from these observations, viz:

1. That young children recognise adults as better sources of knowledge and information.

2. Young children have some beliefs in the willingness of adults to entertain and satisfy their questions.

Would children concede in turn the quest to want to know to an inferior, and co-operate with him in this pursuit? In order to answer this question, we altered the knowledge/authority relation in favour of the child. The situation was one in which the child was to teach a supposedly simple minded "talking" chimpanzee a few things about some toys and objects to which the child is very familiar. The idea of a talking doll was created and used by Lloyd (1975) to explore the communication of pre-school children.

METHOD

Subjects:

10 children (5 boys and 5 girls) from the Departmental Nursery took

part in this study.   They were divided into two groups of five
children.   Group 1 consisted of 3 boys and 2 girls (mean age 59.0 months;
range 6 months).   In Group II were 3 girls and 2 boys (mean age
35.8 months;   range 3 months).

The Experimental Room and Materials

In the experimental room was a soundproof cubicle which carried
a one-way mirror.   A graduate student who acted as the voice of the
learner was positioned in the cubicle in such a way that he saw into
the experimental room.   He had a pair of earphones through which we
monitored sound in the experimental room.   He also had a microphone
which permitted him to talk through a loudspeaker embedded in the tummy
of the learner.   The microphone and the earphones were hooked into a
tape recorder in the cubicle.   The learner was a $1\frac{1}{2}$' tall doll
chimpanzee with a big body of fine velvety brown cloth.   He sat in a
low chair in the experimental room with his back to the one-way mirror
of the soundproof cubicle.   In front of him was a table with a bag of
familiar objects on it.   The objects were:

1. A pair of scissors
2. A blue rocking cradle
3. A toy chair
4. A toy table
5. A white toy horse
6. A white toy cow with brown patches
7. A carrot
8. An apple
9. An orange
10. A blue toy house

Opposite this table were two little chairs - one for the child,
the other for the experimenter.   Each session was video-taped and
lasted for approximately 15 minutes.

Procedure

A day before the study commenced, the chimp was introduced to the nursery by the Teacher as an African chimp who wanted to learn a few things in English. The children were asked to volunteer as his teacher. They all expressed willingness and enthusiasm. On the day of testing, one child at a time was taken to the experimental room and having sat on the chair directly opposite the learner, was introduced. He was then asked to take an object out of the bag and tell the chimp about it. The chimp who has been instructed by the experimenter on what kinds of knowledge to seek and what mistakes to make, may ask the question, "What's that (name of the child)?", if the child did not volunteer information about the identity of the object extracted. If the question was ignored, it was repeated. If ignored again, the experimenter then asked the same question. This was to ensure a flow of exchange.

Instruction to the Chimp:

He was to seek the identification by name of each object and its function. He was also concerned to get the child to explain the basis of any object groupings effected spontaneously or provoked by the chimp. He was to make two types of errors, viz:

1. Identification (e.g. identifying a carrot as an apple). This may be induced by the experimenter asking the chimp what he has learned so far, and

2. Bad reasoning with information provided by the child (e.g. a child may have said "A cow eats grass", and "A horse eats grass". The chimp would conclude that "A cow is a horse").

The chimp was to make 10 errors, half of type (1) and the other

half of type (2).

When the child grouped some of the objects spontaneously, or was provoked so to do, the chimp was to ask 5 "rationale" questions and 5 "compatibility" ones. A rationale question is a "why" question aimed at getting the child to explain the basis of his grouping. A compatibility question concerns the possibility of including another object hitherto outside the group, whilst retaining the identity of the group, or expanding the identity of the group to accommodate the new object.

In all, the chimp may ask each child the following number of questions:

5 Rationale Questions

5 Compatibility Questions

10 Identification Questions, one on each object) These were asked
10 Functional Questions, one on each object   } only if the informa-
                                                tion was not freely
                                                supplied by the child

Treatment of Data

The data were transcribed and the children's responses to the question categories of Identification, Function, Rationale and Compatibility analysed, so as to reveal the provision of required information. Specifically, we looked for the following:

1. Spontaneous provision of information.

2. Non-spontaneous provision of information, i.e. information provided only through the chimp's questioning.

3. Refusal to answer questions from the chimp.

4. Answering the chimp's questions only when mediated by the experimenter.

5. Refusal to provide information even when asked by both the chimp and the experimenter.

We also analysed the children's responses to the identification and reasoning mistakes made by the chimp. Were the mistakes corrected and, if so, was correction spontaneous or did it require the experimenter's intervention? What behaviours accompanied the recognition and correction of mistakes?

RESULTS

The 3- and 5-year-old groups of children identified the objects both nominally and functionally. But there striking differences in the spontaneity of behaviour. With respect to nominal identification, the younger children supplied 42% (21 in 50) of the required information spontaneously. The remaining 29 names were given as responses to questions. The older children on the other hand, spontaneously provided 94% (47 in 50) of the object names. Only 3 objects had to be identified nominally through questioning. The median of spontaneous nominal identification in the 5-year-old group is statistically higher than that of the younger age group at the .005 level (one-tailed).

Functional description presented a similar pattern with the younger children spontaneously providing only 36% (18 in 50), whilst the older group spontaneously gave 82% (41 in 50). The median score is again higher in the older group of children at .005 level of significance.

There were group differences in the children's attendance to the chimp's questions about the names and functions of the objects. Out of the 29 identity questions asked of the 3-year-old group by the chimp, only 31.0% (9 in 29) were responded to. But the ignored 20 questions, when repeated by the experimenter, elicited naming responses. The older group of children were asked only 3 identity

questions by the chimp because they had spontaneously named the bulk
of the objects.   These 3 questions were answered without the benefit
of the experimenter's intervention.   40.6% (13 in 32) of the chimp's
questions (about functions of the objects) to the younger group of
children were responded to.   The same 19 ignored questions, when posed
by the experimenter elicited responses.   With the older group all the
9 function questions that needed to be asked by the chimp were answered
without the experimenter's involvement.

There do appear to be two differences so far between the groups
of children - one relating to the spontaneity with which they provided
information, the other having to do with a preference to answer the
same questions from the experimenter that they had refused to answer
from the chimp.   Are these differences to be explained by claiming
that the younger children are relatively lacking in autonomy and
initiative?   If so, why did they reject the initiative that came with
the chimp's questions?   Or could it be that they found the source of
such initiative too incredible?   We shall dwell on these questions in
the discussion.   For the moment, we will turn to the issue of how the
children explained their actions on the objects (i.e. grouping of the
objects) and their reactions to the erroneous judgements of the chimp.

It would be recalled that the circumstances in which the chimp
asked rationale (i.e. "why") questions, dealt with the object-grouping
behaviour of the children.   We observed in general that the 3-year-old
children spontaneously grouped the objects a lot more than the 5-year-
olds.   With the latter group, the chimp had to provoke grouping by
asking "Which ones can you put together?".   A grouping having been
obtained, the chimp then sought an explanation of its basis.   In our
analysis, we were only concerned to see whether the child would attempt

an explanation - the correctness or logic of the explanation for the moment being unimportant. We found that the younger group of children did not answer 76% (19 in 25) of the chimp's "why" questions whereas the older group failed to answer only 20% (5 in 25) of similar questions. We again observed that the younger children were avoiding the chimp's questions.

Now, it might be argued that the object-groupings on which the children were being questioned may not have been intended as groups proper, but as mere aggregates. If this were so, one would expect the questions implying such aggregates as groups to receive answers that would negate those implications. It is to such matters that we now turn.

It would appear from the 3-year-olds' responses to the chimp's compatibility questions, that they accepted uncritically his suggestions. Here is an example from a 3-year-old girl, who has just put the toy house and cot together:

Chimp: "Can I put the cow in the cot to sleep?"

Child: "Yes" (puts cow in cot)

Chimp: "Can I sleep in the cot?"

Child: "Yes"

Chimp: "What about the carrot, can it sleep in the cot too?"

Child: Nodded (puts carrot in the cot).

The older children on the other hand brought to bear on such questions their critical understanding of what is possible logically, and what they knew from past experience, although they too fell prey to the chimp's suggestion. An example from one child would serve to illustrate this:

Chimp: "Who sleeps in a cot?"

Child: "A baby."

Chimp: "I am a baby chimp, so I can sleep in it, can I?"

Child: (Turns to Experimenter, smiles). "Thinks he can sleep in it."

Expter: (Smiles)

Child: (Turns to face chimp) "You can't, you're too big."

Chimp: "OK,but what about the cow, can I put it in the cot to sleep?"

Child: (Puts cow in cot, removes it ...) "Cow sleeps in shed."

It is also interesting to note that a question carrying a possibility for action, in the form "Can I put X in Y?", carried for all the children in the two age groups, a strong invitation to act in accordance with the proposition "It is possible that X be put into Y", and thus they put X into Y. The example below is from a 5-year-old:

Child: (Puts the carrot, orange, apple, cow, table and the chair together)

Chimp: "What else can you put in there?"

Child: "Haven't got any more food"

Chimp: "I see, but what about the horse. Can you put the horse in there?"

Child: (Puts the horse in.) "The horse eats grass."

Another example came from one of the young ones who, having put the cradle and the horse together, was asked by the chimp if he could include the cow. The child simply included the cow, then the car and so on, until he had all the objects in one heap. Questioned by the chimp, about the basis of his grouping, the child refused to answer, but turned to the experimenter who repeated the chimp's question to which the child replied, "They're on a farm".

The children's responses to the chimp's errors were also illuminating. The younger group of children supplied only 11 (44.0%)

correction-responses to Identity errors, whilst the older group of
children corrected all 25 (100.0%) of such errors.   The median of the
correction-responses in the older group was higher statistically than
in the younger group at the .005 level.

The younger children were also inferior to the older ones in the
number of correction-responses to reasoning errors, although the differ-
ence in the medians is not significant statistically.   Furthermore,
some qualitative differences were observed in the way the young and the
older children reacted to the chimp's reasoning errors.   The older
children typically laughed at the chimp, turned to the experimenter and
joked about the chimp's errors before they corrected his mistakes.   The
following is an example from a five year old boy:

Chimp: "What do you do with a car?"

Child: "A car?   To drive in."

Chimp: "I see.   A car is to drive in.   What about the house?"

Child: "A house is for sleeping in."

Chimp: "So the car can sleep in the house."

Child: (Laughs and turning to the experimenter)   "Thinks the car
         can sleep."

Expter: (Smiles)   "Well ...."

Child: "Ca... cars don't sleep."

No doubt, the younger children too recognised such 'errors', but
they acquiesced, appearing not to know what to do.   They would turn and
look at the experimenter as if they needed some support or advice.   If
the experimenter provided no support or advice, the children were apt
to accept the chimp's ideas.   If, however, the experimenter chipped in
with a "Is that right?", or "Do you agree with that?", the child was
likely to reject the chimp's reasoning and indeed, offer a correction
response.

CONCLUSION AND DISCUSSION

The spontaneity of the behaviour of the older children concerning the identification of the names and functions of the objects, their justification of the object-groupings they were prompted to construct, the relatively autonomous (independent of the experimenter) way in which they handled "Compatibility" questions and "Reasoning" errors suggests the following:

(a) That they understood the demand-feature relationship between questions and answers.

(b) That they were willing to accept the chimp as a source of questions, that is, imbue him with the property of a learner or a knower. This is an important point psychologically for it indicates a readiness to accept the bizarre or the extraordinary as a working basis. It may well be indicative of an ability to deal with phenomena which are not ratified in the child's past experiences. Clearly the children were not fooled by the talking doll. One of them remarked, "There's someone in there" (pointing to the soundproof cubicle in which the collaborator was). Five-year-olds know there is a difference between fact and fantasy, that certain things are possible, others are not. The following short exchange between two children listening to a story about the metamorphic history of the butterfly attests to this:

The Context:	(The hungry caterpillar voraciously eats into leaves, an event physically depicted in a page in the story book.)
Elspeth (3-11 months):	"He (the caterpillar) didn't really, did he ... go through _that_ hole?"
Stefan (4-1 month):	"It's just a story."

Chukovsky (1963) gives several examples. There is one of a

four-year-old girl playing with her wooden horse.   The little girl said:

"The horse put on a tail and went for a walk."

Her mother interrupted her play, saying:
"Horses' tails are not tied to them - they cannot be put on and
then taken off."

"How silly you are mummy, I am just playing." (p. 26)

He also tells of a mother attempting to get her little girl to
eat.   She tried to influence the child via the medium of imaginary
play-acting.

"Don't you hear? - the roll begs you to eat it."

And in answer, she heard the logical reply:
"The roll can't talk.   It doesn't have a mouth." (p. 28)

The point about these examples is that not only do children
recognise some truths from half-truths, but they can deliberately exploit
this knowledge to serve certain ends, whether at play or at school.
This exploitation we would suggest, demonstrates in some way the ability
to exercise some autonomy and independence over what is to be assimilated
in the environment of play and communication.

We are not suggesting that this autonomy is total or constraint-free
even in the older children, nor that it is totally absent in the three-
year-olds.

It may just be that the younger children, even though recognising
the pretend aspect of the situation, felt unable to accept and exploit
it for what it is.   The confidence with which they entered into the
situation must have been low.   If confident, they would have queried
the chimp about its intentions, what it wanted to know, how well he was
coping with the "new" information, etc.   Also, they would have readily
given the chimp the information he wanted, corrected his obvious

mistakes, joked about and with the chimp (as the older children did) and used the pretend component of the situation to turn it into a game. Instead, they continued to rely on the experimenter for what seemed to be an interpretation of the situation and suggestions about what they were meant to do.

In other words, the younger children were more prepared to deal with the human agency that they knew belonged to the experimenter, but did not feel confident enough on their own, to relate to the chimp in the same vein. The discovery of this limitation in children's willingness to give intelligence and reasonableness to the talking chimp led us to search for a human environment in which both 3- and 5-year-old children can confidently ask and answer questions about one another's motives, clarity of expression and intentions, possibility of actions, etc. The next study is a description of this environment as well as the manner in which children use questions within it.

CHAPTER 3

CHILDREN'S QUESTIONS AND RESPONSES AT STORY TIME

INTRODUCTION

Berlyne and Frommer (1966) have experimentally used situations of incongruity, novelty, surprisingness and uncertainty to provoke questions in 6 - 8 year-old children. They failed to find consistent differences in the frequencies of questions of children whose questions were answered and those whose questions were ignored. We reasoned that a story-telling context would be ideal for collecting children's spontaneous questions because some of the content of the stories read to the children are bound to be novel, incongruous or incompatible with some of their previously held beliefs and knowledge. We shall be looking at the dynamics of spontaneous verbal exchanges with a view to describing how the relationship between speaker and listener is tailored toward understanding of each other's intentions. More specifically, we shall focus on the aspects of the relationship aimed at securing, with the aid of question-devices, some information about the stories. Of interest also, shall be the interpretation given to the question and the response attached to it. Knowledge deriving from this study may be of value from two theoretical positions:

1. Within the Piagetian framework, it may explain how a child, faced with a break in communication due to conflict in views, negotiates a resolution of this conflict, and perhaps as a result of this, comes to avoid similar conflicts by planning utterance that will maximise understanding of intentions and meanings.

2. Within the speech act theoretical framework, it may lead to an understanding of how young children use their language resources to

perform acts and to induce performance in others.

METHOD

The children and the story situation:

The everyday routine of the Nursery includes story-telling, an event that lasts for about fifteen minutes, starting at around half past ten in the morning. The children are summoned, usually with a "It's story time". They are allowed to sit anywhere they choose on the floor, the general configuration approximating a semi-circle. The teacher sits on a very low chair facing the group of children and reads from the selected picture books. An average of two stories are read per session.

The children's utterances during and after each story, as well as those of the teacher, were tape-recorded on an average of three times a week for 5 months. There were 12.4 recorded sessions on the average, a month. Total number of recording was 62. These were transcribed and a note made on the contextual part of the story that preceded each utterance. During the course of each session a check list was used to help identify speakers. This also helped in identifying both the context and identity of utterance. Despite this, it was not always possible to identify the producer of every utterance, especially when more than two children spoke at the same time, but such cases were not too frequent. Retrospectively, video-taping would have eliminated this problem.

21 children took part in the study. Some joined the Nursery after the study had begun, some left before it ended. It became necessary, therefore, in order to achieve relatively uniform attendance, to select children whose utterances would be analysed. Two criteria were used for this purpose. These are:

(a)   At least three months regular attendance in the Nursery before the study commenced.   This was to minimise the effect of unfamiliarity (with the Nursery and its routine) on the production of, and reaction to, utterances occurring in the story context.

(b)   There was a total of 62 observations.   Children whose total number of attendance was less than 75% of this were excluded from analysis.   The employment of these two criteria disqualified 5 of the 21 children, leaving 16 children who divided into 7 males and 9 females, with a mean age of 46.6 months (range = 25 months).   Mean attendance or observations was 55.3 with a range of 15.   The least observed child, however, averaged over the 75% mark.

Coding of Data

The tapes were transcribed and verbal exchanges initiated through questioning by the sixteen selected children were extracted.   The questions, together with the answers attendant upon them, were then scored using a category system adapted from Robinson and Rackstraw (1972).   This system was chosen because of its responsiveness to two interests with which this thesis is concerned -

1.   The intention or motivation to seek some information or understanding through questioning, and

2.   A description of the answerer's attempts to give the required information or achieve the desired understanding through a series of negotiations.

The Robinson and Rackstraw's category system recognises that questions fall into two main types:

Type 1:   "Open" or information-seeking.   This type of question is indicative of "a gap in a framework of knowledge or belief" and it serves

to discover the information required to fill this gap. "One linguistic expression of such a question is 'What is X?'. An assumption is made that 'X' is something characterisable by the relative pronoun 'what', i.e. an object, substance, position, or process which can be referred to by a substantive. The demand is for a specification of its nature."

Type 2: "Closed" or "Prompt". This type implies that the questioner is aware of probable alternative answers to his question and demands that the answer hypothesised and contained in the question be confirmed or denied.

> "The linguistic expression of such a question might take the form: 'Is X, Y?' Once the existence or meaningfulness of 'X' is presumed, then the predication of it as 'Y' may be either confirmed or denied' (Robinson and Rackstraw, 1972, p. 17).

It is quite possible to reduce prompt questions to open ones. "Is X, Y?" is reducible through its underlying assumption that 'X' is something, to "What is X?" or "Will X go to Y at time Z?" to "When will X go to Y?". The possibility of this reduction allows the identification of the referential categories of both open and prompt questions. An advantage of this process is that different interrogative markers which function to select the same reference, become known. It is hence possible to specify and predict the answer required by two referentially-identical questions. For example, "At what time did he come?" prescribes an answer the sort of which is required by "When did he come?". The referential category of these two questions are considered identical since they both require that an event (i.e. the coming), be placed in time.

Referential Categories for Questions:

Using the system of categories developed by Robinson and Rackstraw (1972), 7 referential functions of questions were identified. These

were questions <u>initiating</u> verbal exchanges.   Excluded   were queries
which functioned to <u>maintain</u> sequences of exchange.

1.   Identification

This comprises questions about the names of people or objects and
labelling of actions which are current or had taken place, or will take
place.   They are characterised by the interrogative words 'who' and
'what'.   Except where indicated, all questions are taken from the
corpus of children's speech collected in the study.
Examples:

a)   "Who is that?"

b)   "What is a daddy lion?"

c)   "What fell off?", "What happens if another wolf comes along?"

2.   Definition

These are queries concerning the meaning of a word that has
occurred in a preceding utterance.   They are characterised by the
interrogative word 'what' and 'why'.

Example (a):

(Context: talking about a 3-tier wedding cake at a wedding
attended by Willie.)

Child: "There's ... there's a bottom and a top and a big cake down."

Teacher: "That's right ... it's got three tiers."

Child: "Why are they called 'tears'?"

Teacher: "Well - it's just really layers - big one at the bottom, then
the middle one and a little one at the top held up with these
pillars."

It is obvious that the child, having taken 'tiers' for 'tears' and
noticing a different usage of tears from the one she normally knows,
requests for the definition of the new meaning of 'tears'.

Example (b):

(Context: child handling a real sea urchin shell.)

Teacher: (Issuing a warning) "Be careful with it, because it's very brittle."

Child: "It can break?"

Example (c):

Teacher: "Matilda and Sam were quite worn out." (Passage from a story book.)

Child: "What's 'worn out' mean?"

3. Placing

These are questions or requests seeking the location of events or objects or persons in space or time. 'Where' and 'when' are their characteristic markers.

Examples of a temporal type:

a) (Context: a book was being given to a child for inspection on request.)

Child: "Can I have a look at that after Debbie?"

b)

Child: "Was I born before Beverley?"

Teacher: "Oh, yes."

Child: "How old is Beverley?"

Teacher: "Beverley is three and you're five."

Child: "She was born two weeks after me?"

Teacher: "Not two weeks – two years."

Example of Spatial type:

a) (Context: the picture of a cavalier bowing to plump little Clara)

Child: "Where's his eyes, Mrs. Strachan?"

Teacher: "He's standing with his back to you, Clara."

Child: "Oh!"

4. Explanation

These are questions concerning the logical relation of cause and effect and also that of compatibility.   They are typified by the word 'why' –

Example of a Compatibility question:

(Context: the drawing in a story book of a doll with three hands.)
Child: "Why does the doll have 3 hands?"

Examples of Cause and Effect questions:

a)   (Context: Shahnaux, who was one of the little ones, was playing with a story book, to the distraction of the class.)
Child: "Why don't we put it on a high beam?"

b)   "Is he sad because he lost his mum?"

5. Process

These are questions about the state or manner or the process by which a particular state of affairs has, or will come to be.   They are usually characterised by the interrogative word 'how'.

Examples:

a)   (Context: a fox has just spotted a hen and wants to catch it for its meal.)

Child: "He will have to creep up quietly, won't he?" (i.e. if he is not to alert and warn the hen of his intention, thus frightening her off).

b)
Child: "How is he?" (asking about a boy who has been knocked down by a car and is in hospital).

c)   "How did the fox get in?"

6. Psychological

This category embraces questions which indicate that the questioner is aware that –

a)   Other persons have thoughts or knowledge or beliefs which may

be different from his own. Now, two possibilities of action may arise from this awareness. The child may test the readiness of other persons in wanting to share their thoughts or knowledge, or he may want others to share in his thoughts and knowledge about an event or object, e.g. "Do you know what happened yesterday?" Asking this of a child may be an attempt to secure his attention and find out about his willingness to enter into verbal interactions.

The other possibility is that the child may test the validity or correctness of the other person's knowledge. Or he may simply want to know whether the other person indeed possesses such a knowledge as he might have thought. An example: "Do you know, sometimes people think foxes turn into fishes?".

b) People's understanding of the motives behind actions may differ. In particular, that an action may be deemed intentional or accidental.

Example:

(Context: sly fox was tricked by little red hen into carrying home a bag of stones believing it to contain red hen's chicks. The bag was thrown into a pot of boiling water and the resulting splash killed the fox's little ones.)

Child: "Do you think that the wee red hen knowed that the big stones would kill the red foxes?"

7. Clarification

These are questions seeking the clarification, through repetition, expansion and specification, of an entire utterance, or segments thereof. Characteristic interrogative words are 'huh', 'a what', 'which'.

Examples:

a)

Child 1: "And we saw Bobby on it, and he was riding."

Child 2:   "No."

Child 1:   "No what?"

Child 2:   "No, I didn't see it."

    b)

Child: "Buying a hat, did you say?"

Teacher: "Yes."

Coding Responses as Answers

Robinson and Rackstraw (<u>op. cit</u>) offered a detailed scheme for the description and analysis of answers.   They judged as answers, statements in response to questions.   Excluded are queries, exclamations, commands, refusals to answer and non-verbal behaviours.   In other words, statements were considered to be answers only if they conceptually filled gaps, that is, supplied the information requested in the question.   They set up linguistic and cognitive criteria which responses have to meet to quality as answers.   Essentially, an answer must be given by a person who has received a question.   "It must be expressed in language, consist of at least one declarative clause, have lexical continuity with the question, convey a statement and be able to function within the same referential category as the question." (p. 24)

Although Robinson and Rackstraw recognised that the mode, form and context of an answer may be influenced by the perceived intentions, present state of knowledge, and the general orientation of the questioner, they opted for a rather formal and linguistic treatment of the question-answer relation.   Their formal approach to the relation between questions and answers was necessitated by their conceptualisation of questions and answers.   For them questions function to elicit information lacking in the knowledge framework of the questioner.   Logically, answers become responses which reduce the gap in knowledge indicated by

the question. "This is quite independent of the motivation or
desires of the participants in the process, viz. questioner and
answerer. Question posing and answering can be considered a formal
exercise which specifies gaps in a conceptual framework and then fill
them in." (p. 29). This emphasis resulted in a study which, though
detailed in analysis, only marginally touched on what, in this thesis,
is an important problem. This relates to how the questioner's
intentions are perceived and realised in conversations and how an
answerer checks and complements the questioner's intentions. In short,
how the questioner and the answerer ensure that they are both function-
ing within the same referential locus intended by the initial question.
We shall suggest a few strategies available to people who may want to
use questioning to effect mutual understanding. These are:

a) The complementation or modification of the information
given to a question. This may lead to a concordance of views between
the questioner and the answerer.

b) Successive questioning by participants to ensure the correct
matching of purposes, as the interaction progresses.

c) Even silence may be used as an indication of misapprehension
of what is meant, and hence force a reformulation or restatement of
prior utterance.

c) Non-verbal signs may also be used to indicate disapproval,
disagreement, objections, etc., e.g. wearing a worried or puzzled look.

All these may function as guides to keep question/answer pairs
within the larger corpus of verbal exchange tailored down to specific
reference points. This guarantees against wide swings from the desired
path and ensures that contributions can be understood along the same
mutually-agreed-upon axis. For example:

Teacher: (Context: "The Hungry Caterpillar".)
           "There are blue butterflies in Skye."

Child: "Why can you not see them?"

Teacher: "You can see them."

Child: "Can you?   I can't."

Teacher: "I said they were on SKYE."

Clearly the child misunderstood the first Skye to mean sky.
However, this was resolved.   This example shows how strategy (b) can
be used to restore concordance of reference.

The Robinson and Rackstraw scheme for the description of question/
answer relation does not make provision for how an answer is ensured
to be functioning within the same referential category as the question
it is supposed to be satisfying.   This is not a surprising weakness
in a scheme that precludes non-verbal behaviour, exclamations, questions
and commands and 'refusals to answer' as answers to questions.   It is
being suggested in this thesis that, if we are to understand how people
come to an understanding of each other's intentions in communication,
the questioner's motive in posing the questions he poses becomes an
important entity for investigation.   Such motives may well be to fill
gaps in his knowledge system, or to establish rapport through rhetorical
questions as "How are you today?"; or to secure the attention of a
listener as in "Are you listening?".

Of no less significance is what follows, not only from the standpoint
of the formal grammatical and linguistic concordance of answers to
questions, but also from the standpoint of maintaining the purpose of
the interaction between a questioner and an answerer.   That is, how the
two match, test and modify their inferences about each other's intentions
in order to maximise the chances of mutual understanding.   Linguistic
and grammatical agreements between questions and answers, though necessary,

are not sufficient for a complete description of how question/answer

pairs aid the understanding of intentions and referents in communication.

The above objections formed the basis for a treatment of answers

which departs from the one developed by Robinson and Rackstraw (1972).

We, like these authors, relied on the context of utterance, mode and

lexical continuity between a question and an answer to determine the

Appropriateness, Completeness and the Presupposition of answers to

questions.   We   would   here offer a definition of our answer categories.

Context of utterance:

This refers to the aspect of the story that may be taken to be

the target to which the question refers.

Mode:

This refers to the range of possible answers that a particular

question can take.   Naturally, the mode selected would depend on

several variables, like the interpretation given to the question-to-be-

answered, what in the answer the answerer can presume to be already

known to the questioner, what the answerer thinks that the questioner

really wants to know, how best the answer is to be framed to permit

understanding by the questioner and so on.

Example: (hypothetical)

Q.   "How tall is X?"

A1.   "X is very tall."

A2.   "X is taller than Y" (where Y is known to both questioner
      and answerer).

A3.   "X is 6'2" tall."

A4.   "Don't tell me you don't know how tall X is", etc.

A1, 2, 3, 4 are different modes of answers to the question although, of

course, A1 is rather incomplete; A2 contains some presuppositions;

A3 is complete and matter-of-fact and A4 appeals to a belief that the questioner has reasons or grounds to know the height of X.

Lexical Continuity:

This consists of word-units which co-occur in a question and an answer. They tie the two together and can make the relation between them rather obvious.

Example: (hypothetical)

Q. "When is cricket on TV?"

A1. "I don't like cricket."

A2. "It's at seven."

A3. "I have a date tonight."

The occurrence of the word 'cricket' in A1 and an interpretation given to the pronoun 'It' in A2 allows for continuity and, therefore, the judgement that A1 and A2 are answers to the question. In the absence of a lexical continuity between the question and A3, assessment of A3 as an answer would be relatively more difficult to make. This is not to say that it may not qualify, but the certainty of its status as an answer can not be guaranteed on this basis alone.

Appropriateness:

This is defined in terms of an agreement between the 'aim' of a question and the answer given to it.

Example: (hypothetical)

Q. "Where did the boy hide?"

A1. "He hid in the bushes."

A2. "He ran away into the bush."

Both A1 and A2 are appropriate as answers because they supply information about location. The information need not be factually correct. What

is important is that the information be related to the locative
component of the question.

Completeness:

An answer can be examined to see whether it completely satisfies
the aim of the question or not.   This judgement is being made in our
role as observers and the grounds for making it may be tenuous because
we may not be able to tell what the answerer presumes to be common
knowledge for him and the questioner.   Fortunately however, we can
expect a dissatisfied questioner to further pursue his aim.   We can
also expect children who are in doubt as to the appropriateness and
completeness of an answer to a question to indicate so, either by
contributing what in their view is the missing part of the answer or
by querying the answer.   These expectations lead us into the phase of
our analysis which is about the consequences of types of answers (i.e.
whether appropriate or complete) on talk exchange.

Extension into Further Levels:

The above scheme enabled us to identify and categorise a question
and describe the answer in terms of whether it is appropriate or complete.
But normal talk exchanges do extend beyond that level.   An evaluation
of an answer to a question along the lines outlined may lead the
questioner, or a third person, into various activities, including
acknowledgement and agreement of the appropriateness and completeness of
the answer, or it may lead to a disagreement followed perhaps by a
contribution calculated to augment the answer in some way.   Or it may,
indeed, lead to a rejection and a restatement of the question; or it
may lead to a query.

This, we think, is one way in which talk is naturally generated
and sustained.   We think that talk is in part, an analytic process

whereby a participant evaluates the contributions of others and uses the product of this evaluation to plan his further contributions. The views of the other person may force an examination of the speaker's initial views, opinion or knowledge on the issue at hand. This examination may lead to a rejection, acceptance or a modification of either his own or his partner's views. It is negotiation of this sort that causes the development of coherence that is so characteristic of talk-exchanges or conversations. In order to be able to explore this feature of question-initiated verbal exchange, we looked at the children's reactions to answers. Do they follow the hypothesis outlined above? Do they complement answers that they judge incomplete and in so doing, extend the boundary of the talk-exchange? Do they query answers given to questions, thereby challenging a point of view expressed in such an answer or do they ask for a clarification or modification of the answerer's opinion?

To answer this question, we looked at extensions of the primary question/answer sequence. We identified 3 levels of extension, hereinafter called sequential levels 1, 2 and 3.

Sequential level 1 (SL1):

This is the primary minimal unit of our analysis. It comprises a question (of whatever referential category) and an answer.

Sequential level 2 (SL2):

This category contains sequences of verbal exchanges which start as in SL1 with a question followed by an answer. Then the questioner or a third child offers a statement that in some way modifies the answer (through deletion, addition, etc.). The third child's contribution or, indeed, the answer may be further commented upon by the answerer, the questioner or a fourth child, and so on. The significant

feature of this category is that all the contributions are tied to the same topic (as introduced by the question) and they constitute different viewpoints or opinions on that topic.   Some sequences finally lead to publicly acknowledged agreement.   Some do not.

Example 1:   Key: C = Child

    Context: (C has just told of an accident his father had with a
           knife.)

    C2.   "Oh!   Did he cut his whole hand off?"

    C1.   "No - he cut his finger."

    C2.   "Cut his finger off." (in apparent disbelief)

    C1.   "Noooo ... it was bleeding.   He didn't cut it off ...
         it was just bleeding."

    C2.   "Hmmmm."

Example 2:

    C1.   "What's that?" (pointing to a cat in the picture book).

    C2.   Cara   "There's a cat."

    C3.   Stewart   "It's like the tiger."

    C4.   Richard   "A mini-tiger, it's like."

    C5.   Val   (Laughs) "Like mini cars!"

Example 3:

    C1.   "She might get out of it."   (About the fox being trapped
        in a house.)

 Teacher: "Out of what?"

    C1.   "... get outa it."

    C2.   "The house, she means."

Sequential level 3 (SL3):

    This also is a category containing sequences initiated by a question. The answer however receives a query either from the questioner or from

a third party.   This query may be answered by the first answerer or a fourth child, and so on.   Where the third party, or any of the contributors, is an adult, we label the exchange SL3 + adult.   Where no adult contribution is involved, the exchange remains SL3.   The essential feature of this category is that it contains at least one queried answer within each sequence.

Examples of SL3 + Adult:

E-Ann: "Was I born before Beverley?"

Teacher: "Oh, yes."

E-Ann: "How old is Beverley?"

Teacher: "Beverley is three and you're five."

E-Ann: "She was born two weeks after me."

Teacher: "Not two weeks - two years."

Example 2:

Context: (The Gingerbread Man)

Elspeth: "Why did he run away?"

Teacher: "Well - why did he run away?"

Gert: "Because he didn't want to stay."

Julie: "He didn't want to be eaten."

Elspeth: "How can he do it?   Since he's got ginger legs!"

Example 1 involves two participants while example 2 involves four.

Example SL3 (i.e. without adult participation)

Context: (The mother fox and sly fox throw the bag of stones into the boiling water, which splashed, killing the little foxes.)

Debbie: "The wee red hen would be pleased now, wouldn't he?"

Cara: "Yeah."

Richard: "But what happens if the wolf comes?"

E-Ann: "She'll have to keep out of the way."

Nial: "But what happens if ... if three foxes come to eat him all up?"

SUMMARY OF QUESTION CATEGORIES

REFERENTIAL CATEGORY	SUB-CATEGORY	NORMAL INTERROGATIVE GROUP
1. IDENTIFICATION	Personal	Who
	Impersonal	What
	Action	What (+ doing, (happening, (etc.
2. DEFINITION	Word-meaning	What
3. PLACING	Time	When
	Space	Where
4. EXPLANATION	Compatibility	Why
	Cause	Why
	Effect	Why
5. PROCESS	State	How
	Manner	How
	Specification of method	How
6. PSYCHOLOGICAL	Testing readiness of others to co-operate Testing intention versus Accident	
7. CLARIFICATION	Repetition	Hm?, What
	Specification of kind	Which

SUMMARY OF TREATMENT OF ANSWERS

CATEGORIES	SIGNIFICANCE FOR ANALYSIS	SIGNIFICANCE FOR THE PSYCHOLOGY OF COMMUNICATION
IS IT AN ANSWER?		
CONTEXT OF UTTERANCE	) Used to determine	) Indicates knowledge
	) whether a response	) about certain
MODE	) qualifies as an	) properties of an
	) answer or not	) answer
LEXICAL CONTINUITY	)	)
HOW SATISFACTORY AN ANSWER?		
APPROPRIATENESS	) Used as a crude	) Indicates answerer's
	) measure of agree-	) knowledge of and
	) ment between a	) willingness to meet
COMPLETENESS	) question and an	) certain expectations
	) answer	) of the questioner
LEVELS OF SATISFACTION		
SEQUENTIAL LEVEL 1	) Used to describe	) Indicates attempts
	) how the relation	) at 3 different levels
	) between question	) to negotiate and
SEQUENTIAL LEVEL 2	) and answer may	) contribute to an
	) foster coherence	) understanding or
	) of verbal exchanges	) resolution of view-
SEQUENTIAL LEVEL 3 (+ Adult)	) in conversations	) points

RESULTS

In Table 3.1, the speech produced by each child
was partitioned into answers, comments and questions.
Talkativeness measured by the number of utterances
produceddid not increase with age.   In fact the younger
children appeared to be more talkative, the correlation
between age and the number of utterances being -0.672,
$p < .01$.   It may well be that the older children are
more adept at listening and paying attention to the
stories.   Another explanation may be that the older
children being longer in the nursery, have become
more familiar with the stories and consequently have
less to talk about, or that the younger children are
much more given to a display of irrelevant chatter.
But in the absence of an exhaustive analysis of the
children's behaviour, we had no way of choosing between
these or other possible explanations.   An analysis of
the kind we have in mind would include an evaluation
of listening, attending and orienting behaviours;
resistance to distraction and familiarity with the stories.
However, we did consider possible associations between
age of the children and the proportions of questions and
answers in their talk.

For each child, total amount of talk was not
significantly correlated with proportion of questions
although there seemed to be a trend in this direction

(r_s = 0.417, p < .05). Talk was also neither correlated with proportion of comments (r_s = 0.021) nor with proportion of answers (r_s = -0.275). Age did not seem to be reflected in changes in the proportion of questions in the children's talk (r_s = -0.111) nor did it correlate with the proportion of comments (r_s = -0.01).

As we have observed, younger children tended to do more talking at story-time. Since age did not correlate with the proportion of questions it does seem as suggested above that the older children, being more familiar with the stories, have less to say and are for the same reason more attentive and topic-relevant in their utterances. Although we still have no definite reasons to choose this out of the two explanations previously offered, i.e. in terms of expertise in attending or resistance to irrelevancies and distractions, either of them would lead us to expect older children to provide more answers than the younger ones to questions. This expectation was borne out by the value of the correlation between age and the proportion of answers given (r_s = 0.523, p < .05). So, although the older children talked less, they answered more questions than the younger ones.

It is quite conceivable that children who asked questions might have done so for two reasons. First to seek information required to fill a void in their knowledge-system and secondly to seek attention or social approval. In the case of the former, i.e. epistemic questions, it

would be expected that the children who used questions to serve this purpose would be less proficient at commenting on their very questions or on those of others, for the simple reason that they would have insufficient knowledge. Such children would also be less able to comment generally on the stories simply because they would know less about them. On the other hand, if questions were being used to secure social approval or attention, questioners ought to comment on their questions or on the answers elicited by such questions and at the same time comment on the general themes and topics of the stories. The data seem to favour the epistemic explanation. The proportion of comments in the talk of questioners was less than in the talk of non-questioners - the correlation between proportion of questioners and the proportion of comments in talk was -0.455, $p < .05$. Furthermore, the correlation between the proportion of questions in talk and providing responses at sequential level 2 (by definition comments on answers to questions) was -0.426, $p < .05$. In other words, those children who had relatively high proportions of questions in their talk produced few comments on answers given to questions. That is, non-questioners more than questioners extended question/answer sequences by their comments. This supports the central hypothesis of this thesis that children ask questions because of a motive to seek knowledge and understanding of their world.

From Table 3.1, the paucity of answers and questions

TABLE 3.1

The Proportion of Answers, Comments and Questions in the talk of each child

	Name	Sex	Age (months)	Talk	Prop. Answers	Prop. Comments	Prop. Questions
*	1. Angela	F	61	16	.13 (2)	.81 (13)	.06 (1)
	2. E-Ann	F	60	207	.22 (45)	.83 (171)	.17 (36)
	3. Nial	M	57	66	.14 (9)	.76 (50)	.11 (7)
	4. Julie	F	51	53	.21 (11)	.77 (41)	.02 (1)
	5. Gert	F	50	65	.28 (18)	.69 (45)	.03 (2)
	6. Stefan	M	49	131	.18 (23)	.79 (103)	.04 (5)
	7. Richard	M	48	61	.05 (3)	.92 (56)	.03 (2)
*	8. Elspeth	F	47	288	.11 (31)	.82 (235)	.08 (22)
*	9. Debbie	F	45	214	.12 (25)	.74 (159)	.14 (30)
	10. Paul	M	45	77	.13 (10)	.86 (66)	.01 (1)
	11. Ewan	M	42	40	.25 (10)	.65 (26)	.10 (4)
*	12. Stewart	M	41	149	.10 (15)	.86 (128)	.04 (6)
*	13. Cara	F	39	214	.08 (17)	.79 (170)	.13 (27)
	14. Shabir	M	38	98	.06 (6)	.40 (39)	.54 (53)
	15. Beverley	F	37	32	.13 (4)	.84 (27)	.03 (1)
	16. Kate	F	36	47	.11 (5)	.81 (38)	.09 (4)
	Mean age		46.2	Total 1758	.13 (234)	.78 (1367)	.11 (202)

Nos. are in parentheses

are obvious.   The answers constituted only 234 or 13.3%
of the total talk, whilst questions accounted for 202
or a mere 11.5%.   Moreover, the proportion of answers
relative to the talk of every child was extremely low.
The same was true of questions except in the case of
one child, Shabir, whose questions reached an
exceptional 54% of his talk.

Table 3.2 shows clearly that the bulk of the data
on questions came from five of the sixteen children
who between them contributed 83.2% (168 out of 202)
of questions.   These same children produced 58.1%
(1,021 out of 1,758) of talk, 52.9% (124 in 234) of
answers and 56.6% (774 in 1,367) of comments as is
shown in Table 3.3.   Because of the great contri-
bution of these five children, detailed analyses of
their questions and answers were done on a case by
case basis.

E-Ann

At 60 months the oldest of the five children
selected on the basis of their questioning activity,
she produced 36 questions.   'Explanation'
questions formed the largest category, amounting to
30.6% (11 out of 36).   'Identity' and 'Placing'
questions tied at 19.4% (7 out of 36).   'Definition'
and 'Psychological' questions came next, both giving
11.1% (4 out of 36).

TABLE 3.2

The proportion of answers, comments and questions contributed by individuals relative to group performance

Name	Sex	Age (months)	Talk	Answers	Comments	Questions
1. Angela	F	61	.009 (16)	.008 (2)	.009 (13)	.004 (1)
2. E-Ann	F	60	.117 * (207)	.192 * (45)	.125 * (171)	.178 * (36)
3. Nial	M	57	.037 (66)	.038 (9)	.036 (50)	.034 (7)
4. Julie	F	51	.030 (53)	.047 (11)	.029 (41)	.004 (1)
5. Gert	F	50	.036 (65)	.076 (18)	.032 (45)	.009 (2)
6. Stefan	M	49	.074 (131)	.098 (23)	.075 (103)	.024 (5)
7. Richard	M	48	.034 (61)	.012 (3)	.040 (56)	.009 (2)
8. Elspeth	F	47	.163 * (288)	.132 * (31)	.171 * (235)	.108 * (22)
9. Debbie	F	45	.121 * (214)	.106 * (25)	.116 * (159)	.148 * (30)
10. Paul	M	45	.043 (77)	.042 (10)	.048 (66)	.004 (1)
11. Ewan	M	42	.022 (40)	.042 (10)	.019 (26)	.019 (4)
12. Stewart	M	41	.084 (149)	.064 (15)	.093 (128)	.029 (6)
13. Cara	F	39	.121 * (214)	.072 (17)	.124 * (170)	.133 (27)
14. Shabir	M	38	.055 (98)	.025 (6)	.028 (39)	.262 (53)
15. Beverley	F	37	.018 (32)	.017 (4)	.019 (27)	.004 (1)
16. Kate	F	36	.026 (47)	.021 (5)	.027 (38)	.019 (4)
Mean age		46.6	1758	234	1367	202

No. is in parentheses

TABLE 3.3

Frequency in percentages of talk, answers and comments of 5 children
who asked the greatest proportions of questions relative to the group of 16 children

	Sex	Age (months)	Talk %	Talk N	Answers %	Answers N	Comments %	Comments N	Questions %	Questions N
1. E-Ann	F	60	11.7	(207)	19.2	(45)	12.5	(171)	17.8	(36)
2. Elspeth	F	47	16.3	(288)	13.2	(31)	17.1	(235)	10.8	(22)
3. Debbie	F	45	12.1	(214)	10.6	(25)	11.6	(159)	14.8	(30)
4. Cara	F	39	12.1	(214)	7.2	(17)	12.4	(170)	13.3	(27)
5. Shabir	M	38	5.5	(98)	2.5	(6)	2.8	(39)	26.2	(53)
Total N			1021		124		774		168	
Proportion of N to total N for the group of 16 children			$1021/1758 = 0.58$		$124/234 = 0.529$		$774/1367 = 0.566$		$168/202 = 0.831$	

Elspeth

The next oldest child at 47 months produced
22 questions in all.   'Explanation'questions formed
the largest category, forming 31.8% (7 in 22).
This was followed by 'Process' questions – amounting
to 22.7% (5 in 22).   Next was 'Definition', 'Placing'
and 'Clarification', each equalling 13.6%.

Debbie

The third oldest child in age at 45 months
produced 30 questions out of which 'Explanation'
formed the largest category, 53.3% (16 out of 30).
'Identity' questions came next with 23.3% (7 in 30).
This was followed by 'Psychological' questions, 10.0%.
'Placing' and 'Process' tied at 6.7% (2 questions
each out of the total of 30).

Cara

The fourth oldest child aged 39 months produced
questions which fell into only four of the seven
question categories.   Of these, 'Explanation' was
highest at 51.9% (14 in 27).   This was followed by
'Identity' 22.2%, 'Process' at 14.8% and 'Placing'
at 11.1%.

<u>Shabir</u>

The youngest at 38 months and the only male in
the group, his total number of questions of 53 was
largely made up of 'Explanation' questions, 83.0%
(44 out of 53).   'Identity' and 'Process' came
second in number, each comprising 5.7% (i.e. 3 in
53).   'Placing' amounted to 3.8% and 'Clarification'
a mere 1.9%.

These are shown in Table 3.4.

Two interesting features emerged from the
question profile of these five children.   First,
'Explanation' questions featured the most in the
questions of each child and secondly, only the two
oldest of the children (E-Ann and Elspeth) appeared
to be interested in the meaning of words as reflected
in the 'Definition' questions they asked.   Were the
questions being asked genuinely to seek information
or were they being used merely to establish social
contact?   In other words, were the children asking
questions for which they could provide answers or for
which they had no interest in the reply?
Alternatively, were they asking truly epistemic
questions calculated to yield information to fill a
gap in their knowledge system?

TABLE 3.4

The Production in % of categories of questions relative to the total number of questions per child

QUESTION CATEGORIES

Name	Age (months)	Identity		Definition		Placing		Explanation		Process		Psychological		Clarification	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
E-Ann	60	7	19.4	4	11.1	7	19.4	11	30.6	2	5.6	4	11.1	1	2.8
Elspeth	47	1	4.5	3	13.6	3	13.6	7	31.8	5	22.7	0	0	3	13.6
Debbie	45	7	23.3	0	0	2	6.7	16	53.3	2	6.7	3	10.0	0	0
Cara	39	6	22.2	0	0	3	11.1	14	51.9	4	14.8	0	0	0	0
Shabir	38	3	5.7	0	0	2	3.8	44	83.0	3	5.7	0	0	1	1.9

If questions were being used to serve an epistemic rather than a social function, it would be expected that:

(a) Some of these questions would be specific prompt questions reflecting a deliberate and structured search for specific information with which to confirm or refute an opinion already held as a probable answer. Now, whilst a lack of prompts would not necessarily rule out an epistemic function, its presence may indicate this function. As shown in Table 3.5, the proportion of prompts in the questions of the children are low yet these may represent deliberate and unequivocal use of questions for epistemic purposes because prompts are assumed to be cognitively harder to frame. It would be unreasonable for a child to employ prompts if his intention was just to attract attention.

The relative absence of 'Explanation' questions of the prompt type is to be noted because 'Explanation' questions formed the largest single category of questions produced by each child. Could it be that the children found it more difficult to formulate causes, motives and justification of actions and had to ask such questions in a general and open manner? Or would this question category be the least

TABLE 3.5

Proportion of prompts in the questions of five children

Questions	E-Ann	Elspeth	Debbie	Cara	Simbir
Identity	2	1	4	1	1
Definition	1	0	0	0	0
Placing	0	1	0	0	0
Explanation	0	0	4	0	0
Process	0	2	0	0	0
Psychological	0	0	2	0	0
Clarification	1	2	0	0	1
No. Prompts	4	6	10	1	2
Total Questions	36	22	30	27	53
Proportion of Prompts	.11	.27	.33	.04	.04

differentiated for children in this age bracket?
In order to answer this question it would have been
useful to have had a larger corpus of 'Explanation',
'Identity', etc. questions.   This would have
permitted a subcategorisation into a scheme such as
offered below.

Explanation Questions

I   cause)
) Relating to objects.
     effect)

        e.g. "Why is the ball rolling down hill?"

                  Relating to purpose of human action.
II   motivation –
                 – Psychological action.

        e.g. "Why are you carrying a bag?"

                  – compatible with conventions.
III   justification
               e.g. "Why is stealing bad?"

                  – compatible with logical reasoning.
        e.g. "Why is 2, half of 4?"

Identity Questions

I   Personal   – relating to the identity of
                   Persons and animals.

   Impersonal   – relating to the identity of objects.

   Action   – relating to the identification
                   of agents of actions.

Unfortunately we did not have enough data to do this.

(b) If questions were in part being used epistemically, it would also be expected that the questioner pay attention to answers elicited by his questions. Much more acceptable indices of attentiveness like direction of gaze and head-orientation towards answerer are not available to us because the story-telling sessions were audio-taped. However, the contributions of questioners to sequences of interaction elicited by questioning can be used. If children ask questions and expect answers, they would probably attend to the questions of others. This is not to say that factors other than questioning may not be associated with attentiveness measured by responses to questions. In fact, as we have shown in our analysis of the questions of the group of sixteen children, age correlated with answering ($r_s = 0.523$, $p < .05$). Even within the present sub-group of five children this is also the case ($r_s = 0.95$, $p < .05$). Unfortunately the proportion of questioning in the talk of the children did not correlate with the proportion of answers in their talk ($r_s = -0.3$, $p > .05$) nor did

it correlate with the proportion of answers at
sequential level 1 (r_s = 0.006) or sequential
level 3 (r_s = -0.205). The correlation of
questions with answers at sequential level 2
was barely significant (r_s = -0.426, p < .05).

In other words, children who produced a
lot of questions attended less and contributed
less than non-questioners to Question/Answer
responses at SL2. Because of the small number
of questions in the group of 16 children and
also because of the uneven distribution of
questions within the group, the five children
we had selected because they asked more questions
were examined in terms of the levels at which
they responded to questions. From Table 3.6
it is clear that the proportion of answers
relative to the total number of responses for
each child did not seem to vary according to
age on any of the answering levels. These
proportions did not correlate significantly
with the proportion of questions in the
children's talk.

TABLE 3.6

The responses in % of five children at three answer levels

Answer levels	E–Ann		Elspeth		Debbie		Cara		Shabir	
	N	%	N	%	N	%	N	%	N	%
SL1	21	46.7	10	32.2	9	36.0	4	23.5	3	50.0
SL2	14	31.1	11	35.4	5	20.0	6	35.2	2	33.3
SL3	4	8.9	8	25.8	4	16.0	2	11.7	1	16.6
SL3 + Adult	6	13.3	2	6.4	7	28.0	5	29.4	0	0.0
Total Responses	45		31		25		17		6	

Did the five children prefer to answer questions the likes of which they were apt to ask? In order to answer this the responses at the three sequential levels (SL1, SL2, SL3) were pooled for both responses to children's and adults' questions. It will be recalled that for all the five children under study, 'Explanation' questions formed the largest, i.e. the most frequently asked. As is shown in Table 3.7, 'Identity' questions were answered most frequently by E-Ann, Elspeth and Cara. For Debbie, answers to such questions tied with answers given to 'Explanation' questions. The number of responses produced by Shabir was too small (n = 6) for further consideration. It is true that 'Identity' and 'Explanation' questions were in any case the two largest categories of questions prevailing within the story context, and naturally answers to these two categories of questions were bound also to be numerous. Nonetheless, the great difference in favour of 'Identity' questions in the proportion

TABLE 3.7

Responses in % to seven question categories by five children

Questions N →	E-Ann		Elspeth		Debbie		Cara		Shabir	
	N	%	N	%	N	%	N	%	N	%
Identity (105)	19	42.2	14	45.2	9	36.0	7	41.2	2	33.3
Definition (9)	1	2.2	-	-	-	-	-	-	-	-
Placing (33)	10	22.2	2	6.5	1	4.0	-	-	1	16.7
Explanation (116)	10	22.2	6	19.4	9	36.0	5	29.4	1	16.7
Process (24)	-	-	5	16.1	1	4.0	3	17.6	-	-
Psychological (17)	3	6.7	1	3.2	2	8.0	1	5.9	-	-
Clarification (26)	2	4.4	3	9.7	3	12.0	1	5.9	2	33.3
Total number of Responses	45		31		25		17		6	

Entries in parentheses represent pooled number of questions from all 16 children and adult teachers.

of answers to these two question categories, at
least for E-Ann, Elspeth and Cara is such that
it is tempting to want to suggest an explanation
of preference for if children were asking one
kind of question and answering essentially
another kind, it is likely that the answers
to the questions they were asking were largely
unknown to them.   That is, the most frequently
asked questions are likely to be of some
information value to the children.   If this
were so, we may tentatively conclude that those
questions were genuine information-seeking
questions and not just those seeking social
approval.

DISCUSSION

The main hypothesis in this thesis derives
from the position that children, and perhaps
even infants, are motivated to seek an understanding
of events and relations between events in the
world. The hypothesis states that in children
who have come to possess and use speech, this
motivation may be translated into questions proper
or utterances which function as such. When
questions are employed for seeking information,
the attempt is often successful only because it
benefits from the co-operative nature of human
relationships. Now, using questions in a more
and more controlled manner to seek information
within the co-operative bond must follow a
developmental path which starts out initially as
vague and general (from the observer's perspective)
and leads on to the specific and the explicit.

We have approached the data from the point
of view of the premise expressed above. The
question with which we have analysed the data has
been, "What is it (if anything) about children's

questions that can lead us into seriously considering the motive behind such question-asking as a search for information?" We considered two alternative possibilities. Were the children's questions epistemic or social?

It is well documented that adults' speech to young children contain a high proportion of interrogatives (Ervin-Tripp, 1977; Ervin-Tripp and Miller, 1977; McShane, unpublished). It is also well established that such questions serve more to initiate and sustain social relationships than to inform or be informed (Ervin-Tripp, 1977; Blank and Allen, 1976). For example, an adult's reaction to a child's undesirable behaviour like spilling milk is often of the form "What did you do that for?" or "Why did you do that?". Also, that questioning is used by mothers to set up a pattern of mutual exchange or intersubjectivity around their infants' interests, emotions and actions is becoming increasingly clear (Murray, 1980). From this background the observations often made that the questions of pre-school children are on some occasions not information-seeking but attention-

seeking or relationship-seeking (Lewis, 1951;
Piaget, 1959) is perhaps not surprising.   But on
what occasions and at what age do children start
asking genuine epistemic questions as well?
And how can these types of questions be distinguished
from those with social goals?

The problems which arise in classifying
(a) utterances which are non-interrogative in form
but are information-seeking and (b) utterances that
are clearly interrogative in form but are not requests
for information but attention and approval seeking
are complex.   Sinclair and Coulthard (1975) have
advanced a reasonably satisfactory model to account
for those cues that are used to decide the status
of questions by participants in a formal situation
such as a classroom.   Within this situation, a
teacher's question may be no more than a "starter"
especially if it is followed by another utterance
from the teacher.   In such cases the function of the
adults' question would not be information gathering
but a directive.   It might serve to direct the
pupil's attention and introduce the forthcoming
thought to the pupil.   On the other hand, the same

question from the teacher can be an "initiator"
instigating information from the pupil if the pupil
is <u>allowed</u> to speak immediately after it.   The point
is that in these two different "situations" the same
question can have different functions or "tactical"
effects, as the authors call them, on the pupil.
Deciding on the status of questions in a relatively
informal situation such as story telling in a
nursery is bound to be even more difficult.   A
knowledge of the direction and duration of the
attention of the questioner may be useful in
deciding whether his question was intended to
elicit information.   Because we had no measures
of the non-verbal correlates of attention such as
line of regard, we used verbal ones like contribu-
tions of the questioner to sequences of verbal
interaction engendered by his question.   This is
of course less reliable as non-contribution may be
due to lack of knowledge about the topic.

     Robin Campbell (personal communication) has
suggested a method of dealing with this problem.
He considered this method would be especially
suitable for handling what he called attributive
questions.   These are interrogatives about the

defining   characteristics and identities of objects.
In our category system these would fall within the
category of "Identity" questions.   Campbell proposed
that a distinction be made between questions which ask
about intrinsic and therefore relatively obvious and
static characteristics (e.g. the colour of a car);
the other consisting of questions which ask about the
dynamic and changing properties of objects (e.g.
hotness and coldness).   The former subcategory could
be considered to lend themselves to social purposes
since their semantic contents are about obvious and
apparent features.   The latter could be regarded as .
more epistemic in intent in that they seek answers
to uncertainties.   But this would not totally resolve
the difficulty because, although the semantic content
of a question may be apparently social, its semantic
intent may be epistemic.   For example, a child asking
whether a red car he is currently looking at is red,
may by so doing asking for the meaning of the word
'red', or he may be seeking attention.   How does one
choose between these two possibilities?   We believe
that for two reasons we do not have the ideal kind of
data with which to tackle this problem.   First, most
children in our sample gave no substantial and usable
amounts of questions.   Secondly, most of the general

ambience of the situation was lost in the audio-
record, thus depriving us of useful non-verbal data
accompanying and/or following each questioning event.

One final point: it is possible that the reason
why questioning occurred very sparsely in eleven of
the sixteen children was the size of the group. Two-
child groups are significantly more effective than 4-,
6-, 12- and 24-child groups for eliciting questions
in 3 to 5-year-old children (Torrance, 1970; Endsley
and Gupta, 1978). Groups bigger than two may be
relatively ineffective because of dominance hierarchy
effects, shyness, etc. Besides, having posed a
question within a large group, the questioner could
relinquish responsibility attaching to the questioning
act to other children in the group.

In the next chapter two-child groups were used
in a context where questioning if it occurs would have
no purpose other than information seeking.

CHAPTER 4

THE GAME OF BISCUITS-IN-THE-BOX

INTRODUCTION

The performance of the child-questioners in the story-telling
situation can be said to be a confident, controlled and, apparently,
non-egocentric use of language to communicate. Our explanation of the
basis of this performance is that, in the story situation, the child
himself defined the interest area within which he chose his topic.
The topics as they appeared in the children's questions were classified
as to their referential functions. Now, the selection of various questions
formats to encapsulate their inquiries about the topics of interest
arose spontaneously. In other words, children voluntarily selected and
controlled a variety of linguistic and communicative behaviours
appropriate to the particular demands of their interests or to those of
their listeners. But the question arises, in a situation where the
initiative is taken from the child concerning choice of topic, game to
be played or task to be performed, would he still be able to select from
his repertoire of linguistic and communicative skills those which are
appropriate both to the situation and his partner-in-communication? The
answer to this question would depend upon the child's mastery of a
number of potential sources of uncertainty or confusion. Some of these
are:

1. The complexity of the situation in terms of the cognitive demands
placed on the child. Does he possess the cognitive skills required?

2. How easily the child can 'read' the situation as a task and come
to an understanding of its purposes. What is he there to do? and

3. How co-operative his partner-in-communication is, given his age,

knowledge-status, etc. Does the child being tested have to consider the contributions of others as sources of information, instruction, etc., in planning towards achieving the set goal?

These are important issues relating to how children perform under instructions. Children receive instructions not only at school, but when they are called upon to 'do' psychological experiments. Under instructions, they may be required to function within the purposes defined by others. The problem for the child, therefore, becomes multiplied. He has to overcome certain natural tendencies to interpret the situation as he would, if left to his own devices, search for what the instructor might mean and having done this, subject his actions to those meanings. This calls for a specific kind of control over his psychological resources (Donaldson, 1978).

One is reminded of the distinction between spontaneous and non-spontaneous concepts made by Piaget (1959; 1973) and developed in great detail by Vygotsky (1962). Piaget labelled those ideas about the world arrived at by the child's own efforts as spontaneous or psychological and those ideas secured through the help of adults (instructions for example) he called non-spontaneous or psychosocial. The former, whether on the plane of action or language, is unreflective and unconscious, that is, cannot turn on itself or know itself. The latter on the other hand, can demonstrate a knowledge or awareness of itself. Olson (1975) used written speech to exemplify this non-spontaneous use of language. It can be frozen, broken down and synthesised because the processes and rules are known at a conscious level. Piaget proposed that the child moves from spontaneous to non-spontaneous use of concepts by becoming more aware of his skills and thoughts. This comes about when he experiences conflict, that is, when he is exposed to ideas and thoughts that differ from his own. The need to cope with such differences forces

the construction of an awareness of his own ideas and thoughts which hitherto would have been automatic and organized at a lower level of cognitive functioning.

> "If a well-adapted action requires no awareness, it is directed by sensori motor regulations which can then automate themselves. When, on the contrary, an active regulation becomes necessary, which supposes intentional choices between two or several possibilities, there is awareness in function of these needs themselves."
>
> (Piaget, 1973, p. 41)

For Piaget, therefore, having a conscious grasp of one's thoughts or actions is a necessary condition for the attaintment of non-spontaneous concepts. Although he recognised that the family, education and schooling can play some role in furthering the course of a child's development of non-spontaneous thought, Piaget has always stressed the spontaneous aspect of development - that is, "what the child learns by himself, what none can teach him and he must discover alone".

Vygotsky accepted Piaget's distinction between spontaneous and non-spontaneous concepts, but insisted that the role of formal and informal instruction on the development of non-spontaneous (he called it "scientific") concepts be acknowledged and studied. Spontaneous use of actions and language hardly ever require tuition or instruction. He observed that attention and memory become more voluntary and mature as the child grows older, and all the mental functions necessary for becoming aware of his actions and thoughts unfold gradually. As they do, the child assumes an increasing control over his psychological resources. This, Vygotsky partly credited to the informal instructive role of adults and, perhaps also, peers in the child's life. However, a great leap forward is achieved when the child goes to school for formal instruction. What formal instruction does for the growing child is to force <u>a change in his attitude</u> toward the world. A change from a rich, action-related

way of representing to a relatively more schematic and systematic mode
of representation.   In yielding to this change, the child's spontaneous
concepts permit a closer, deliberate concentration of effort and control —
a kind of auditing of the contents ofhis spontaneous tool-bag for its
essential generalisable characteristics.   The reward to the child of
this change in attitude is the attainment of a relative degree of
freedom from the immediate context of action.   It is worth quoting
Vygotsky in some detail.

> "The inception of a spontaneous concept can usually be traced
> to a face-to-face meeting with a concrete situation, while a
> scientific concept involves from the first a 'mediated'
> attitude toward its object ......
>
>   The influence of scientific concepts on the mental
> development of the child is analogous to the effect of
> learning a foreign language, a process which is conscious
> and deliberate from the start.   In one's native language,
> the primitive aspects of speech are acquired before the
> more complex ones.   The latter presuppose some awareness
> of phonetic, grammatical, and syntactic forms.   With a
> foreign language, the higher forms develop before spontaneous,
> fluent speech.   The intellectualistic theories of language,
> such as Stern's, which place a full grasp of the relationship
> between sign and meaning at the very beginning of linguistic
> development, contain a measure of truth in the case of a
> foreign language.   The child's strong points in a foreign
> language are his weak points in his native language, and
> vice versa.   In his own language, the child conjugates and
> declines correctly, but without realising it.   He cannot tell
> the gender, the case, or the tense of the word he is using.
> In a foreign language, he distinguishes between masculine and
> feminine gender and is conscious of grammatical forms from
> the beginning."   (pp. 108-109)

Whilst the examination of the development of concepts per se is not
the main goal of this thesis, the implications of schooling and instruct-
ing on attentiveness, deliberate control over the child's resources, and
acceptance of initiative and purposes from other persons are of consider-
able importance in understanding language use in children, including the
use of questions.

The topics being explored in this chapter are as follows:-

Do Nursery school children possess the volitional control of the communication resources required for effective performance in conditions where instruction is to be given by one child to another? If so, how is it exercised? What role does it play in the process of sharing and understanding between children?

To try to answer these questions, a situation was devised where one child was given the benefit of a certain experience, which is to hide a desired object in one of six boxes, which was then locked with a key. The hider then had to instruct another child on how to use that experience in guiding the finder's action to retrieve the hidden object. We looked for evidence of control in the acts and utterances of both children. Of interest, also, was how they adapted to each other's expressed needs and moved along the path of mutual understanding. If on this joint-task, we can show that a nursery school child does deliberately vary the use of his language and communication resources to fulfil the needs of his partner, across varying situations, we would have shown that:

1.   The child is aware of the needs of his partner as they vary across situations.

2.   This awareness must have led to a conscious or intentional choice in the communicative alternatives (of strategies) open to him.

We can then explore the relationship between the two children with a view to discovering how the attention, and consequently the awareness of one is directed to the needs of the other. It is the central hypothesis of this thesis that this is done through questioning.

THE GENERAL HYPOTHESIS

We had some expectations concerning the performance of the children

under the four experimental conditions set up. The general hypothesis was that successful performance demanded a considerable measure of deliberate control over one's communicative resources. In these conditions, one just did not say anything that comes into one's head or strikes one as interesting about the boxes and the keys. The purpose of the game has to be borne in mind in planning, giving and executing instructions. Also, certain attributes of one's partner have to be considered. Ford and Olson (1975), in their work on children's description of objects, found that 4- and 5-year-olds had no difficulty in describing objects when such objects had to be partitioned from a context of up to five different alternatives. But the children's descriptions showed "little sensitivity to the immediate context and to the information that is actually and minimally required by the listeners ...". The authors did not explain why, but only noted that "even at age 7, children showed no tendency to elaborate the noun phrase in a way sensitive to the particular referential context of the object". We would like to suggest an explanation. In a situation where a child's intentions about an act are not his own, but given to him, such as happens in Psychological experiments, the task facing him becomes two-fold, as we have suggested earlier on. Firstly he must come to know what this 'imposed' purpose really is, accept it, and agree to its reasonableness and workability. Secondly the child must use his resources as best he could to act on the purpose. We found an example to support this in the advice of a 5-year-old child who failed to describe a picture-card (from a set of four) to the experimenter (E), who was sitting opposite him without being seen. When the child realised that his assumption that his own cards and those of E were "arranged the same" was incorrect, he gathered up his cards and concluded that "You can't play properly ... isn't it?".

On being told that it was still possible to play properly by trying

harder, the child, who had started walking away with his hands in his pocket, turned round to face E and declared.

Child: "You know what to do?"

E: "No"

Child: "Put same number on these four ... on these four"(the set from which he was to pick and describe one card, so that E could pick an identical card from E's set) "and arrange them the same."

E: "Oh, I see ... you mean ..."

Child: "Say that ... say that" (indicating a card) "was there" (tapping his right side of the table), "then you put ... then you put the other one there" (moving over and tapping E's right half of the table).

Hence, during a dyadic communication game with children, one of the primary functions of the initial verbal exchanges may be to establish the prevailing meaning-intention which they can then use to guide the formulation of a message to their listener. It is, of course, quite possible that young children placed in the circumstances we have been describing, will be unable to control their natural inclinations to act spontaneously. Consequently, they may fail to ascertain the immediate purposes of the instruction or they may assume that the purposes and, therefore, the requirements are as they expect them to be. In any case, the Ford and Olson paradigm did not make any provisions whereby the children could ask for specific information concerning such purposes and requirements.

This study was intended to remedy this situation. One is reminded of the not so uncommon phenomenon of even 20-year-old undergraduates faced with an ambiguous question in a term test. Unable to grasp the

real intentions of the examiner, and unable to ask what those
intentions are, they write all they can and all they know about the items
mentioned in the question – thus providing a highly descriptive, but
redundant answer.

METHOD

Subjects:

30 Children attending the departmental nursery took part in the
study.   All were between the ages of 2 years 11 months and 5 years and
2 months.   They were divided into the following three age groups of
10 children each, as shown below.

	No. of children	Mean age (months)	Range (months)
5-year-old group	10	58.4	(63 - 56) = 7
4-year-old group	10	48.6	(52 - 46) = 6
3-year-old group	10	37.5	(40 - 35) = 5

There were 5 boys and 5 girls in each group.

Playroom, Equipment and Materials:

The playroom in which the study was conducted was large, spacious
and well lit.   It was frequently used by research students working with
the children and thus could be assumed to be familiar to most of the
children.

The materials consisted of three large (8" x 8" x 8") boxes, one
blue, one red and the other yellow, with a large blue, red and yellow
key to match.

There were three small (4" x 4" x 4") boxes as well, blue, red and
yellow, each having a key of the same colour and size.   A small box
could be put inside a large box.   Provided also, was a large tin of

biscuits from which the children picked two biscuits of their choice to be hidden in the boxes.

A two-room structure was set up inside the playroom. On one side was a low table on top of which were the six boxes and the keys. A video camera was trained onto this table. Two chairs stood by this table, one for the child, the other for the experimenter. This room was designated the 'hiding' room. The other side, called the 'telling' room, also had a low table, a nursery chair and a camera scanning it. There was in the hiding room an electronic control device which allowed the experimenter to activate the two cameras alternately. Hence, the goings-on in both the hiding and the telling rooms could be video-recorded as the hider/finder interaction moved from one to the other. Figure 4.0.1 represents a diagram of this set-up.

Procedure:

The children were brought into the playroom in pairs and asked to play a game of 'biscuits-in-the-box'. The introduction went as follows: "I want you to play a game of biscuits. It's very easy, really. One of you will hide two biscuits in one of these boxes and then he'll go and tell the other in the next room. The boy (girl) in the next room will come and find the biscuits. Then you'll eat the biscuits, OK? Now, who'll hide the biscuits first?" The experimenter then chose who was to be the hider. The instruction took place in the hiding room in full view of the boxes and the keys.

There were four experimental conditions.

Experimental condition 4.1:

After introducing the two children to the game, the finder was led into the telling room and sat on the chair provided. The hider, who remained in the hiding room, was prompted to name the colour of each of

HIDING ROOM — video camera 1

TELLING ROOM — video camera 2

opaque screen

keys

r   y   b
R   Y   B

Hider

Finder

Experimenter

c-c

KEY

R - big red box.

r - small red box.

Y - big yellow box.

y - small yellow box

B - big blue box

b - small blue box

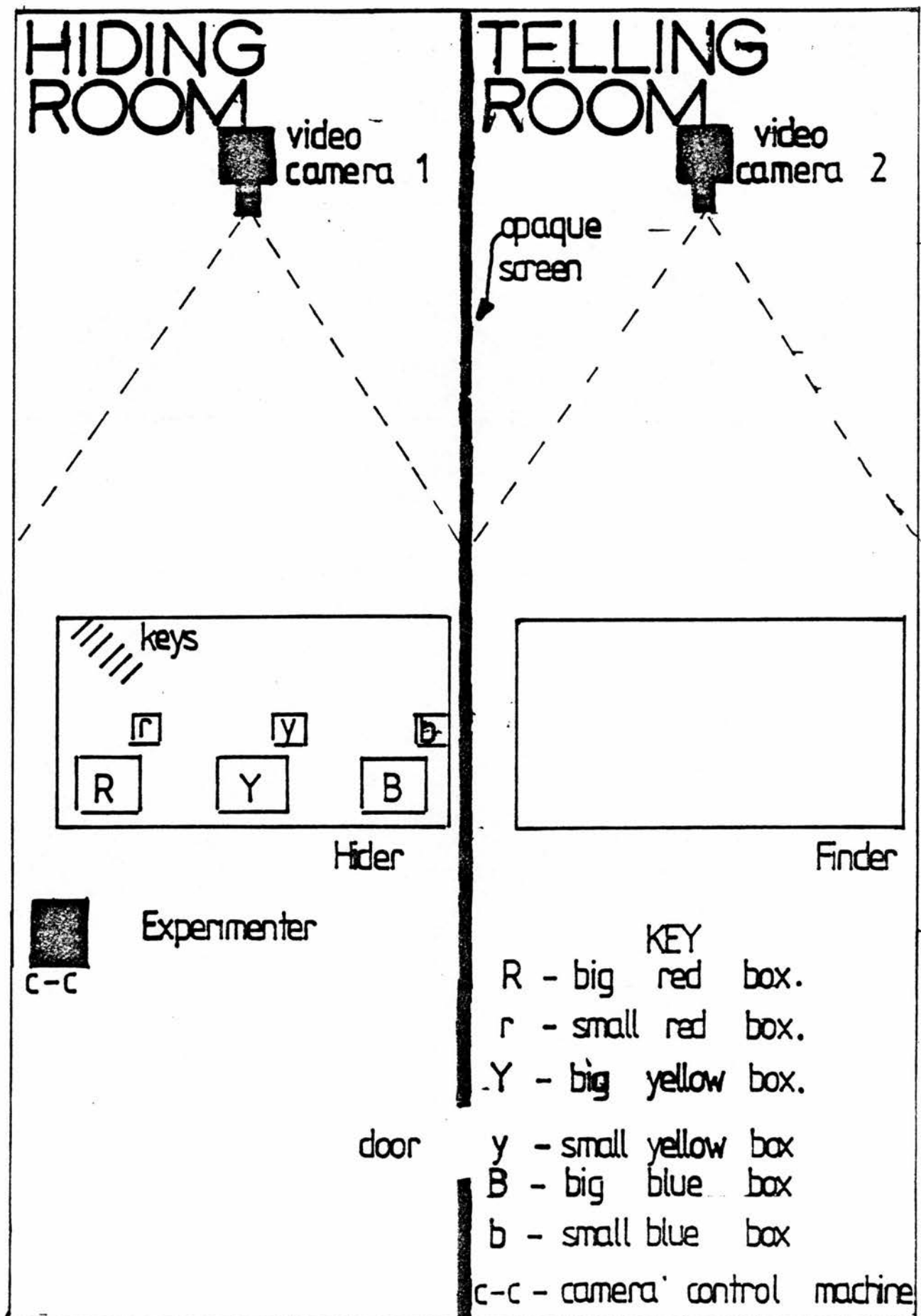c-c - camera control machine

door

Fig 4: 0: 1: The Experimental room

the six boxes with a "What colour is this?" from the experimenter who pointed to each box. Having ensured that the hider could name the colours of the boxes, the experimenter took a key and, putting it on top of the box matching it in colour and size, said, "This key opens this box, OK?", and "This opens this", matching another key with its box. The demonstration of two keys with their boxes was enough to provoke the child into matching all the remaining keys with their boxes. He was then asked to choose two biscuits from the supply tin which was thereafter put away. The hider then selected a box in which the biscuits were put. The box was locked and its key put in a heap with the other keys. The hider was then asked to go and help the finder retrieve the hidden biscuits. The instruction was as follows:

"Now, I want you to go and tell (the finder's name) where you've hidden the biscuits. Tell him properly so he can come and find them. If he finds them, you'll eat them. Now, tell him properly so he doesn't make a mistake, OK?". Four features had to be mentioned, the size and colour of both the key and the box.

Experimental condition 4.2:

The procedure for this condition was identical with that in 4.1 except that the biscuits were hidden in a small box which was put inside a big box of the hider's choice. Both boxes were locked, thus the task required the mention of eight features, the size and colour of two keys and two boxes.

Experimental condition 4.3:

This was similar structurally and procedurally to Condition 4.1 except that, after hiding the biscuits in one box, the hider was asked to "go and bring (the finder's name) here so you can tell him where you've hidden the biscuits. If he finds them, then you can eat them. Now, you must tell him properly so he doesn't make a mistake". This gave the hider the opportunity to prompt the finder in the course of his seeking.

Experimental condition 4.4:

This was similar structurally to 4.2 in the sense that the small box containing the hidden biscuits was put in a big box , and procedurally similar to 4.3, but, having brought the finder into the hiding room, the hider was in this condition asked to sit on his hands before telling the finder. The child-hiders were told the reason they were asked to sit on their hands was because it was not part of the game to point.

In Conditions 4.1 and 4.2 the finder was discouraged from using a trial-by-error strategy. If the experimenter had reasons to believe that the finder was stuck, he saved the game from collapse by sending the child back into the telling room to ask. The finder's trip was justified or motivated by the experimenter saying "Hey! You know something? I have an idea. Why don't you go and ask (the hider's name)?".

The experimenter helped with using keys to open or lock boxes if a child appeared to be in difficulty. Each child-pair got a warm-up session. In each true session the game lasted for as long as it took the children to work out the solution of the problem.

It was decided to restrict the study to the children in the nursery because of the unique experience offered by the story-telling routine and the advantages to the children of contact with several adults, mainly research students and staff. Moreover, it would have been difficult to set up the experiment with video-cameras and the two-room partition in a non-university nursery.

The use of a small population of subjects made it necessary to distribute the children into the experimental conditions using a schedule that minimised practice effect. The time schedule adopted allowed at least a two-week interval between roles. That is, children who served as hiders in one condition, with a particular age-group of

children as finders, were used two weeks later as finders with the former finders now acting as hiders. There was also at least a four week interval between conditions. Presentation of the four different conditions was counterbalanced. A summary of the design appears in Table 4.0.1.

The category system:

The behaviours of both the hiders and the finders were categorised on the basis of the two main semantic functions of language, that is descriptive and interpersonal (Lyons, 1977). Verbal and non-verbal events were used to put behaviours in the two categories. There was a third category which embraced the children's reactions to one another's questions and requests. These reactions were judged to be either adaptive or non-adaptive to the aims of the questions and behaviours which have provoked them.

I. The category of Descriptive Behaviour:

This embraced verbal and non-verbal signals relating to the identification of the box(es) containing the hidden biscuits. This included a description of the physical attributes like colour and size of the box(es) and key(s); the action to be performed (e.g. "You open the box") and the location of the box (e.g. "You go in there, in there the other room."). Non-verbal behaviours in this category included using the hands to describe the size of the boxes when hider is in the telling room with finder, or pointing at the box when both children are in the hiding room.

II. The category of Inter-personal Behaviour:

These are behaviours which serve to establish and maintain social relationships. We recognised five sub-categories dealing with:

1. Attention - getting behaviours

2. Distance - reduction behaviours

TABLE 4.0.1

(Summary of the design, showing directions in which the test was
run with different pairs of subjects, as well as the main
characteristics of each experimental condition.)

Experimental Condition	Characteristics of each Condition	Age of Hider/Finder in each Condition
4.1	Target: One box of six	✱ 5 → Adult; 5 → 4; 5 → 3/4 → Adult; 4 → 5; 4 → 3/3 → Adult; 3 → 5; 3 → 4.
4.2	Target: Small box inside one of three big boxes	5 → Adult; 5 → 4; 5 → 3/4 → Adult; 4 → 5; 4 → 3/3 → Adult; 3 → 5; 3 → 4
4.3	As in 4.1, but hider and finder together with the boxes	5 → 3; 3 → 5/3 → 3; 5 → 5
4.4	Small box in one of three big boxes. Hider and finder together with the boxes, but hider not allowed to point	5 → 3; 3 → 5/3 → 3; 5 → 5

✱ Base of arrow indicates age of the hider and the head of arrow
the finder.

═══════ Represents an interval of at least four weeks.

3. Identification of motives and states of awareness

4. The regulation and control of behaviour

5. Pointing to indicate direction in which the required
   action is to take place.

We shall discuss each sub-category in some detail.

1. Attention-getting:

This included devices for obtaining the attention of the addressee.
Verbal devices used for this purpose are, calling the name of addressee,
saying "hey", "listen", etc. Non-verbal examples included eye-contact,
touching and orienting the body of the addressee toward the speaker.

2. Distance-reduction:

These are behaviours indicating 'closeness' between the hider and
finder. Examples are 'moving and getting close to addressee', 'smiling
to addressee', etc.

3. Psychological identification (dealing with motives,
   intentions and states of awareness):

Comprised of behaviours indicative of a recognition that other
persons have psychological attributes like state of readiness ("Are you
ready?"); Intentions ("Do you want to ...?"); Capabilities and Limita-
tions of ability ("Do you think you can do it?") and limitations of
memory ("I'll tell you twice, so you don't forget."), etc.

4. Regulatory or control of action:

This dealt with the actions of the hider when he is instructing the
finder. Did the finder listen and wait till the hider had finished, and
did he (the finder) acknowledge receipt of information given by the
hider? And if so, is the finder's restraint voluntary or is it forced
by the hider? (e.g. holding the finder to make him wait and listen or
saying to him "Don't go ...").

5. Pointing:

Those are hand gestures indicating to the finder the direction of the hiding room. They may be accompanied by verbalizations such as "In there ...", "Go in the other room ...".

III. The Category of Reactions to Questions and Requests:

This had two sub-categories, adaptive and non-adaptive responses.

Included under Adaptive responses are monitoring behaviours. These are behaviours showing that the hider was following the finder mentally into the hiding room. Because the two rooms were separated by a thin sheet of plywood, the hider could hear (but not see) the goings-on in the hiding room. Such 'eaves droppings' led some hiders to contribute and supply needed information from across the floor. Some hiders' questions to finders also qualified for entry into this sub-category if they were suggestive of aiding the finder's search. E.g. to a finder who had come to ask the hider where the biscuits were, "Did you not look in ...?". The greatest bulk of adaptive reactions though, were hiders' responses to questions from the finder. These responses were answers giving more or new information.

The non-adaptive responses were repetitions, no-responses and those that were plainly irrelevant or unhelpful to the questions and needs of the finder.

RESULTS

Three general questions guided our analyses. These are related to:

1. How a hider attempts to get a finder to act in the interest of his (the hider's) aims. This presupposes that the hider is capable of diagnosing the capabilities of the finder. It also presupposes that the

hider can act in ways which are sufficiently suitable to persuade and encourage the finder to act in accordance with his aims.

2.   The ability of the finder to <u>attend</u> to the hider's instruction and use the information contained therein to guide his action to the goal, which is the retrieval of the hidden biscuits.   If the finder runs into difficulties either with understanding the instruction or with using it to effectively guide his search, he must be able to give an indication to this effect.

3.   The problem that arises when a hider misjudges either the capabilities of a finder, or the suitability of the mode that he (the hider) has selected in conveying his instruction or request.   In order to overcome this problem, the hider must be able to re-organize his cognitive and communicative resources to adapt to the new knowledge concerning the finder's capabilities or the adequacy of his earlier mode of instruction.   To come to this new knowledge, the hider may have to rely on feedback from the finder.

The hider's initial instructions:

    In order to answer question (1) above, we examined the hiders' initial instructions to the finders and found that the number of critical features contained in the initial instruction of three-year-old hiders both on the 4-feature task (i.e. experiment 4.1) and the 8-feature task (experiment 4.2) was low, achieving the grand mean proportion of 0.23 and 0.27 respectively.   The grand mean proportion of the number of critical features to the required, was higher in the two experiments for the 4-year-old hiders, 0.56 and 0.39.   This ratio was highest among the 5-year-olds, amounting to 0.87 and 0.71 in experiments 4.1 and 4.2 respectively.   This is shown in Tables 4.1.1 and 4.2.1.

TABLE 4.1.1

Mean Proportion of critical features in the initial instruction
of hiders to three age groups of finders on the 4-feature task.

Hider groups	Finder Groups				Grand Mean Proportion
	3 yr. old	4 yr. old	5 yr. old	Adult	
3 yr. old	-	0.3	0.18	0.23	0.23
4 yr. old	0.53	-	0.7	0.45	0.56
5 yr. old	0.68	0.92	-	0.95	0.87

TABLE 4.2.1

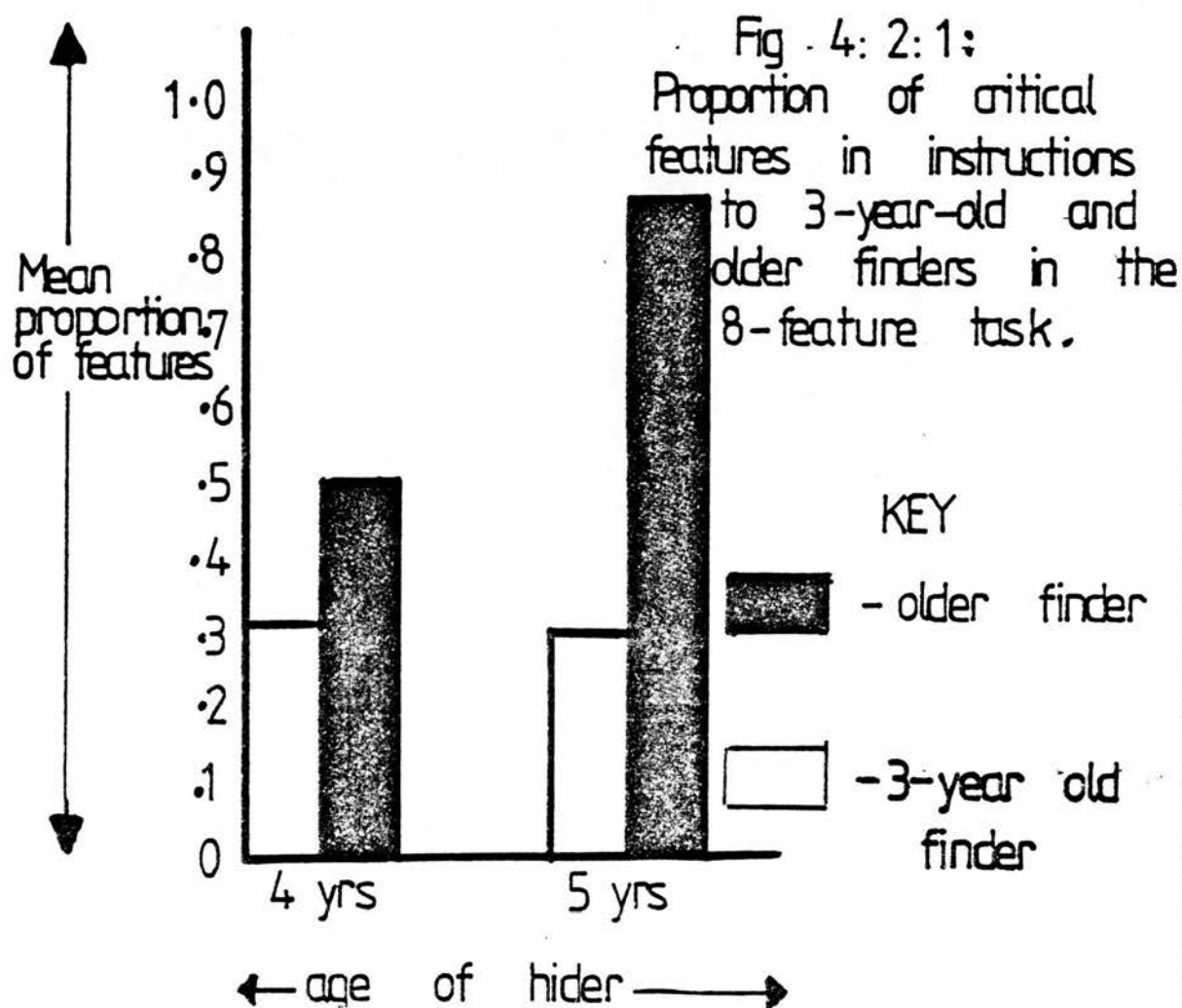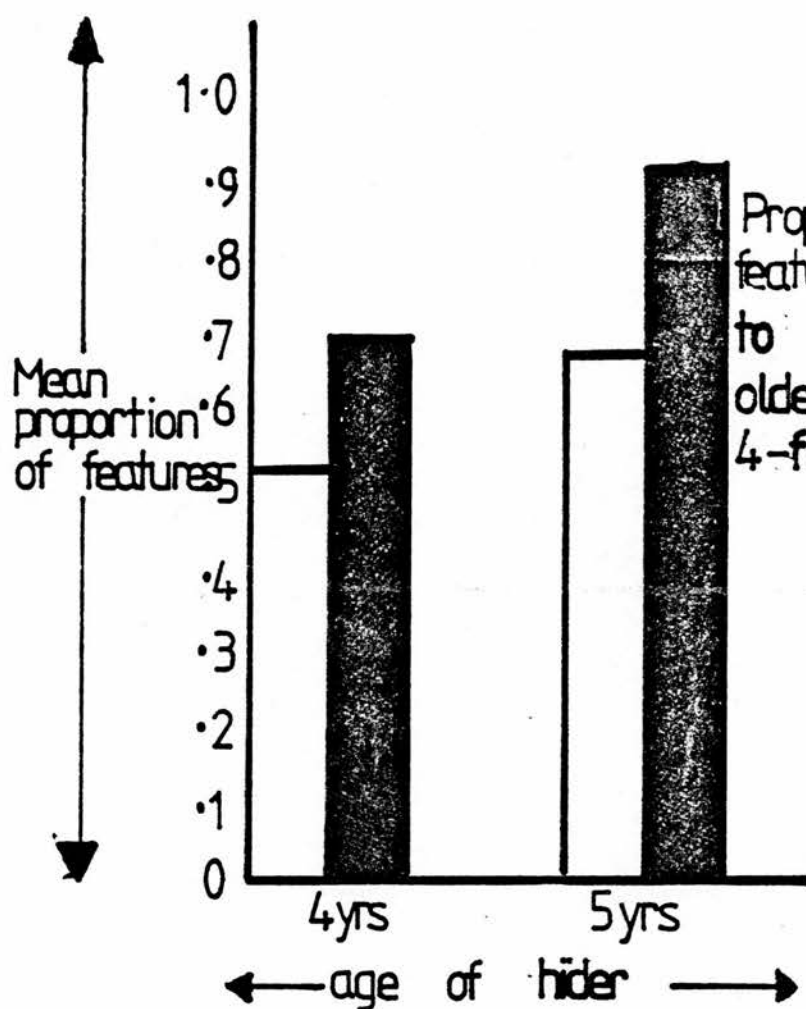Mean Proportion of critical features in the initial instruction
of hiders to three age groups of finders on the 8-feature task.

Hider Groups	Finder Groups				Grand Mean Proportion
	3 yr. old	4 yr. old	5 yr. old	Adult	
3 yr. old	-	0.25	0.27	0.3	0.27
4 yr. old	0.31	-	0.5	0.35	0.39
5 yr. old	0.3	0.87	-	0.95	0.71

But of more interest and relevance to question (1) is how the hiders gave information to the various finder groups. Is the information given in such a manner as to suggest that the hiders attribute different handling capacities to the finders on the basis of age?

In an attempt to answer this question, we compared the amount of information in the hider's instruction to the youngest finders (i.e. the 3-year-olds) with those in the instruction to older finders. We found that the 4-year-old hiders gave less information to 3-year-old finders than to 5-year-olds on both the 4-feature as well as the 8-feature tasks. Using the Wilcoxon T test, these differences were found to be statistically significant ($T = 4.5$, $p < .025$, one-tailed on the 4-feature task; $T = 5$, $p < .025$, one-tailed on the 8-feature task). 5-year-old hiders similarly gave less information to 3-year-old finders than to the 4-year-olds on both tasks. These differences were also confirmed statistically ($T = 7.5$, $p < .025$, one-tailed for both conditions). These results are shown in Figures 4.1.1 and 4.2.1 for the 4- and 8-feature tasks respectively.

In fact, the information in the 5-year-olds' instructions increased as a function of the age of the finders in both conditions (see Tables 4.1.1 and 4.2.1). This also held true for the 4-year-olds' instructions when paired with 3- and 5-year-old finders. It is possible that the hiders gave little information to the 3-year-old finders in the belief that they could handle only a little of the required features at a time. It is also possible that they could have expected the young finders to act first on the given information and come to ask for the rest. In order to test the latter suggestion, we looked at the post-initial-instruction behaviours of the hiders when paired with young finders and we found among other things, that the hiders monitored the performance of the young finders in the hiding room and supplied more information to

Fig. 4:1:1: Proportion of critical features in instructions to 3-year-old and older finders in the 4-feature task.

Fig. 4:2:1: Proportion of critical features in instructions to 3-year-old and older finders in the 8-feature task.

KEY

- older finder

- 3-year old finder

the finders as they went along. We shall come to discuss this more
fully when we consider the hiders' reactions to the finders' questions
and requests. For the moment we want to leave aside the issue of the
amount of information in the hider's instruction and look at those other
behaviours of the hider that accompanied his instruction. It is to be
recalled that our category of inter-personal behaviour comprises
attention-getting and distance-reduction devices, psychological identi-
fication of motives and state of awareness, regulation/control of
action, and pointing to indicate direction. Are there differences in
the frequency of use of these behaviours by the hiders, to young and
older finders?

Our results indicate that this is so. Tables 4.1.2 and 4.2.2 show
that where the behaviours occur, the hiders used them significantly more
often with the 3-year-old finders than with older finders. That is, when
the hiders were working with the younger finders, they used pointing to
indicate the direction of the hiding room, employed attention-getting
devices, reduced both the physical as well as the psychological distance
by moving toward and smiling to the finder, restrained the impatient
ones in an attempt to get them to listen, and asked about their ability
and readiness to play the game. These findings, together with the
paucity of descriptive features in the hider's instruction to the young
finders, suggest that the hiders were co-operating in special ways that
are likely to ensure successful performance by the younger finders.

The Responses of finders to the hiders' initial instructions:

The hiders in their initial instructions were solicitously controlling
the younger finders by restraining and directing their communicative
resources to the requisite demands of the game. Examples of these
demands include attentiveness, directionality and a readiness to act on

TABLE 4.1.2

Frequency of Inter-personal Behaviour Categories Accompanying
the Hider's Initial Instruction to 3 Finder Groups in
Condition 4.1

Behaviour	Hider Group	Finder Groups				Q value	df = 2
		3	4	5	Adult		
Pointing (to indicate direction of hiding room)	4	4	–	0	0	8	P< .02
	5	5	0	–	0	10	P< .01
Attention-Getting Devices	4	5	–	0	0	10	P< .01
	5	8	3	–	0	12.25	P < .01
Distance-Reduction Devices	4	7	–	0	0	14	P < .001
	5	9	0	–	0	18	P < .001
Psychological identification of motives ...	4	0	–	0	0	0	–
	5	3	0	–	0	6	P < .05
Regulation or control of finder's actions (eg holding to restrain)	4	0	–	0	0	0	–
	5	3	0	–	0	6	P < .05

Read the table thus: (Q = Cochran Q_{test})

4 out of 10, 4-year-old hiders pointed to indicate direction to
3-year-Old finders. None pointed when paired with 5-year-old and
adult finders.

5 out of 10, 5-year-Old hiders pointed to 3-year-old finders. None
to 4-year-old and adult finders. This difference is significant at
.01 level.

TABLE 4.2.2

Frequency of Inter-personal Behaviour Categories Accompanying
the Hider's Initial Instruction to 3 Finder Groups in
Condition 4.2

Behaviour	Hider Group	Finder Groups				Q value	df = 2
		3	4	5	Adult		
Pointing (to indicate direction of hiding room)	4	7	–	0	0	14	P<.001
	5	8	0	–	0	16	P<.001
Attention-Getting Devices	4	10	–	0	0	20	P<.001
	5	10	10	–	5	10	P<.01
Distance-Reduction Devices	4	10	–	0	0	20	P<.001
	5	10	2	–	0	16.8	P<.001
Psychological identification of motives ...	4	0	–	0	0	0	–
	5	0	0	–	0	0	–
Regulation or control of finder's actions (eg holding to restrain)	4	0	–	0	0	0	–
	5	4	0	–	0	8	P<.02

the basis of the information contained in the instruction. Now, how
many of these demands can the young finder meet without the benefit of a
helping hand from the hider? Specifically, how much control does the
3-year-old finder have over his attentional resource compared with the
4- and 5-year-old finders?

In order to answer this question, we created from our data an
identical instruction-situation for both the young and older finders.
This we did by dividing all of the hiders' instructions into two types,
one comprising those with half or more of the required number of critical
features, the other made up of instructions containing less than half.
We shall refer to the former type of instruction as "complete" because they
contain all the information necessary to find the biscuits, or at least
enough to lead to an intelligent search. For example, mentioning the
colour and size of the critical box may lead a finder to select a key on
the assumption of a correspondence between the colour and the size of key
and box. The other type of instruction shall be referred to as
"incomplete". On receiving an incomplete type of instruction, we
expected a finder to hesitate and wait in anticipation of further develop-
ment of the instruction. It was also expected that the finder might ask
for information that was withheld by the hider.

To use our earlier example, a finder might want to be told which key
opened the mentioned box. To summarize, our strategy was to assess the
finder's control of his attentional resource by counting the number of
finders who:

(1) voluntarily delayed attending to incomplete instructions
and (2) asked questions about what he (the finder) thought the hider might
have omitted.

As shown in Figure 4.1.2, the proportion of delayed responses in

Fig. 4·1·2: Proportion of questions and delayed-responses by finders to incomplete instructions on the 4-feature task.
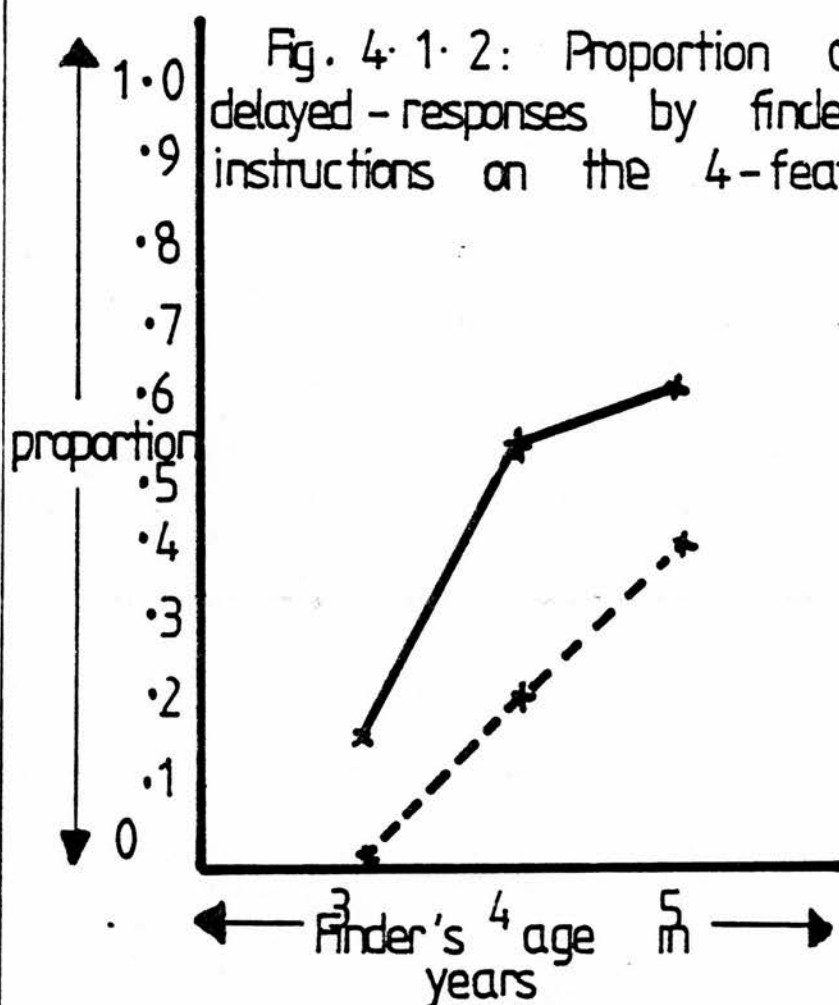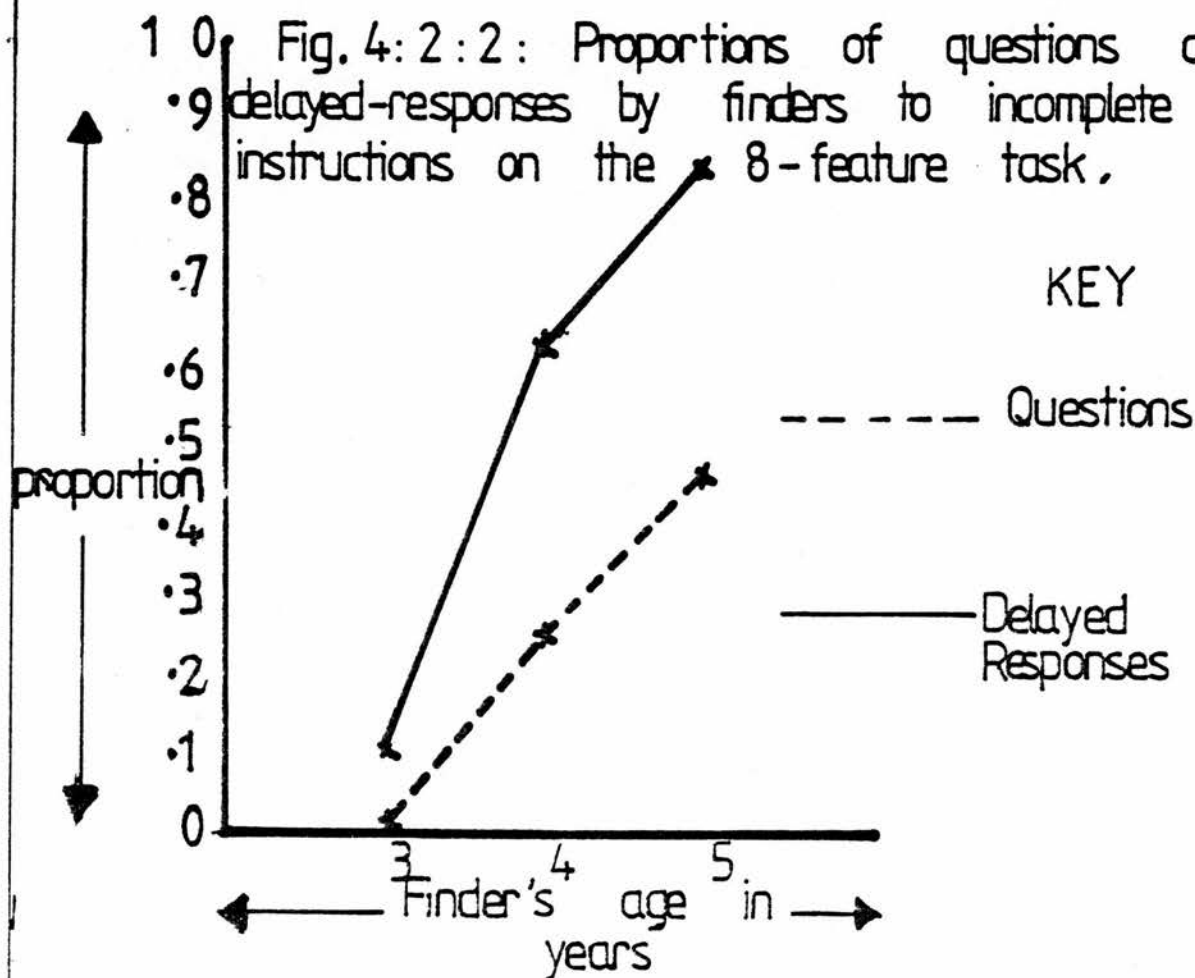

Fig. 4:2:2: Proportions of questions and delayed-responses by finders to incomplete instructions on the 8-feature task.

KEY

– – – – – Questions

———— Delayed Responses

hiders receiving incomplete instruction increased with age - there being three voluntary delays among the 3-year-old finders to 17, incomplete instructions; ten, among the 4-year-olds to 18 inadequate instructions and also ten among the oldest group of finders to 16 incomplete instructions in the 4-feature task. The number of questions asked by the finders also increased as a function of age.

A similar result was found on the 8-feature task in which two delays were effected by the 3-year-olds to 20 incomplete instructions, 10 from 4-year-old finders to 16 incomplete instructions and 17 delays from 5-year-olds to 20 incomplete instructions. Again, the number of questions asked by the finders increased with age. This is shown in Figure 4.2.2. These results indicate a greater control over attentional behaviours with age.

The Finder's Questions:

We turn now to the analysis of the finder's behaviour subsequent to his acting on the information first given by the hider. It should be emphasised that finders were discouraged by the experimenter from opening more than one box at a turn. This was to ensure that the finder acted mainly on the hider's instruction. We expected that those finders who had not been adequately instructed or those who had forgotten some of the relevant information given, or those who had not received the hider's instruction because of impatience or distraction, etc., would have three options to them, viz:

(a) Return to ask the hider

(b) Ask the experimenter

or (c) Remain stuck.

In the case of (a), the finder's questions were regarded as spontaneous. In (b), the experimenter said it was not his part of the

game to tell. The finder could, thereafter, use option (a) or (c).
If (a), his questions were considered spontaneous. If (c), the
experimenter 'saved' the situation from collapse by suddenly presenting
the idea that the finder could go and ask the hider. Questions ensuing
under (c) were regarded as provoked. Hence, questions were generated
either spontaneously or under provocation. Apart from the issue of
spontaneity of feedback, our analysis also included the type of question
used. We were concerned to see how specific or 'prompt' such feedback
would be. This is to be contrasted with 'open' or general types of
question-feedback. As discussed in chapter 3, an open question is a
device aimed at discovering the information required to fill a gap in
the questioner's knowledge system. For example, "Where's the biscuits?"
assumes the biscuits are somewhere, but the questioner does not know
where. A prompt question on the other hand, implies that the questioner
is aware of possible whereabouts of the biscuits and demands a denial or
confirmation of the hypothesized location. For example, "Are the
biscuits in the little red box?". Our interest in the specificity of
question-feedback arose from our suggestion in chapter 3 that by the
nature of the answers appropriate to prompt questions, they are relatively
easier to handle by young answerers. If this were so, one would expect
helpful and co-operative finders to direct more prompt than open questions
to very young hiders.

As expected, the three-year-old finders appeared not to know what
they could do after failing to find the box containing the biscuits.
Most of them appeared to lose interest in the game, or had their attention
distracted and switched onto something irrelevant to the purpose of the
game (e.g. building towers with the boxes). Consequently, all of the
70-odd questions from them were provoked. This was not the case with
the older finders. 93.9% (77 out of 82) of questions from the

4-year-old finders were spontaneous, and only 6.1% (5 in 82) provoked.
88.7% (63 out of 71) of questions from 5-year-old finders were spontaneous,
whilst only 11.3% (8 in 71) were provoked.   Naturally, all adult finders'
questions were spontaneous.   It is interesting to note that all of the
4- and 5-year-old finders' questions to 3-year-old hiders were spontaneous.
The few provoked questions from these finders were directed to older
hiders.   In other words, 4- and 5-year-old finders did not hesitate in
asking questions from 3-year-olds, but to older children, they were not
always so willing.   It is also of some interest that the greatest number
of questions from 4-, 5-year-olds and adult finders occurred when each
was paired with three-year-old hiders as shown in Figure 4.1.3.   This
relates to the relative poverty of the initial information (the descriptive
features of the critical box and keys) contained in the instruction of
three-year-old hiders (see Table 4.1.1).   Spontaneity of finders'
questions in experiment 4.2 (i.e. the 8-feature task) is roughly identical
to the profile above except that, as shown in Figure 4.2.3, the 3-year-old
finders' questions included 20 spontaneous ones, i.e. about 15% of the
number of questions produced by them.   A small proportion of the 4- and
5-year-olds' questions were provoked, 6.9 and 5.2 percent respectively.

With respect to the type of questions used by the finders, we found
that in experiment 4.1, all of the 3-year-olds' questions were of the
open type.   The 4- and 5-year-olds produced roughly equal proportions of
open and prompt question types - 51.2% and 48.8% respectively in the case
of 4-year-olds;   and 53.5% and 46.5% respectively for the 5-year-olds.
But all of the prompts of the 4-year-olds as well as those of the 5-year-
olds were produced when they had 3-year-old children as hiders.   Further-
more, the older finders each directed more prompt than open type questions
to the young hiders.   This is shown in Figure 4.1.4.
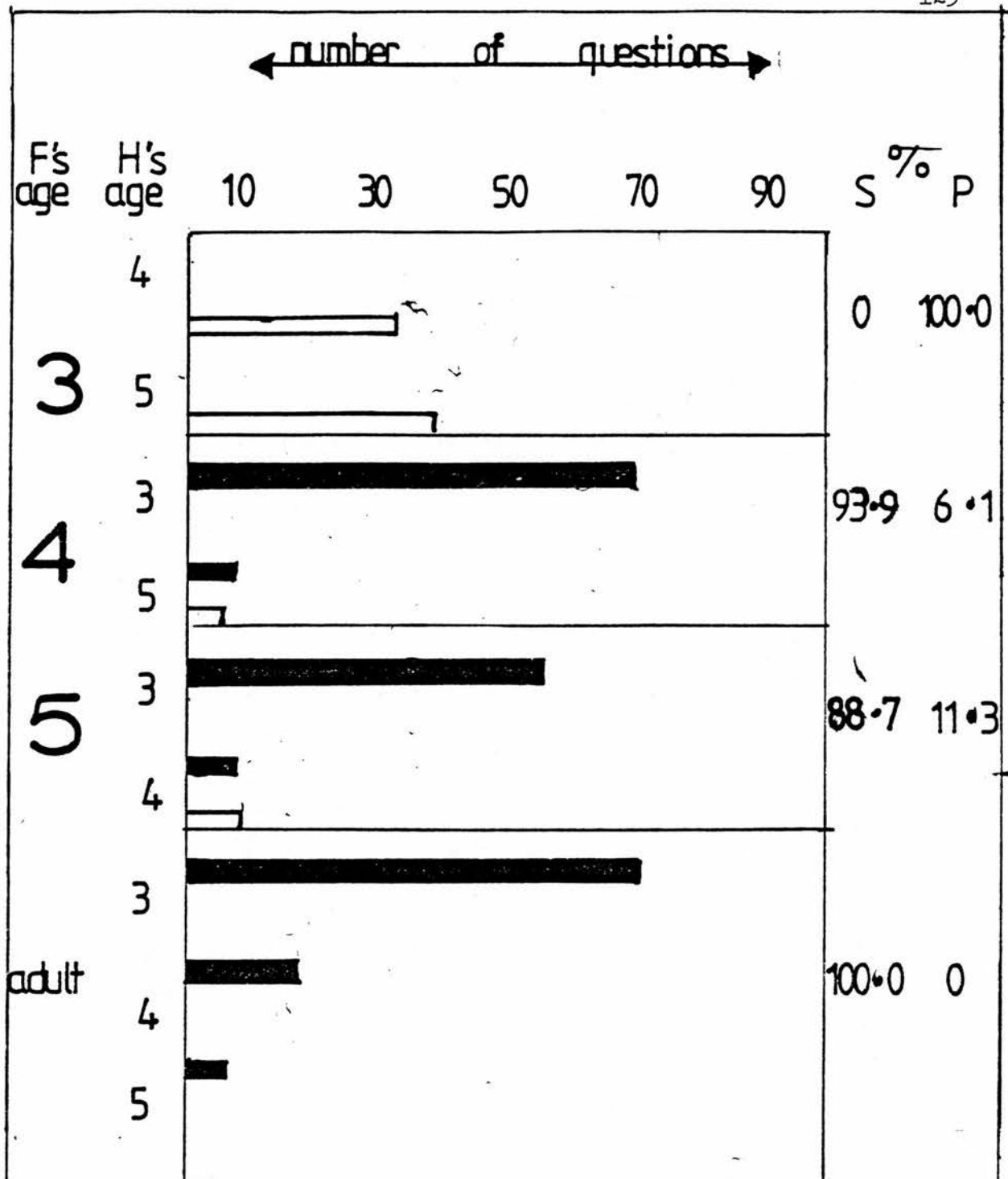
Fig 4:1:3: Distribution of Finders' Spontaneous and Provoked Questions to 3 age groups of hiders in the 4-feature task.

KEY

▬▬▬	Spontaneous questions (S)
☐☐☐	Provoked questions (P)
F	Finder
H	Hider
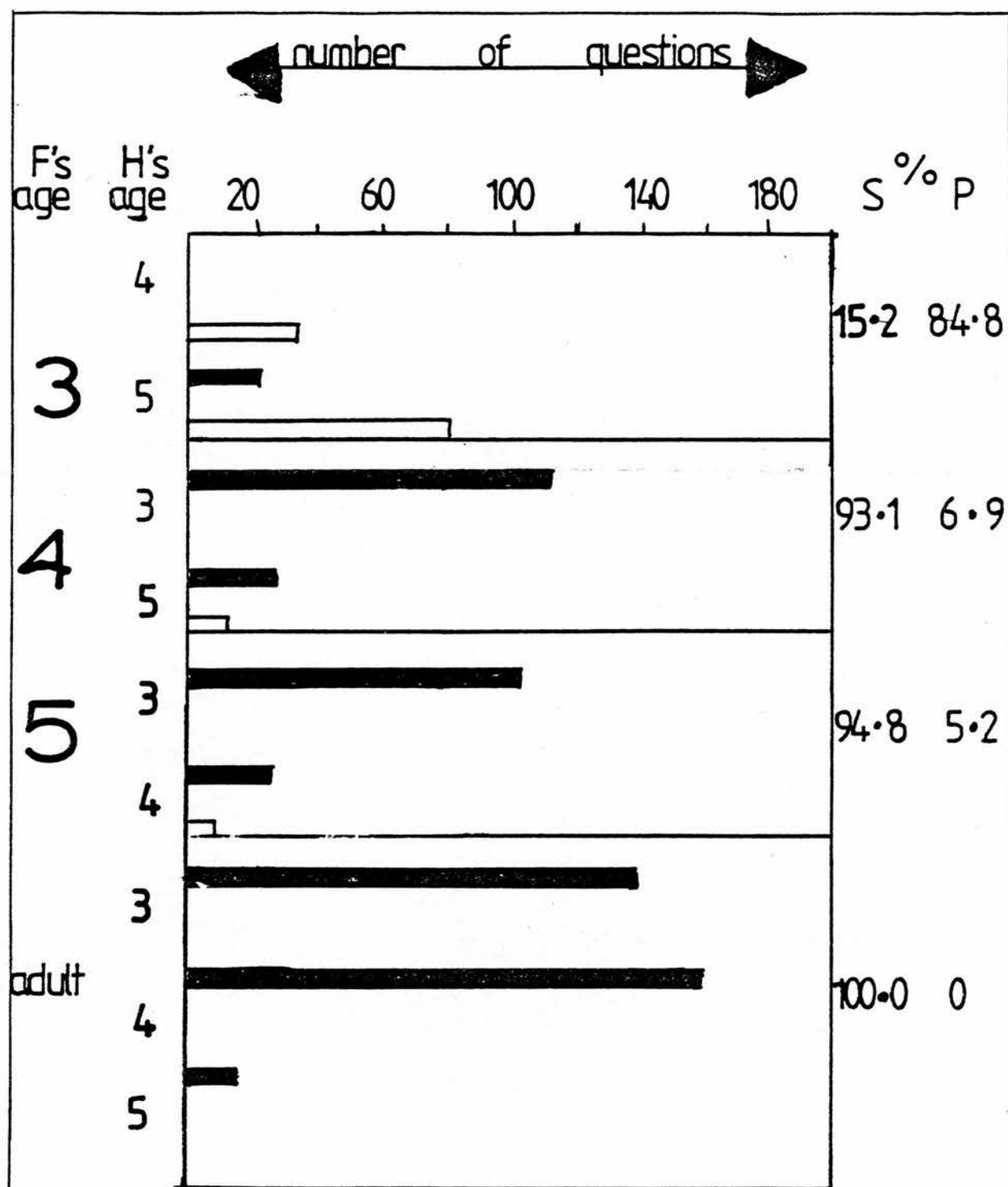
Fig 4·2·3: Distribution of Finders' Spontaneous and Provoked Questions to 3 age groups of hiders in the 8 - feature task

KEY

▬▬▬	Spontaneous questions (S)
▭▭▭	Provoked questions (P)
F	Finder
H	Hider

Fig. 4:1:4 : Distribution of Finders' Open and Prompt Questions to 3 age group of hiders in the 4-feature task.

KEY

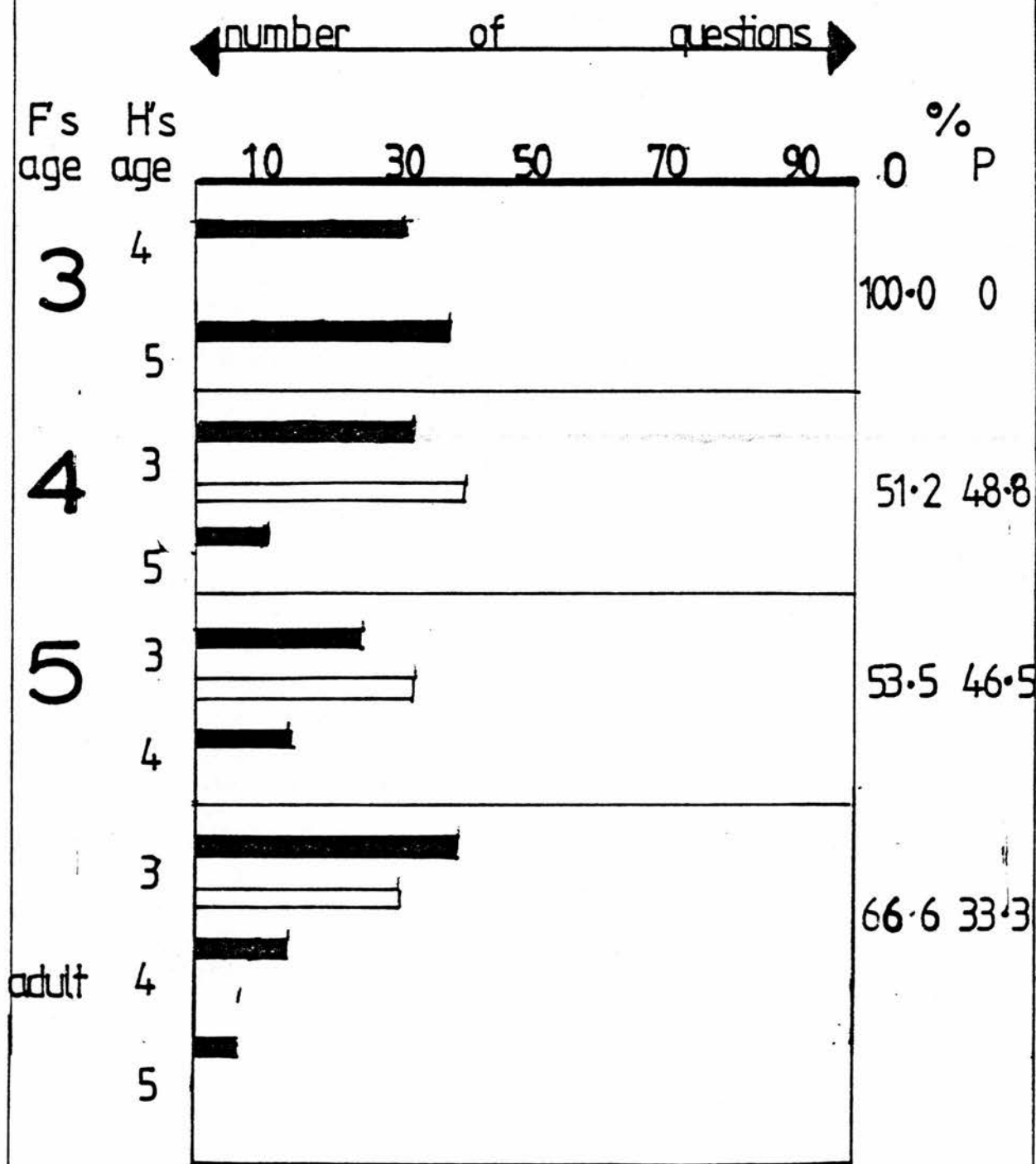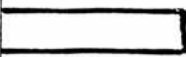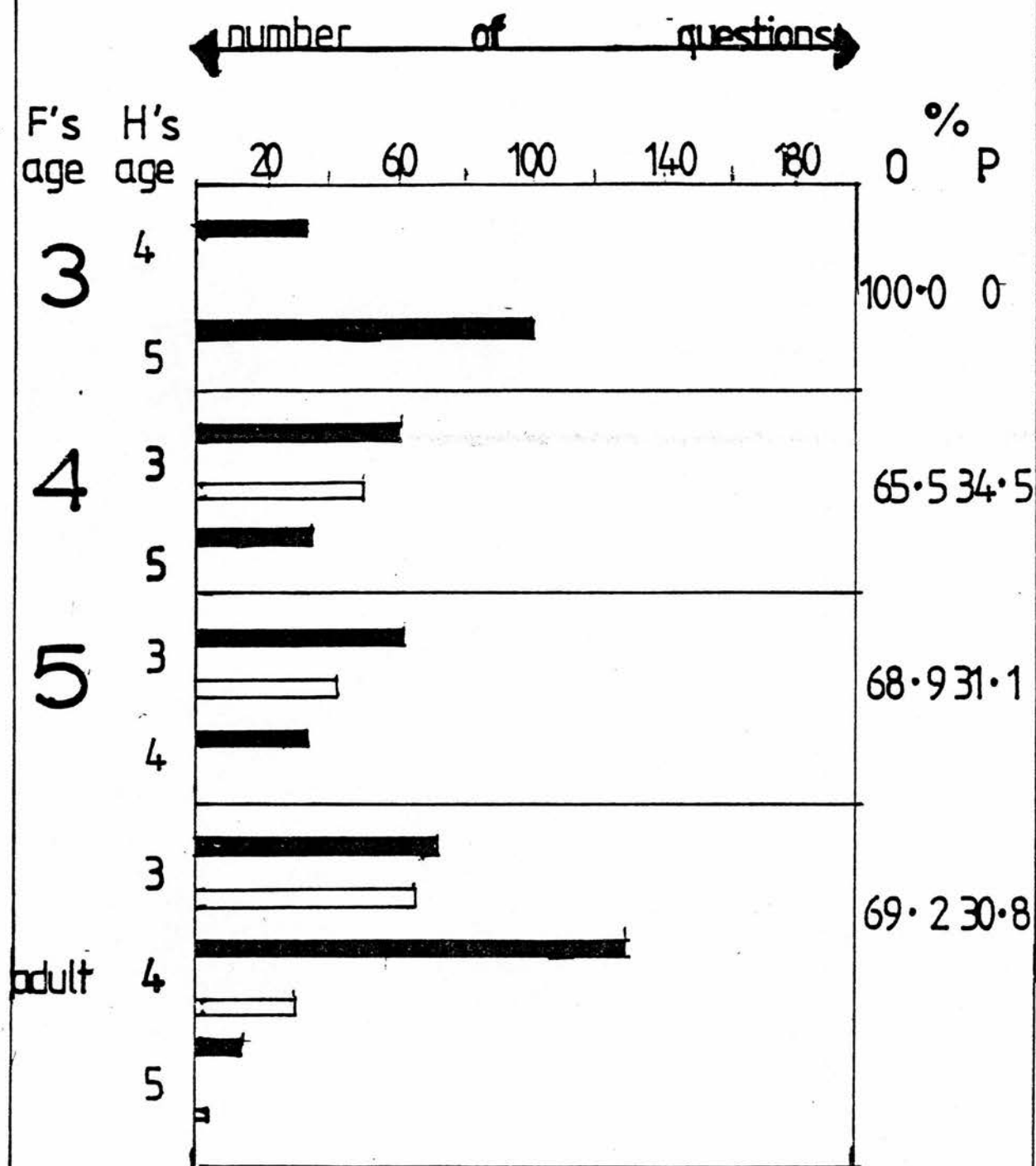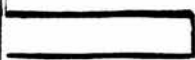|	
▬	Open questions (O)
▭	Prompt questions (P)
F	Finder
H	Hider

Fig. 4:2:4: Distribution of Finders' Open and Prompt Questions to 3 age group of hiders in the 8-feature task.

KEY

�	Open	questions (O)
□	Prompt	questions (P)
F	Finder	
H	Hider	

The above results compare in some respects with those found in experiment 4.2. Here too, all of the 3-year-olds' questions were open. But, unlike the results of experiment 4.1, there were more open type questions than prompts to the 3-year-old hiders from both 4- and 5-year-old finders. However, it is still noteworthy that all of the older children's prompts were produced when they were paired with 3-year-old hiders. (See Figure 4.2.4.) From the evidence, it appears that the older children as finders, understood more than the younger ones, some of the purposes to which different types of questions could be put. This they did voluntarily and efficiently, especially when they had younger children as their partners.

We come now to the question of how the hider responded to feedback from the finder. We dealt with two broad categories of responses. The first comprised those hiders' responses which satisfied or attempted to satisfy the aims of a finder who posed a question or made a request. Such responses will basically provide information about the colour, size, location, etc. of the boxes and keys as they were required by the finder's questions. Included also in this category were unsolicited but relevant information from hiders, based on the monitoring of the finder's performance in the hiding room. In other words, two types of responses were covered in this class, one based on actual, the other on inferred finder-needs. This category will be referred to as adaptive.

The second category, which will be called non-adaptive, comprised of irrelevant and repetitive responses, or plain refusal to respond.

Our analysis revealed that prompt questions were highly successful at eliciting adaptive responses from all the children. In both experiments 4.1 and 4.2, only 2.7% (7 out of 260) of such questions failed to draw adaptive responses from the 3-year-old hiders. All 31 of similar questions to the 4- and 5-year-old hiders elicited adaptive responses.

Non-adaptive responses to open questions were, in both experiments, highest amongst the 3-year-old hiders, amounting to 68.0 and 54.4 percent in experiments 4.1 and 4.2 respectively. This was followed by the 4-year-olds, with 10.2 and 27.3 percent. The 5-year-old hiders produced only 12.8% (19 out of 149) non-adaptive responses in experiment 4.2, none to 54 open questions in experiment 4.1. These findings are given in Tables 4.1.3 and 4.2.3. They show that with very young children, the more specific the form of an enquiry, the greater the chance of it eliciting information which is direct, relevant and satisfactory to the aims of the questioner. General and less specific queries tended to elicit non-adaptive responses from the younger children perhaps because such queries did not indicate probable domains of adaptive responses.

In the two experiments, repetition accounted for most of the non-adaptive responses, it being responsible for 54.5, 71.2 and 84.2 percent among the 3-, 4- and 5-year-olds respectively. Refusal-to-answer contributed 29.8, 20.3 and 15.8% to the non-adaptive responses in the respective age-groups.

We observed that the older children gave some unsolicited aids only to 3-year-old finders and not to one another. There were 26 and 29 of such proffered helps in experiments 4.1 and 4.2 respectively. It will be recalled that our category system of the hider's responses to the finder's questions and requests, allowed us to score unsolicited aids as adaptive.

It would appear from the results in experiments 4.1 and 4.2 that in a situation of joint enterprise, older children seem to <u>show</u> their communicative skills best when they are working with younger children than with children their own age. Their treatment of 3-year-old children

TABLE 4.1.3

Hider's Responses to Open and Prompt Questions in Experiment 4.1

Hider Age Groups	Hider Response	Open		Prompt	
		N	%	N	%
3	Adaptive	31	31.95	102	99.0
	Non-adaptive	66	68.0	1	0.97
	TOTAL	97		103	
4	Adaptive	53	89.8	-	-
	Non-adaptive	6	10.2	-	-
	TOTAL	59			
5	Adaptive	54	100.0	-	-
	Non-adaptive	0	-	-	-

TABLE 4.2.3

Hider's Responses to Open and Prompt Questions in Experiment 4.2

Hider Age Groups	Hider Response	Open		Prompt	
		N	%	N	%
3	Adaptive	88	45.6	151	96.2
	Non-adaptive	105	54.4	6	3.8
	TOTAL	193		157	
4	Adaptive	141	72.7	30	100.0
	Non-adaptive	53	27.3	-	-
	TOTAL	194		30	
5	Adaptive	130	87.2	1	100.0
	Non-adaptive	19	12.8	-	-
	TOTAL	149		1	

demonstrates a knowledge of the young one's capabilities, needs, as well as how best to tap those capacities and satisfy their needs. This came out clearly in how they approached the young children prior to and during the initial instruction; and how they used particular forms of questions to elicit information from them. We would like to suggest that the older children's performance, in so far as it is based on the awareness of the demands of the game and how to help the young children cope with these demands, implies some degree of self-control on their part. By self-control is meant the ability to proceed from means to ends in a manner that is relatively free from distractions. Within the context of experiments 4.1 and 4.2, self-control would be relatively difficult to exercise because two ends or purposes would have to be considered and planned for, in what the child says and does. One such purpose would be that of his partner, the other, his own.

As we have shown, the older children helped the younger ones restrain their natural impulse to act and furthermore, by asking prompt questions, directed their attention to the specific need-areas of the game.

But to talk about control is to imply a decision, or a choice. Experiment 4.3 was carried out to determine which system of communication would be chosen by a hider to describe the boxes containing the biscuits, when the boxes are visible to both of them. It was assumed that the gestural as well as the verbal systems of communication are already available to children at the age of three years. Experiment 4.4 investigated how much control the child had over his gestural system. It will be recalled that only 3- and 5-year-old children were used on both experiments and that in experiment 4.4, the hiders were asked to sit on their hands so that they could not point.

The instructions of all hiders to 3- and 5-year-old finders in
experiment 4.3 were pooled and examined for incidence of pointing and
the specification of the physical attributes of the boxes and keys.   It
was found that only 10% (2 out of 20 cases) of the 3-year-old hiders'
instructions specified either the colour or the size of the target box.
The remaining 90% were pointings augmented occasionally with verbal
directives such as "there", "In there" or "that one".   30% (6 cases in 20)
of the 5-year-old hiders' verbal instructions specified at least one of
the physical features of the box.   The rest of their instructions was
either pointing or touching.   The two groups of hiders did not differ
significantly in their choice of instruction mode - both employing
pointing more frequently than giving verbal descriptions.   The number
of cases giving at least one verbal attribute (colour or size) in their
description was 2 among the younger hiders and 6 among the older children.
The difference was non-significant (x^2 = 2.50, p $>$ .05).   It was also
observed that all cases specifying the physical features occurred in
response to hesitations by the finder.   That is, they were reformulations
of previous gestural descriptions.   It does appear that the children
relied more on pointing and touching than giving colour or size in
identifying the critical box, when it was present for both the hider and
finder to see.

In experiment 4.4, the biscuits were hidden in a small box which was
then put in a bigger box.   The 3-year-old hiders had difficulty in
complying with the instruction which was that they sat on their hands and
not point.   In telling the finder, they either pointed at, or touched
the target box.   The older children, on the other hand, complied with the
instruction.   In 16 cases out of 20, they leaned forward in their seat
and, moving their heads in the direction of the target box, verbalized
the colour and size of the box.   The difference in the frequency of pointing

in the two groups of children was significant (x^2 = 26.6, p < .001).

However, the superiority of the older children over the young ones in terms of the degree of control they exercised on pointing, vanished with the opening of the big box. No sooner did the finders identify the big box and open it, than the hiders got up from sitting on their hands to point at, touch, or select the appropriate key to the small box. Hence, although the older hiders complied with the experimental instruction by inhibiting their natural urge to point, it was difficult for them to sustain this control when the goal was nearly achieved.

SUMMARY OF FINDINGS AND DISCUSSION

In experiments 4.1 and 4.2, the older children as hiders were listener-oriented in their instruction to younger finders. They moved toward them, sought and sustained their attention, in some cases restrained the impatient ones, pointed in the direction of the hiding room, generally reduced the psychological distance through smiles and close physical proximity. Even with the departure of the young finder into the hiding room, the older hiders maintained a 'mental' contact with him, inferring and attempting to satisfy his needs. As finders, they were patient and controlled when receiving instruction from the hiders and they spontaneously asked the hiders for more information as the need arose. Furthermore, the questions that were asked of the younger hiders were specific, thus effectively anticipatory of adaptive response.

The performance of the 3-year-old children contrasted sharply with our report of their communicative behaviour in the story-telling context (see chapter 3). In the story-telling, spontaneous questions freely came from the 3-year-olds. In fact, all 96 of their questions were spontaneous and there were even a few specific (i.e. prompt) questions from them.

But on the 'Biscuit game', very few of their questions were spontaneous.
Indeed, of all their questions in both experiments 4.1 and 4.2, only
9.9% were not provoked, and none were prompts.   This difference in
performance can be explained on the basis of the degree of control
required to function in the two contexts. The naturalness of the story
situation permitted the freedom to choose which aspect of the story to
explore.   This may have accounted for the high frequency of spontaneous
questioning.   Besides, having posed a question, the questioner may
relinquish responsibility to older and more able children if the substance
of his question was challenged and queried.   The confidence with which
to initiate a course of action and contribute to the process that may
see that course of action through, is conferred on the child by the
co-operative support he feels he can get from those around him.   By
contributing voluntarily to the activities of persons in his world, the
child's confidence level increases.   He then comes to feel like a little
master who can exercise some control over his world.   He can then start
to ask not just the names of objects and the causes of their existence,
but also query the beliefs and ideas of others.   The degree of control
needed to co-ordinate his actions with those of his partner in the
'Biscuit-game' may have been too great for the 3-year-old to exercise.
When, however, his partner was an older child who co-operated by providing
an environment of discourse most suitable to his capacities and needs,
then his performance improved.

We defined "control" in terms of an awareness of a deliberate choice
between various means with which to gain an end.   This approach to the
issue of "control" has been suggested as a springboard for intellectual
growth by Donaldson (1978):

> "If the intellectual powers are to develop, the child must
> gain a measure of control over his own thinking and he cannot
> control it while he remains unaware of it.   The attainment of

"this control means prising thought out of its primitive
unconscious embeddedness in the immediacies of living in
the world and interacting with other human beings." (p. 123)

The control hypothesis was put to the test in experiment 4.4 and
the results indicate a superlative possession of this quality by the
5-year-old children.   Is this the age then, that children start to
grasp the communicative functions of their messages, questions, requests,
etc.?   An incident suggestive of the existence of this ability in
4-year-olds occurred during one of the sessions in experiment 4.2.

The   child involved had just finished instructing a 3-year-old on
how to find the biscuits and, whilst the young finder was on his way to
the hiding room, the hider shouted across to the experimenter:

"Kayode, have I told him right?"

This, we think, is an example of a four-year-old thinking about the
efficiency and completeness of his instruction and its likely effect on
the performance of the finder.   Clearly, he must be aware that his
instruction can be evaluated in terms of adequacy or 'rightness'.
Prompted by this event, we decided to collect self-reports on why children
ask questions.   We got typically "don't know" responses from 5, randomly
selected, three-year-olds.   From the 5 selected four-year-olds, however,
came some startling reports, some of which are given below.   In
parenthesis by each report is a label of the class to which we felt the
particular report belongs.

Why Children Ask Questions (self-report by 4-year-olds)

1.   "Because they want to know things." (Search for knowledge.)

2.   "'Cause nobody is talking to us." (Initiation of social intercourse.)

3.   "'Cause people don't know what you're meaning." (Clarification of
     intentions.)

4.   "'Cause people don't know, don't know what you don't know."
     (Drawing attention to one's area of ignorance - with a view to
     seeking help.)

5. "'Cause you want, want to know, what he want to know." (Asking aboutintentions of other persons.)

6. "Because people do want to know what they are doing." (About actions of others.)

7. "Because they want to ask." (Rhetorical.)

These examples lend some support to our suggestion that nursery school children below the age of five years may already have begun to develop an awareness of some of the reasons underlying their questioning-behaviour. This awareness brings along with it a degree of control over their behaviour. The control, it has been suggested, is a necessary condition for inter-individual interactions in which the child has to accept responsibility for his contributions.

Control is considered a necessity if the child is to mentally hold or freeze an utterance and evaluate it in the context binding the utterer, and the addressee, and determine its meaning and implicature (Grice, 1967). Only after this can he plan and formulate an appropriate reply. It is our claim that control of this aspect of the processes of communication is only minimally present in the 3-year-old, but is manifestly present at around the age of 4 years. It is an important concept which reveals itself in 4- and 5-year-olds as a blanket, which can be pulled over spontaneous behaviours to restrain them. There is an advantage conferred on the child by the possession of this blanket, especially as he moves from situations with differential demands. Since some of his natural impulses can be held in check, a new situation is perceived as new. He then stands ready to re-organize his psychological 'tools' and apply them in accordance to the special demands of the new situation.

In the next chapter a study will be reported in which the child's ability to question the efficiency of his own instruction to a listener, in the face of implicit feedback, is explored. In this situation,

successful communication is predicated on:

1.   The child-instructor inferring that the listener feedback must mean a fault in his instruction.

2.   The child-instructor analysing his former instruction so as to locate the fault, and

3.   The child-instructor sending another message to repair or compensate for the fault of his earlier one.

CHAPTER 5

THE CUP GAME

INTRODUCTION

Human skilled activities have generally been interpreted in terms
of a model that specifies three levels of functioning. First, there
is an intentional level constituted by a desire to bring about some
change in the subject's relation to the environment. At the second
level, devices are effected which translate intended acts into perform-
ance and thirdly there is a regulatory level that allows for the use of
knowledge of results. At this level, there is perception of success
or failure in the attempt to achieve the intended act through actual
performance (Bernstein, 1967; Welford, 1968). Bruner summarises
Bernstein's control theory model of voluntary activity thus:-

> "... the carrying out of an activity requires a system
> containing an effector which is to be regulated, a control
> source which conveys to the system the specifications of
> the act intended, a receptor that registers the course of
> the act, a comparator that estimates the discrepancy between
> intended act and act thus far accomplished, and a feedback
> device that converts the discrepancy computed by the
> comparator into regulatory signals to the effector. In
> short, there is a feed-forward signal from the control source
> specifying intention, a discrimination of present state, a
> comparison of present achievement with intention, and feed-
> back based on that comparison. This is the essence of
> regulated activity."   (Bruner, 1969: p. 3)

It has been assumed in this thesis that questioning can constitute
an attempt by a questioner to effect a change in the situation in which
he finds himself. This change may be directed inward, that is to the
self, as when a questioner seeks to obtain for himself information with
which to close a gap in his knowledge system. On the other hand,
questioning may be directed outward at other persons, as it is when a
questioner intends to get others to do something for him they would

otherwise not have done.

The assumption has allowed us to posit the existence of a co-operative bond between a questioner and an answerer. The justification for hypothesizing the existence of this bond has been found by examining the role played by questioning in establishing and sustaining communication when children of different ages were engaged in a situation of story-telling (Chapter 3), or undertaking to solve a joint-problem (Chapter 4).

Our analysis of questions in Chapter 4 dealt with how they were used to regulate the behaviours of others. This analysis revealed that whereas both 'open' and 'prompt' questions were successful in eliciting adaptive responses from older children, only prompts were so successful with the very young ones. It was argued that prompt questions drew a proportionately greater number of adaptive responses from younger children than open questions, because they specified explicitly the questioner's domains of interest and also suggested possible answers. All that the answerer had to do was to confirm or deny the proposed answer. On the contrary, 'open' questions marked or segmented the questioner's domain of interest only in general terms. Prompt questions then may be taken as being relatively more explicit about the form of information they require than open questions.

It is not questions alone however, that can be treated along the dimension of implicitness -explicitness. Other kinds of information can be analysed in a similar manner. For example, requesting that a child hand over a toy car he's currently holding, may be made in one of the following ways:

1. An outstretched hand in the direction of the toy.
2. Saying the word "Car" $\pm$ outstretched hand.
3. "May I have the car" $\pm$ outstretched hand.
4. "Would you mind giving me the car" $\pm$ outstretched hand.
5. "I want you to give me the car you're holding."

1 - 5 are different modes of requesting which vary along the continuum of implicitness-explicitness. Note that mode 1 is essentially non-verbal, modes 2, 3 and 4 are either verbal or both verbal and non-verbal, depending on whether they are accompanied by the outstretched hand. Mode 5 is verbal. Without intending to suggest that the non-verbal mode 1 is necessarily less explicit than the verbal mode 5, it is nonetheless reasonable to suppose that mode 5 is the least equivocal for someone who understands the language. Similarly, rebukes, warnings, worries, puzzlements, etc. can each be signalled in ways which are more or less explicit. The point is that to become a competent communicator in an adult sense involves being able to make use of implied as well as explicitly stated information about the wishes or intentions of others.

There are both theoretical and practical reasons for wanting to study children's understanding of implicit information. The theoretical interest is compelled by the hypothesis that gestures, facial expressions, and other kinds of tacit information accompanying linguistic utterances constitute powerful clues for the child learning language. These clues help him in understanding meaning-intentions which are then mapped on to utterances (MacNamara, 1972). Other theorists of child language development have proposed that, in learning about language, children must be able to recognise and utilize implicitly given information within the linguistic context in which they occur (Greenfield and Smith, 1976; Rommetveit, 1974).

Various approaches have been used to test this hypothesis. One is to require children to select a pictorially represented facial expression from a set, and match it with a story describing an appropriate emotional state, e.g. joy, sadness, fear and anger (Borke, 1971; Chandler and Greenspan, 1972). Another is to elicit from children verbal descriptions of line drawings depicting in a cartoon fashion, a person thinking

about another person, or thinking about another person's actions, etc. (Miller et al, 1970). Finally, children are requested to judge whether the actions of an actor in a story are intentional or accidental. Would the implications or the consequences of the actor's actions be used in judging? (Imamoglu, 1975). Borke claimed that children as young as 3 years were able to infer correctly the meaning of emotions from the picture cards. Imamoglu found that 5-year-olds did infer intentional and accidental acts from their consequences. Chandler and Greenspan also found that 3-year-old children abstracted information from cartoon drawings and used it to anticipate the emotional reactions of characters in a story. These authors disagreed with Borke's interpretation that the young children, in anticipating the consequences of affect-situations on story characters, were taking the 'point of view' of another. They argued that the young children's success could be based on processes of identification, projection and empathy - relatively automatic processes which do not negate the existence in the children, of egocentrism defined as "the inability to accurately assume perspectives different from one's own". Differences in interpretation notwithstanding, the point relevant to our interest is that very young children appear able to recognise and indeed utilise implicitly given information in drawings and cartoons concerning the motives of others. Miller and his associates employed this basic recognition in testing children's understanding of the recursive property of thought.

A different kind of approach is characterised by the collection of naturalistic data suggesting that implied linguistic information is processed by children. Shatz (1978), Dore (1977), Errin-Tripp (1977) have shown that very young children comprehend and react appropriately to indirect (and therefore implicit) information in speech acts. But in the environments in which these studies were carried out, the children

will have had access to non-linguistic situational clues as well as some explicit linguistic information accompanying the indirect speech acts. This possibility makes the findings equivocal.

The practical reason for wanting to investigate children's understanding of implicit information arose from the findings of experiments 4.1 and 4.2 (in Chapter 4) that the 3-year-old child-hiders did not respond in an adaptive way to 'open' questions from the finders. 'Open' questions are those which specify a gap in the knowledge system of the questioner and request that the gap be filled by the answerer. They take the general form "What is X?" and are thus different from 'prompt' questions which not only specify a gap in the questioner's knowledge, but also involve the awareness of possible answers to the question. E.g. "Is it X?" We suggested that the young children might have found 'open' questions difficult to answer because they did not contain explicit statements of what answers might be satisfactory to the questioner's aims. Could it be that the young hiders did not perceive the relationship between 'open' questions and the adequacy of their earlier instruction? Or could they have perceived the relationship but be unable to locate the inadequacy of their instruction? Or did they locate the inadequate segment of their instruction, but lack the capacity to rectify it?

In this chapter, we will be concerned to determine whether a child-instructor can recognise implicit feedback from his listener and interpret it as an invitation to examine his earlier instruction. The general hypothesis is that, given implicit feedback from a listener, a skilled instructor will utilise it as knowledge of result, for he would assume that the feedback is related to his instruction. Having made this assumption the instructor would want to know something about the listener's understanding (or lack of it) of his instruction. Now, how

much the child-instructor would in fact know from the implicit knowledge of result would depend, in part, on how well he can use self-directed questions to abstract features from the feedback that are relevant to his original instruction.   It is expected that the instructor's subsequent message would reveal the extent to which his self-directed questions have succeeded in helping to identify the faulty, difficult or incomplete segment of his initial instruction.

METHOD

Subjects:

The participants were 10, three-year-olds with a mean age of 3 years 2 months (range 2;10 - 3;04) and 7, five-year-olds with a mean age of 4 years 11 months (range 4;10 - 5;02).   Sex distribution was about equal in each group, but this was not a significant factor.

Playroom, Equipment and Materials:

The Playroom was large, sparse and well lit.   In the middle was a table with a very low divide across it.   This allowed the child and the experimenter who sat opposite to see one another, but it effectively precluded the sighting of the top of each other's half of the table. A video-camera was situated to the side of the table.

The play material consisted of   two sets of picture cards.   Each set comprised   4 cards, 7 x 5 inches and depicting a large cup.   Each set had a cup with its handle on the left, one with a handle on the right, another had it in the middle and there was a handle-less one.   The right handled cups had 'α' written in the top left corners of the card depicting them.   The left handled ones were marked with 'β' in the same place. The handle-less had 'δ' inscribed on them.   While those with handles in the middle were adorned with 'γ'.   The lettering was done so as to identify each card quickly on video.

Procedure:

Each child was tested individually. He was brought into the play-room and after a brief chat, asked if he would like to play a game of cups. Willingness expressed, he was sat in a chair and given a set of picture-cards. Having ensured that he knew what the drawings were, by asking him to identify them, the experimenter brought out his own pack of cards. The two sets were compared and agreement concerning the similarities of the cards led to the start of the game. The experimenter sat opposite the child and spreading his cards, advised the child to do the same. The game started with the experimenter giving the following instruction:

> "Now, I want you to take one of your cards. OK, tell
> me about it so I can take the same card from my
> side. I don't want you to show me. Just tell me
> properly so I don't make a mistake. OK?"

There were two conditions. One in which a low screen stood between the child and the experimenter. In this condition, the E responded to the child's initial and if necessary, subsequent messages by giving facial expressions intended to portray worry and puzzlement. The experimenter did this by first catching the eye of the child, looking down and across his cards and pretending to be in difficulty by frowning, biting his lower lip and scratching the nape of his neck. He also muttered, grunted and occasionally repeated the child's message whilst going through the facial expression signalling non-comprehension. This condition was called the visible facial condition (FC). The other condition, called the implicit verbal condition (IVC), had a high screen between the child and the experimenter, who responded to the child's initial and if necessary, subsequent messages by giving an implicit verbal feedback of the sort:

> "I don't understand", or
> "I can't find it".

In this condition, the high screen totally prevented the child and the experimenter from seeing one another. Half the number of children in each age group did the facial condition first, the other half, the verbal condition first.

If a child picked the handle-less cup, the game was allowed to run, but was asked to choose a different one the next time. Descriptions of the handle-less cup were regarded as warm-ups and therefore not scored nor reported. Each of the three messages subsequent to and including the child's initial message, received a feedback appropriate to its experimental condition. Beyond this, the session was terminated whether the child was successful or not. Termination was effected by showing the child the cards one at a time until the target was hit. Tasks requiring the co-ordination of two or more different perspectives are difficult for young children to solve (Hughes, 1975). It was for this reason that this problem was chosen. The advantage of this choice is that the experimenter could 'genuinely' pretend that the child's descriptions were inadequate.

Coding of Data

From the children's protocols collected in the two experimental conditions, four kinds of strategies emerged:

Strategy 1

This was a 'Trial by Error' response involving calling on the listener (that is, the experimenter) to make a choice which, if wrong on comparison, would be eliminated, e.g. "Take one and I'll tell you if you're right".

Strategy 2

This was a 'Placement' response based on the assumption that there

was a serial order correspondence between the two sets of picture-cards,
e.g.:

> "It's in the middle (tapping the middle top of his
> table). Yeah, two in the middle, one of those".

Strategy 3

This was a 'Featural' response involving the use of the handle and
its position on the cup. For example, in describing the right-handled
cup in the Facial Condition:

> "It has a handle pointing to that door"
> (indicating by pointing, the door which is to his
> right).

Example from the implicit verbal condition: The child came to the
middle of the table, thereby avoiding the large screen and said:

> "When it's this way (tapping his right of the table),
> it's this way" (pointing to the experimenter's left
> of the table).

Strategy 4

This was a 'Number' response based on the assumption that the Greek
letters on top of the cards were numbers, e.g.:

> "It's number eight, eight at the top".

The first strategy employed by each child was identified. Changes
within the chosen strategy or changes from one strategy to another,
subsequent to each feedback from the listener were noted. The within-
strategy changes fell primarily into the category of addition. This
category comprised of post-feedback messages which elaborated (by provid-
ing more information) upon earlier messages. Such added information
could be verbal, non-verbal or both. Changes from strategy to strategy
were merely recorded as inter-strategy changes.

An Example of Inter-strategy changes:

Strategy		Message
(Nil)	Child:	"I have picked a cup"
	Listener:	(Facial Expression)
	Child:	"There's more cup than there's the mug" (looks at listener) "And there's only one mug and two cups"
	Listener:	(Facial Expression) "Hmmm....hmm...."
(1)	Child:	"... Well, you pick any one ...."
	Listener:	(Hesitates then facial expression)
(1)	Child:	"Pick any one you want ... and then I'll tell you"
	Listener:	(Looks from card to card, hesitates, then facial expression)
(3)	Child:	(Looks across own cards) "Try the one with a handle pointing towards you (pointing to listener) and me (pointing at, and touching his chest)"
	Listener:	(Nods, smiles)
(3)	Child:	"The handle is pointing towards me (pointing to himself) and from there (touching the screen, then pointing to the listener) you, toward you."

An Example of Intra-strategy changes:

Strategy		Message
(3)	Child:	"Cup with handle this side" (tapping table top to indicate right handled cup)
	Listener:	(Facial Expression)
	Child:	"That side, that side (tapping table top)
	Listener:	(Facial Expression)
	Child:	(Looks intently at own cards) "I don't know my left from right"
	Listener:	(Looks surprised)
	Child:	"Not really (shaking head from side to side and smiling), only when some, only when someone is putting their hand up"

Strategy	Message
Listener:	"Hmmm ... hmm ... (Facial Expression, then raised right hand)
Child:	"Right. You got the right hand up (puts a finger on the right-handled cup, looks up at listener's raised hand and used his left hand to project a point diagonally from listener's right hand to his own, which all along was kept on the right-handled cup). "The right hand up. The other side of the right hand. Like that."

20 protocols were randomly selected from the two experimental conditions and coded by two naive judges into strategies. Any changes within, or between strategies were also identified. The inter-judge reliability was high ($r_s = 0.85$).

Other relevant behaviours of the child were also noted. By 'relevance' is meant behaviours pertaining to the task of formulating messages for the listener to decode. These were classified into three categories:-

(1) Declaration of Intention:

This embraced expressions of intentions concerning actions to be taken, e.g.: "I'll give you a clue".

(2) Admission of Difficulty:

Included in this category were expressions concerning the comparison of task-demands and personal competence required, e.g.:

"This will be very hard to do".
"I don't know my right from left".

(3) Questioning:

Events admitted into this category were interrogatives. Their loci of reference were used to sub-categorise them into 'Psychological', 'Locative' and 'Others'.

'Psychological' questions pertain to the child's awareness of what

the listener can or cannot do in playing the game, e.g. "You can guess, can't you?", "You don't know?"

'Locative questions are about the spatial orientation of the listener's cards - "Do you have a cup with a handle here?" indicating right or left by pointing), or such attempts as to spatially orient the listener through questioning, e.g. "Where is your right hand?".

Questions which did not fit into any of the above sub-categories were placed in the 'Other' sub-category, e.g. "You don't have any mug?".

RESULTS

Facial Condition (FC)

Three post-initial messages were scored per child. The maximum number of sequences (where a sequence represents feedback from the listener and the child's subsequent message) for the 7, 5-year-old children is 21, and for the 10, 3-year-old group, 30.

Whereas the 3-year-old group exhausted all 30 of the available sequences without a single success, the older children utilised 16 (76.2%) of the available 21 and achieved 4 successes. The initial messages of all the children in the two groups were inadequate, that is, incapable of leading the listener to the target. However, the listener's facial expressions meant to indicate non-comprehension, were followed by reformulations of original message among the older children. To some, this meant changing from one strategy to another and to others it meant effecting intra-strategy changes. All reformulations involved pointing. The younger group of children mainly repeated their earlier messages, especially when forced to abandon what appeared to be a great tendency to show the listener the target-card. When such visual displays were ignored or countered with:

"You are not allowed to show me"

8 out of 10 of the children merely repeated earlier messages which were typically:

"It's a cup", or "It's a yellow cup"

Otherwise, they were silent, appearing dismayed and confused.

The impression gained was that the three-year-olds were only minimally aware of the message-structure of the listener's facial expressions. They suspected perhaps that the listener was in some sort of difficulty, but the specific nature of it, its relation to their own messages about the target-card, and more importantly the kind of reform-ulations necessary to help the listener, eluded them. Visually display-ing the critical card for the listener to see, was an attempt to overcome the difficulty of the task, but, unfortunately, it was unacceptable. Its rejection did not yield an attempt to employ a new strategy.

The older children on the other hand, effected 16 changes in their messages. There were three between-strategy changes from 2 of the children - one of them started with strategy 3, declared an intention 'to give a clue' in his first post-feedback message, adopted strategy 4 and changed to 2 in his third message, although this led to failure. The other child started with strategy 1 and changed to 3. The remaining five children changed within the initially chosen strategy. Within this strategy, they changed some of the aspects of their messages - pointing to themselves, to the listener or to physical referents (like doors) in the room. The non-descriptive behaviours of some of the older children gives further support to the impression that they could use implicit facial information. One of the children asked a psychological question and 2 of them expressed their intentions before acting on them, in the reformulation of their messages.

The number of children giving at least one reformulated message

to the listener's facial expressions is presented in Table 5.1. This shows that only 2, three-year-olds and 7, five-year-olds produced reformulated messages. The difference in the number of children who recasted their messages and those that did not is significant (Fisher exact probability = 0.0018).

<div align="center">

TABLE 5.1

</div>

Number of children giving at least one reformulation
of message in response to implicit non-verbal feedback
from listener

Age of children in years	Facial Condition	
	Reformulators	Non-Reformulators
3 (n= 10)	2	8
5 (n= 7)	7	0

n = No. of children in each age group.

Implicit Verbal Condition (IVC)

The 5-year-olds' initial messages were inadequate, but there were changes in them following the 'I don't understand' feedback from the listener. Such changes however relied heavily on pointing which, in order to be effective, that is, to be seen by the listener, led to the children either getting up from their chair or leaning to one side of the big screen to point in the direction of the cup handles. One child admitted the difficulty of the task, saying:

"This will be very hard to do"

whilst stretching up a hand and asking the listener if the up-stretched hand could be seen.

It is instructive to note that only 1 out of the 7, 5-year-old's initial messages utilised pointing to accompany the verbal descriptions.

Clearly, pointing could be of no communicative value in this condition because it could not be seen by the listener. However, when verbal messages proved insufficient, pointing became irresistible. To the first implicit verbal feedback from the listener, the children's pointings to augment their verbal descriptions were scored as re-formulations of messages. Repeated pointing-responses to second and third feedback from the listener were coded as non-reformulations. There were 12 of such repetitions out of 19 responses generated from a possible set of 21 listener-speaker sequences.

In contrast to their performance in the facial condition, there were only 3 successes. Furthermore, there were no between-strategy switches, all seven children effecting post-feedback changes within the initially chosen strategy. Two children started with strategy 2 whilst the remaining five chose strategy 3, which is, using the handle to differentiate the target from the non-targets for the listener. The small number of successes notwithstanding, the fact of the children's reformulation at least to the first feedback from the listener, is some evidence that they realised the inadequacy of their original messages.

The three-year-old children experienced great difficulty with this experimental condition. Like their performances in the facial condition, their initial messages were colour bound, inadequate and devoid of any discernible strategies. Their typical initial messages were of the kind:

"A cup ... yellow cup".

Post-feedback messages were mainly repetitions (21 responses out of 30 possible messages). The remaining 9 responses were attempts to bring the card over to the listener to show him, these being coded as non-reformulations. The number of children giving at least one reformulated message in response to the implicit verbal feedback from the

listener is presented in Table 5.2.   This shows that all 7 of the five-
year-olds did reformulate, whereas none of the three-year-olds did.
The difference is significant (Fisher exact probability is 0.00005).

TABLE 5.2

Number of children giving at least one reformulation
of message in response to implicit verbal feedback
from listener

Age of children in years	Implicit Verbal Condition	
	Reformulators	Non-Reformulators
3 (n = 10)	0	10
5 (n = 7)	7	0

n = No. of children in each group

The proportions of reformulated messages in the two conditions are

presented in Table 5.3.

TABLE 5.3

Proportion of reformulated messages in two age groups of
children under two different conditions of implicit
feedback from listener

Age	Facial Condition		Implicit Verbal Condition	
	Reformulation	Non-Reformulation	Reformulation	Non-Reformulation
3 years	.17 (5)	.83 (25)	(0)	1.0 (30)
5 years	1.0 (16)	(0)	.37 (7)	.63(12)

Number of responses are in parentheses.

CONCLUSION AND DISCUSSION

The pattern of results in this study indicates that the 5-year-old
children's messages were constrained by implicit feedback provided by the

experimenter in the facial condition as well as in the Implicit verbal condition. The greater proportion of reformulation of messages in the facial condition, compared with the verbal condition, may be due to the availability of visual cues in the former condition. Because the child could see the listener scanning his cards and looking worried, he could not escape the impression that his listener was in some sort of difficulty. The context of interaction, that is, the task mutually engaged in by both participants, may have encouraged the child in his attempt to draw a link between his inference of listener-difficulty and the pre-feedback message that he gave. What is to be done to help the listener overcome his difficulty? Two options appear open to the child - (a) he may repeat his message on the assumption of a memory failure or hearing difficulty on the part of the listener, (b) he may examine his message on the assumption of a possible deficiency. The second option may lead to a reformulation. Whatever the choice of the child, it can only be made as a result of his asking himself the following questions:

(1) What does the listener's facial expressions or utterances mean, and do they relate to his message to the listener? If so, how?

(2) Having inferred the meanings and the intended requests from the feedback from the listener, how can he use them to help the listener?

Now, these very questions must underlie the child's performance in the Implicit Verbal Condition, but here the child had only the utterances of the listener to rely on as cues. With vision cut off, due to the large screen separating the child and the listener, the child may have been forced into trying to establish visual contact necessary to render his post-feedback gestural reformulations effective. The only other alternative was to use a purely verbal description of the target - a difficult feat requiring a heightened level of control necessary to resist

the constraint imposed by some perceptually salient but functionally
unhelpful aspects of the task.   This is so, because the target, i.e.
the critical card, was in front of the child and its presence is likely
to have directed his attention only to some perceptually salient features
of the card which may in turn constrain its full description (Brent and
Katz, 1967; Blank, 1974).   Nevertheless, it emerged that the 5-year-olds
demonstrated some sensitivity to the communication needs of their
listener, even when such needs had to be inferred from Implicit verbal
and non-verbal cues.

This contrasts with the findings of Peterson, Danner and Flavell
(1972) who engaged 4- and 7-year-old children on a "guessing game" in
which they instructed each child to describe nonsense figures drawn on
cards to an experimenter sitting opposite him.   The experimenter then
gave three kinds of information to the child.   In one condition, he gave
explicit indication of what the child was to do to help e.g. "Look at it
again.   What else does it look like?"   In another, called the Implicit
Condition, the experimenter's request for help were implicit and took the
form "I don't understand" and "I don't think I can guess that".   In the
third condition, the experimenter "gave stereotyped facial expressions
that indicated puzzlement and bewilderment".   This condition was called
the Facial Condition.   The authors summarised their findings thus:-

> "Both 4- and 7-year-old children readily reformulated their
> initial messages when explicitly requested to do so by the
> listener, and both failed to reformulate when confronted only
> with nonverbal, facial expressions of listener non-
> comprehension.   In contrast, only the 7-year-olds tended to
> reformulate their messages in response to an implicit rather
> than explicit verbal request for additional help ..."   (p. 1463)

Peterson et al's 7-year-olds did not reformulate in the facial
condition whereas our own 5-year-olds did reformulate in our own facial
condition.   This prompted a closer examination of the three conditions
of Peterson et al.   We found that their Implicit Condition approximates

our own facial condition in two important senses, viz:-

(1) Although the experimenter in Peterson et al's study did not consciously provide facial expressions of non-comprehension in the Implicit Condition, they could not have been totally excluded because visual contact was maintained between the experimenter and the child.

(2) In our own Facial Condition, the experimenter unwittingly provided vocal accompaniments (like grunts, mutterings and occasional repetition of the child's description) to his facial expressions.

Comparing the performance of the children in these two conditions we found that 4- and 7-year-olds in the study of Peterson et al produced 30% and 83% message reformulations respectively. This compares with the 17% and 100% message reformulations scored by our 3- and 5-year-old children respectively.

We may on the basis of our findings and those of Peterson et al, conclude that 4-, 5- and 7-year-old children recognised and met the listener's requests contained in implicit verbal feedback especially when augmented with facial cues. A recent study by Bacharach and Luszcz (1979) has provided additional evidence in support of our conclusion. Bacharach and Luszcz invited 3- and 5-year-old children to describe a series of picture cards, one of which depicted a horse pulling a wagon, another, a bee sitting on a flower, etc. Before exposing a card to the child, the experimenter made a remark such as "Did you know that horses can do a lot of different things? Horses can run. Horses can jump fences. Horses can eat hay. Here's a picture (exposing picture of horse pulling a wagon), tell me about it." This type of remark was intended to focus the child's attention on the _action_ portrayed in the picture. Another type of remark made by the experimenter was designed to focus the child's attention on an _object_

depicted in the picture. An example prefacing the exposure of the picture of a horse pulling a wagon is "Did you know that there are a lot of different kinds of animals? A cow is an animal. A rabbit is an animal. A cat is an animal. Here's a picture, tell me about it." The authors found that the children's productions indicated that the 5-year-olds identified and used the implicit suggestion given by the experimenter, to constrain their descriptions of the picture cards. The 3-year-olds on the contrary did not utilise the implicit information to structure their comments.

Where do three-year-olds stand on this issue? When listeners are minimally co-operative by giving only implicit feedback, very young children experience great difficulties. This conclusion may be drawn from their performance on both the facial and the Implicit Verbal Conditions. Their failure to modify their messages in response to implicit verbal or non-verbal requests can be explained in several ways. One explanation may be that the children have not yet developed the necessary communication skills required to identify and translate the listener's requests from the tacit cues. Another explanation may be that the children can identify that a request has been made and are capable even of examining their own pre-feedback messages with a view to modifying them, but would not do so until specifically and explicitly requested so to do. Yet another explanation may be that the children possess the pre-requisite communication skills necessary to decode the listener's request, but are unable to specify the particular flaws or inadequacies in their pre-feedback messages. In other words, they may have inferred from the listener's cues that some requests for help have been made, but were unable to identify what sort of help. Now, there seems to be an obvious relationship between the latter two explanations. By explicitly asking a child to examine his messages for inadequacies,

a listener would be forcing the child's attention to the listener's specific need-areas, and thereby helping him identify the sort of help required. What we are suggesting is that very young children may not, of their own accord, question the communicative efficiency of their messages to an older person nor even do so when the listener's request is vague and implicit, even though they can from such cues infer that something is wrong with those messages. But when led to do so by the listener asking for <u>specific information</u> as in the adults' and older children's questions to 3-year-olds in Chapter 4, the results can be quite remarkable.

CHAPTER 6

SUMMARY, CONCLUSION AND GENERAL DISCUSSION

GENERAL SUMMARY

In the introduction we found that the interrogative is one of
several ways of expressing an objective, and perhaps achieving it through
the agency of another person. The interrogative we found, has a
social-demand characteristic which requires at least an acknowledgment
from the addressee. Questioning is, therefore, an act based on co-
operation and this suggests that questions may be regulated by the
Co-operative Principle broadly outlined by Grice (1967) for language.
The characteristic features of Grice's co-operative principle include
informativeness, relevance, clarity, orderliness and the avoidance of
falsity and ambiguity. But the degree of co-operativeness between a
questioner and an answerer, when judged in terms of adherence to
specific features of the Co-operative Principle, varies from culture to
culture (Keenan, 1976). It also varies from one social class to
another within the same culture (Robinson and Rackstraw, 1972), or it
may depend upon the relative status of the questioner and the answerer
(Soskin and John, 1963).

Furthermore, when a child asks a question of an adult, the child has
a particular aim or motive - to gain needed information, to attract
attention, etc. The act of question-asking as an expression intended
to satisfy that motive may be just one of many means believed by the
child to be appropriate to that end. Combining these two perspectives,
that is, conceiving questioning as (1) an expression of an inner psycho-
logical state or desire and (2) as an expression of an intention to
secure the co-operation of another in the satisfaction of its desire,

the implication is made that the child as a questioner must <u>recognise</u> appropriate powers, knowledge, etc. of the person to whom the question is directed. The child must also believe in the <u>willingness</u> of the person to co-operate with him in the attainment of his motive. Do young children recognise and attempt to co-operate in the fulfillment of similar question-asking motives in others? Our pilot test constitutes an attempt to decide whether this problem is well posed.

Basically, the test situation was one in which the child was cast in a superior knowledge-status relative to a toy chimpanzee who wanted to learn about some objects visually present to them both. As might be expected of a young learner, the chimp asked a lot of questions and made two types of errors - misidentification of some of the objects and errors of reasoning. It was found that the 5-year-old children were more spontaneous than the 3-year-olds in identifying the names and functions of the objects to help the chimp. Furthermore, the older children responded more to the chimp's questions, correcting him and even joking with the experimenter over some of his errors. This was interpreted to mean that the older children were relatively free of the artificiality of the situation - an attribute likely to encourage the acceptance of the status and responsibility attaching to their role as instructor and at the same time, to provide the basis for dealing with the 'learning' role played by the chimp. This was in contrast to the performance of the younger children who were heavily dependent on the experimenter's intervention <u>as a condition</u> for answering the chimp's questions. In other words, the younger children were unable, in the experimental circumstances, to pretend that the chimp was a purposeful person from whom one could expect and entertain questions.

The problem concerning children's recognition of a willingness to

co-operate in the satisfaction of quests from others may have been well posed, but the situation clearly was inappropriate. The limitation of the younger children in giving purpose to acts of the chimp in this situation led to a search for a less artificial environment in which both 3- and 5-year-old children would be relatively free to ask and answer questions.

We chose to observe children's questions and answers during story-telling because of the theoretical expectation that situations of novelty, surprise or uncertainty built into a story are likely to provoke the use of questions in children's attempts to resolve such uncertainties and understand such novelties. We hoped that an analysis of children's questions and answers would shed some light on their ability to perform two acts. First, to ask about aspects of the world that they consider interesting, and second, to challenge or query the opinions and views of others that run counter to theirs. Consequently, we distinguished questions which were interaction-initiating from those that functioned as interaction-sustainers. The former were classified into seven categories on the basis of their referential functions. These are Identification, Definition, Placing, Explanation, Process, Psychological and Clarification, and each category was dichotomised into open and prompt types.

Identification questions are those asking about the names of people or objects or the labelling of actions. They are characterised by 'who' and 'what'. For example, "What is a daddy lion?".

Definition questions are concerned with the meaning of words. For example, "What's 'worn out' mean?".

Placing questions request the location of events, objects or persons in space or time. 'Where' and 'when' characterise spatial and temporal questions respectively. An example of a spatial question is

"Where's his eyes, Mrs. Strachan?". An example of a temporal question is, "Was I born before Beverley?".

Explanation questions are those concerned with the logical relation of cause and effect or the incompatibility of observed and expected events. An example of the former is, "Is he sad because he lost his mum?". An example of the latter is "Why does the doll have 3 hands?".

Process questions relate to the state, manner or process by which a particular state of affiars has, or will come to be. They are usually characterised by the interrogative word 'How'. An example is, "How did the fox get in?".

Psychological questions are those which indicate that the questioner is aware that other persons have desires, intentions, knowledge, beliefs and thoughts which may differ from his own. Examples are:

"Do you know what happened yesterday?" (asking about the addressee's desire).

"Do you know sometimes people think foxes turn into fishes?" (knowledge or belief of another person).

"Do you think that the wee red hen knowed that the big stones would kill the red foxes?" (Is the hen's action intentional or accidental.)

Clarification questions are those seeking repetition, expansion and specification of segments or an entire previous utterance. Characteristic interrogative words are, 'Huh', 'a what' and 'which'. An example is, "Buying a hat, did you say?"

Open questions are those that mark the questioner's domains of interest in general terms. For example, a child who wants to know the name of an object may express this by posing the question, "What is that?" The assumption is made that the object has a name. Prompt questions on the other hand specify more explicitly, the questioner's domain of interest and in so doing, present the child's knowledge about a possible answer to his question in the form of a hypothesis. For example, "Is

that an X?"

Interaction-sustaining questions were treated along with other responses of the non-query type within a sequence, as answers. These answers were categorised into three levels on the basis of how they responded to questions.

The primary answer level is called the sequential level 1 (SL1). This comprises of a question (of whatever referential category) and an answer that 'terminated' the sequence of interaction.

Example of SL1

    Question: Is he going to be sick?
    Answer : I don't think so.

The second sequential level (SL2) starts as in SL1 with a question followed by an answer. Then the questioner or a third child offers a statement that adds to, deletes, negates or in some other way modifies the answer. The third child's contribution, or the first answer may be further commented upon and so on. An important characteristic of this sequence is that all the contributions are tied to the same topic.

Example of SL2

    Question: What's that? (pointing to a cat in a story book)
    Answer: There's a cat.
    $Comment_1$: It's like the tiger
    $Comment_2$: A mini-tiger it's like
    $Comment_3$: (Laughs) Like mini cars!

The third sequential level (SL3) is also initiated by a question which successfully attracts an answer. This answer however, or a comment on it, receives a query either from the questioner, the answerer or a third party. Where an adult is involved in a sequence of this type, it is called SL3 + adult. But where no adult participation is involved, it remains SL3. The essential feature of this sequential level

is that it contains at least one queried answer within each sequence -
the assumption being that an answer is called into question because it
is doubted in its completeness or appropriateness in satisfying the
motive of the original questioner.

Example of SL3

Question: The wee red hen would be pleased now, wouldn't she?
Answer: Yeah.
Question: But what happens if the wolf comes?
Answer: She'll have to keep out of the way.
Question: But what happens if ... if three foxes come to
eat him all up?

The talk of the group of 16 children was partitioned into answers,
comments and questions in order to establish the extent to which the
children had proneness for questioning. Total amount of talk was not
correlated with the proportion of questions although there seemed to be a
trend towards more questions with more talk. Amount of talk did not
correlate with the proportion of answers. Age did not seem to bear any
strong influence on the amount of questioning or comments. However,
younger children did produce more talk than the older children. It was
thought possible that the older children talked less because they were more
attentive to the stories. Furthermore, it was reasoned that their
attentiveness and knowledge might lead them to provide more answers to
questions. This expectation was tested by correlating age with the pro-
portion of answers in the talk of the children, and was confirmed,
$(r_s = 0.523, p < .05)$.

Children could engage in question asking for two reasons. First
to seek information and secondly to attract the attention of others and
regulate relationships with them. Which of these purposes was the under-
lying one in the story context? It is possible that both factors could
be at play, but, acting on the assumption that one was likely to be
dominant, we correlated the proportions of questions with (a) the propor-

tions of comments on the stories and (b) the proportion of answers to
questions on sequential level 2 (SL2). Answers functioning at this level
were by definition comments on the basic Question/Answer sequences of
interaction. They would indicate the contributions of a questioner to
the answer(s) given to his question. As such they might be regarded as
evidence of interest or attentiveness, this being taken to mean that a help-
ful answer was expected to be given to his question. The correlations
between the proportions of questions and their associated comments and
sequential level 2 responses were –0.455 and –0.426 respectively. Both
were significant at the 5% level. In other words, those children who
asked many questions tended to produce few comments to the stories and
contributed only a few answers to question/answer sequences. Two views
might be taken of this result, either the children who were proficient
questioners were using questions epistemically and so could not really be
expected to comment on the answers given to their questions because they
were deficient in the relevant knowledge; or they were not really expect-
ing or interested in answers to their questions because those questions
were not true information-seeking but rhetorical attention-giving devices.
The difficulty of choosing between these two options was increased by the
small sample of questions for the group as a whole, and also by the uneven
distribution amongst the children of the few questions that were asked.

In an effort to overcome the sampling difficulty, five children who
produced the bulk of the questions were selected for further analysis.
Unfortunately, this analysis did not throw light on the above issue as
neither age nor proportion of questions related in any consistent way to
ability to respond at any of the three answer levels (i.e. sequential
levels 1, 2 and 3).

These five children, though ranging in age from 38 months to 60 months,
with a mean of 45.8 months, all produced more 'explanation' questions

than any other. Moreover, in all but one case, 'identity' questions ranked second. Only the two oldest children asked any questions about the meaning of words. Another interesting feature of the children's questions is the presence of prompts which despite their small number, indicated some deliberately structured search for information with which to ratify or reject a piece of information already held. It was thought unlikely that a child would go into the cognitive trouble of framing a prompt type question if his intention was merely to seek attention - it being assumed that 'open' questions are cognitively easier to formulate for this purpose.

It was also found that although the children asked 'explanation' questions much more frequently than any other kind of question, they gave answers most frequently to 'identity' questions despite the fact that there were many more 'explanation' questions for them to answer. This disparity was used to argue that questions were being used mainly for epistemic purposes, the main thread of the argument being that if the children did not answer the kind of questions they most frequently asked, it is plausible that they were asking that kind of question because they wnated to find out something they did not know and could not discuss.

The evidence we have procured for the epistemic use of questions by nursery school children in story telling is thin and the grounds on which our arguments rest are tenuous. This is principally because the sample of talk available was too small. The meagre production of questions was probably due to the size of the group of the children. It was therefore decided to contrive situations where pairs of children would work on tasks designed to elicit a good sample of convincing

epistemic questions.

The game of "Biscuits-in-the-box" was an attempt to displace the source of the intentional structure to one in which a reward desirable by two children was obtainable only through a joint effort. This was to ensure that neither child could act outside the purposes and requirements of his partner if he was to secure the biscuits which where used as the desirable reward. One of the children hid the biscuits in one of six boxes. He then told the other (the finder) where to look for the biscuits. The 'telling' room was separate from the 'hiding' room.

In the experimental conditions 4.1 and 4.2, the hider instructed the finder outside the room containing the boxes, one of which contained the biscuits. In these two conditions, 5-year-old hiders were paired with adult, 4- and 3-year-old finders. 4-year-old hiders were paired with adult, 5- and 3-year-old finders. And 3-year-old hiders worked with adult, 5- and 4-year-old finders. We found the following:-

1.   As hiders, the older children (4- and 5-year-olds) gave less information in their initial instructions to finders younger than them-

selves, thus indicating a sensitivity to the (presumed as opposed to the actual) information handling capacities of the young finders.

2. With respect to interpersonal behaviour, the older children, when serving as hiders, also behaved differently to young and old finders. They smiled more to young finders, secured their attention, restrained the impatient ones, asked about their capabilities to do the required task and monitored their progress in the hiding room. In this, they were vastly superior to the 3-year-old hiders.

3. The older child-hider's responses to both prompt and open questions from finders, were highly adaptive, whilst the young child-hiders produced adaptive responses to prompt questions only. Repetitions and refusals accounted for most of the non-adaptive responses in both groups of hiders.

4. As finders, the older children were less impulsive than the young ones in acting on the information received from the hiders. They asked questions from hiders, especially when the role of hiding was played by younger partners.

5. When post initial instructions were discovered to be inadequate, this led in the main, to spontaneous questions from older finders. Young finders on receiving similar instructions, had to be manoeuvred by the experimenter into asking the hider for more information. It was as if they did not match the given information with the task-requirements and so could not tell whether the given information was adequate or not.

6. Questions from older finders to young hiders were more specific than to older hiders. That is, they were more frequently of the prompt type. Young finders were not discriminatory, asking mainly open type questions.

It would appear from these findings that in a situation of joint
undertaking, older children were more capable than the young ones in
teasing out the relevant aspects of the task demands, directing the atten-
tion of co-participants to them, and making their own actions as well as
those of their partners rest on those abstracted features. We argued
from this, that an awareness of possible alternative solutions to problems
may be better developed in the older children than in the young ones.
Now, to act on the basis of this awareness, implies a degree of self-control,
defined as involving at least the ability to resist spontaneous and
impulsive first choices. The fact that the older children _showed_ their
skills best when paired with younger ones indicates on their part, not
only an awareness of some of the limitations of the younger children, but
the ability also, to act on the basis of it. This seems to be one of the
essential differences between 3- and 5-year-old children.

In experimental Condition 4.3 we demonstrated that 3- as well as
5-year-olds spontaneously chose to point rather than offer verbal
descriptions, when the object to be described was in full view of both the
hider and the finder. In Condition 4.4 however, where the hider was
instructed to sit on his hands in order that he might not point, it was
found that the older child-hiders, verbally identified and described the
visually present object to a nearby finder without pointing.

The three-year-old hiders could not resist the urge to point. We
interpreted this as a demonstration of the relative lack of control over
pointing behaviour by the young children.

We concluded that although young and older children can give and
follow instructions on simple joint tasks when such tasks are born not
out of their own initiative alone, the inter-personal requirements
necessary for this achievement, and the extent of the children's reliance

on it, varies according to the age of the child. The very young child seems to require a maximally co-operative environment in which:

   (a) His spontaneous and impulsive actions can be restrained by others. Or they can be used to assist in the comprehension of his purposes.

   (b) His attention can be directed to, and focused on the relevant and salient aspects of the task.

and (c) When information is required from him, the type of information will be specified explicitly to him.

In other words, young children have more to be carried along on the initiative and directive of another person, if they are to participate in the attainment of a joint venture. Older children on the other hand, are less dependent on the initiative of their partner. This we claimed, on the evidence of the superior control they demonstrated over their actions and in particular, over their questioning skills.

One of the variables which seemed to benefit young children's performance when, as hiders, they were requested to give information, was the nature of the request, in particular its specificity. Prompt question-types which, by definition, are very explicit requests, elicited adaptive responses from 3-, as well as 5-year-olds. But open question-types whilst generating adaptive responses in the older children, created extreme difficulties for the younger ones. We suggested that this was probably because open question-types did not specify explicitly for the child, the relevant segment within the domain of inquiry.

This suggestion was put to the test in the "Cup" experiment (Chapter 5) in which 3- and 5-year-old children were used as subjects. The child sat opposite the experimenter and each had a set of 4 picture cards identical one to another. On one card was depicted a cup with its handle on the left, on another, a cup with its handle on the right.

The third had its handle in the middle and the fourth was handle-less. The child was to select one picture-card from his set and describe it so that his listener (the experimenter) could pick an identical one from his own set.

There were two conditions.   In one, the experimenter responded to the child's description by giving _facial expressions_ intended to portray non-comprehension.   A divider, low enough to permit visual contact but high enough to preclude both of them seeing the top of each other's half of the desk, was installed.   In the other condition the experimenter responded to the child's description of the cup by _saying_ that he did not understand.   A high divider totally cut off visual contact between the child and the experimenter.   The two kinds of responses or feedback from the listener (one verbal, the other non-verbal) were deliberately structured to be non-specific, i.e. implicit about the needs and difficulties of the listener.   Our concern was to see if the children would recognise this implicit information and act accordingly on it. To act accordingly in this task, requires that the child reformulate his earlier description of the picture card.   We found that in both conditions, the 3-year-old children did not reformulate their descriptions of the chosen picture card, whereas the 5-year-olds did to a significant level.   The success of the older children was thought to be due to their recognition of the implicit feedback as an indication of the inadequacy of their pre-feedback descriptions.   This recognition, it was further argued, might have led to the children _asking themselves_ what was wrong or insufficient in their preceding descriptions.   An examination of those pre-feedback descriptions might then have been set into motion, culminating in the identification of the source of error or inadequacy, and in some cases, leading to successful reformulations.   In other words, the implicit information from the listener might be construed as an

invitation or request to analyse the consequences on the experimenter's task,(picking an identical card) of the child's descriptions.   But it is important for the process of analysis that the child be able to ask himself the right questions, such as:-

1.   Why is he (the experimenter) confused?   Why can he not pick the card as I told him to?

and 2.   Could his inability be due to a shortcoming in the description I gave?   If so, how can the description be improved?

The inability of the young children to offer reformulated descriptions in the two conditions of verbal and non-verbal feedback cannot be due to a failure of the recognition of the implicit information as an indication of the difficulties experienced by the listener, because they did make attempts, albeit inappropriate, to show the target cards.   It was suggested that their failure at reformulation may be due either to an inability to spontaneously raise question (2) above, or an inability to locate the possible source of error in their pre-feedback message, without the guidance of an explicit prompt-type question.   In other words, they had insufficient autonomous self-examination to permit them to give the aid implicitly requested.

GENERAL CONCLUSIONS AND DISCUSSION

In the pilot study reported in Chapter 2 we found that very young children felt the distinction between the human agency and that of artificial animation of a doll, to be important.   They found it natural to confer on humans the "right" to ask them questions and advance suggestions, but denied the same to the artificial agent.   Older children too recognised the two types of agencies, but co-operated with both without much discrimination, answering the questions asked by the "pretend" agent.

A paper by Brown and Levinson (1978) borrowed the concept of "the face" from Goffman (1967) and developed it into a formal characteristic possessed by "all competent adult members of a society", and acknowledged in one another. Brown and Levinson (1978) defined a face as:

> "... the public self-image that every member wants to claim for himself, consisting in two related aspects:
> (a) negative face: the basic claim to territories, personal preserves, rights to non-distraction - i.e., to freedom of action and freedom from imposition.
> (b) positive face: the positive consistent self-image or 'personality' (crucially including the desire that this self-image be appreciated and approved of) claimed by interactants" (p. 66).

Thus, a face is something that everyone recognises, respects and wants to maintain in one another during interaction. We would like to suggest that there is something recognisably faceless about a contrived doll, wired up to talk. The facelessness may have been threatening for the very young, but not for the older children who appeared willing to 'save' the artificial face presented by the doll.

Why the older children may not have felt threatened is a matter of speculation, but of this we are reasonably certain. It is likely to have an important implication for the reception by young children to toys or puppets endowed with a voice, especially one that instructs on how to spell, add, etc. (As in Sesame Street).

Our observations of children's questions in naturalistic contexts laden with surprises and novel events in Chapter 3, indicated that they used interrogatives to initiate interactions which formed the basis for the exchange and negotiation of views, knowledge and opinions. In Chapter 4, the children had to contend and grapple with one another's needs in order to achieve the reward attending the joint project, in which they were engaged as pairs. Here, the children's performances,

especially those of the older ones, evinced rationality and considerable sensitivity. By rationality is meant the capacity to work from means to ends, that is, to have a goal which in the case being presently considered, is mutually shared, keep it in "sight" whilst making plans (again in this case, plans that must include the co-participant) for attaining the goal. Sensitivity refers to the responsiveness to the overt as well as covert needs and intentions of one another. It involves, in both cases, interpretation and inference. The young children did not appear very capable, their successful performance resting on the older children's support. We specified the nature of the support required. In Chapter 5, the sensitivity of the older children and their ability to use covert or implicit information during interaction was confirmed, indicating an ability to interpret and infer meanings from reduced listener-collaboration.

The young children were not so capable, at least in this situation.

From the above, we think that it may be safely concluded that some support has been gathered for the set of assumptions with which this thesis began. These assumptions are:

1. That it is sensible and necessary to conceive man as an active and rational agent in search of the meaning and understanding of those events he observes in his world.

2. That this search takes place, and is satisfied, within an intersubjective structure, characterised by co-operativeness.

Now, the management of this intersubjective structure is subject to certain constraints, like being able to share the aims and purposes of other persons; being able to direct and focus the cognitive resources of attention, inference and interpretation on those behaviours of others that are relevant to the realisation of their aims; and being able to

deploy those resources in ways which are respectful of the strengths and limitations of other persons. We suggested that one of the necessary conditions for operating within this set of constraints is describable in terms of the concept of control. We also used this concept to explain the differences we observed in the communication behaviour of very young children in naturalistic settings (such as story telling) and contrived experimental contexts (such as the game of biscuits-in-the-box). A brief but integrated account of the role of this concept in the realisation of purposive behaviour, may at this point be useful.

To be able to exercise control over a variety of linguistic and communicative skills, and deploy them appropriately to serve different uses, is one of the major achievements for the child who has learned to use language successfully. (Doughty, Pearce and Thornton, 1972; Donaldson, 1978). One of the uses to which linguistic and communication skills can be put must be the expression of motives. The expression of the motive to know or understand the aims of another person, has been one of the concerns of our inquiry. We have also been concerned with the consequences of the use of a particular epistemic device (questions), for both the person who wants to know and the person who collaborates with him in this venture. Our argument is that children who have a fair degree of control over the linguistic and communicative resources by means of which motives can be expressed and satisfied, must also have an awareness or an insight into the purposes of communication. This is because intentional control and the awareness it entails, permits a shift away from the immediate, spontaneous and unreflective disposition to actions. This in turn, allows:

(a) A consideration of alternative modes and means of expressing their motives and intentions. Each alternative can be singled out for consideration, since

voluntary control brings with it, the ability to
inhibit one or more possible modes, in order to
release others for use.

and (b) A readiness to be guided in their actions and
thoughts by the motives of other persons, and so to
regulate their dependency in joint activity.

Our findings indicate that 3-year-old children are limited in doing
two things. They have difficulty in restraining their natural disposi-
tion to act spontaneously with a wide variety of paralinguistic
expression of intent. They also fail to voluntarily ask themselves
what the demands of the situation they are in, are. The second limita-
tion is heightened in contexts where the intentions of the child are in
competition with those of another person, that is, in situations where
the realisation of his interest, depends at least in part, on the realisa-
tion of the intentions of the other person. These two limitations are
related in the sense that asking a question of another, requires that the
child pauses and attends to the situation which he shares with the other.

This fundamental difference we observed between the 3- and the 5-
year old child affects the expression in language and action, of the
child's motive-structure. With respect to the younger child, the
successful realisation of his motive-to-understand, relies rather heavily
on a maximum facilitatory co-operation from those with whom he engages
in communication. As we have shown in this thesis, older children and
adults endeavour to provide this requirement for younger children. Some
of the strategies employed to do this, include, holding the child to
restrain him, turning him to face the speaker, arresting his attention
before giving him information, smiling, moving close to and touching
him. Some other strategies include, linguistic variations in the
questions posed to the children - e.g. simple, easy to answer prompt

questions are used. The literature reports a variety of speech adjustments of older children and adults to very young children. In the main, simple, repetitive, well-formed directives, questions and statements are directed to young children (Sachs and Devin, 1976; Shatz and Gelman, 1973; Gelman and Shatz, 1977; Snow, 1977).

What does this adaptation of other's behaviour do for the growing child of three years? We think it provides an intersubjective framework wherein mutual confidence and co-operation already active in the child, develop. Through these, the child begins to consolidate, on the linguistic plane, the communication skills engendered during infancy. He can now start to use language to regulate his attention and intentions. Put differently, the child's language as well as his actions, begin to reflect greater expressive control (or regulatory powers) over his motivational system.

Although a three-year-old, typically, cannot of his own volition, control his desires for a prized toy by waiting for his turn to play with it, appropriate and well-structured adult intervention can succeed in getting him to appreciate the value of waiting his turn to play a game or get the toy. This is important because it indicates a readiness to be guided into recognising the existence of another mind vying with him for the same objective (the toy). The child may find this lesson useful in similar situations in the future.

In general, our findings confirm the views expressed in Halliday's (1975) functional approach to language development. He firmly puts language within an inter-personal context, one that allows for the exchange of meanings. As meanings are never devoid of social values, his emphasis on language lies not as an object of study on its own, but as a means for understanding pre-existing and developing social

structures and processes. His basic question then, is concerned with what a person of status A, in context B, with Person C, can <u>choose</u> to do or mean. In a sense therefore, it is a theory of how motives are expressed in language. This approach is useful in three important ways. Firstly, it does away with the practical limitations for research inherent in the Chomskian notion of language as a formal system in which <u>idealised</u> speakers, structure the linguistic relations between classes of linguistic events in logical terms. This makes possible the study of <u>real</u> and actual language-use, in the context in which it normally occurs.

Secondly, because it does not start from linguistic structure, but from linguistic function, it makes it possible to ask what functions language serves, even for infants, who as yet may not speak, but perfectly express certain communicative motives. Thirdly, it allows for a pragmatic definition of 'language' that may illumine the very nature of language as an adaptive mental power. If we know what functions language serves for adults, we may then ask, by what means infants express some or all of such adult-like purposes and motives.

Halliday posits that language essentially handles two aspects of "social reality" for the user. These are, the inter-personal and the Ideational. He argues that baby language can be observed to codify the inter-personal relations existing between the child and other persons. This aspect of social reality (the inter-personal) is developmentally prior to, and therefore first handled in language before the Ideational. Halliday (1975) identified 7 kinds of inter-personal functions served by language for the child. These are, the:

1. Instrumental ('I want'): satisfying material needs.

2. Regulatory ('Do as I tell you'): controlling the behaviour of others.

3. Interactional ('Me and you'): getting along with other people.

4. Personal ('Here I come'): identifying and expressing the self.

5. Heuristic ('Tell me why'): exploring the world around and and inside one.

6. Imaginative ('Let's pretend'): creating a world of one's own.

7. Informative ('I've got something to tell you'): communicating new information.

Before the child makes the transition from child language to adult language, he abstracts two important semantic features from the above seven interpersonal functions. These are the pragmatic mode (language as action) and the mathetic mode (language as reflection). It is an interesting part of Halliday's thesis, that he regards the mathetic mode as growing out of the HEURISTIC context in which the child uses the baby language medium, to learn about his world. The mathetic mode later comes to "create the conditions for the development of ideational meanings, those expressing the speaker's experience of the phenomena around and inside him (processes, quality and quantity, time, etc.); and the pragmatic function, that of language as doing, that creates the conditions for the development of interpersonal meanings, those expressing the speaker's role in and angle on the communication process (mood, modality, intensity, etc." (Halliday, 1975, p. 88).

Halliday considers that the rules of grammar, though essential for the ideational function, are not necessary for the expression of the interpersonal function. This is in agreement with the views of Trevarthen (1979), that even before the onset of language, the child directs the attention and action of others and also responds to the linguistic communication of others. Hence we have a situation in which the child, who as yet does not possess speech, communicates his motives and

responds to simple instructions from others.   How does he move from the
non-verbal system of representation to acquiring the linguistic system?
Why does he make this transition and what advantages accrue from it?

We would suggest that the impetus to move from the non-verbal to
the verbal system may arise **partly because of some of the limitations**
of the former to express certain needs of the child in co-operation with
others.   An important cognitive need of the child that cannot effectively
be expressed non-verbally is, <u>asking</u> others about specific causal relations.
It is quite conceivable that the child can 'represent' to himself his
observations about the world directly (Olson, 1970).   It is also
possible for him to determine, independently of language, the meanings
of such observations, for or with others.   Indeed it is quite likely that
in learning his language, the child first determines the 'sense' or the
meaning of what is said to him, and then matches this 'sense' with the
language used to convey it, by an older person who is an accomplished
speaker (MacNamara, 1972; Bloom, 1975).   But the non-verbal system
does fail in conveying to another person, 'things' which have no
correlates which are portray-able in action, and orientation (McNeill,
1970), or which cannot be perceived in the so-called sensorimotor way,
that is, with direct relation to immediately perceivable objects (Blank,
1974).

Brown and Bellugi (1964) have observed that children from the age
of a year and a half, actively construct and invent novel two-word
sentences.   They claimed from their observations that the children may
have abstracted some general principles of language use.   For example,
plurals end in '-s', past tenses end in '-ed', etc.   In applying these
principles, the children sometimes made errors like saying "I digged".
Since it is highly unlikely that the children would have been exposed
to such ungrammatical usage, an explanation based on simple imitation

is ruled out. If the children are imitating, they are also innovating. Blank and Allen (1976) also observed that although adults hardly ever direct "Why" questions to children under 2 years, the children produce "why" questions before they comprehend them. This observation is significant for two reasons. First, it represents a reversal of the comprehension-production sequence, typical of the development of most linguistic terms in general (Bloom, 1973; Lewis, 1951) and other question words like, "What", "Where" and "Who" in particular (Ervin-Tripp and Miller, 1977). Secondly, unlike "What", "Who" and "Where" questions, "Why" does not have an immediately perceivable context and cannot readily be answered, using a non-verbal mode like pointing. Could it be that the need to know and master his enviroment or the need to wonder about it, is mirrored by the early appearance of "why" questions? And could it also be this need that underlies the child's abstraction of general principles of grammar that he so often misapplies?

The advantage of such behaviour to the child is that the errors that he makes, for example errors of overinclusion of reference, which is, to use the same word in situations that do not carry similar perceptually-salient elements (Bloom, 1973) strongly attract corrections from adults. The child may from such corrections gain access to a more adult-like usage, or at least come to realise that there is another usage beyond his own. It may even be possible that such corrections may induce in the child a revision of the perceptual organisation that formed the basis of his earlier usage. This revision may lead to his discovering that, what for him was most perceptually salient in the phenomenon that he wanted to code, is at variance with normal conventions governing the linguistic coding of such phenomena (Clark, 1973). The child's initial hypothesis concerning the relationship between linguistic and phenomenal events thus becomes a vantage point, from which he is helped by others in

his attempt to master his environment.

The act of questioning or forming a testable hypothesis is then a means of inviting responsive agents (one-self or others) to join in the search for meaning. This point is made more pertinent by the observation that blind or partially-sighted children ask more questions than sighted ones (McCarthy, 1954). This is likely to augment the perception of events they obtain through touch, hearing, taste and smell. It is also likely to compensate for their loss of vision.

Once a child can formulate in linguistic terms his search for meaning and understanding, it becomes a means not only for regulating and controlling his own actions, but those of others as well. Furthermore, he can use his language to invite others to help in his quest to find out about the meaning of language itself! We found and described some instances of questions about the meaning of words in Chapter 3.

Nathan Isaacs (1930) demonstrated that children's questions are a means of bringing memory and imagination to bear on a problem and so coming to deal with temporal and causal relations that lie outside the grasp of immediate perception. But the child may not always search properly for meanings, demands, expectations or consequences. There are effective and ineffective ways of conducting a search. Ervin-Tripp and Miller (1977) have shown that adults use the strategy of questioning to initiate and sustain conversation with children. And as pointed out by Isaacs (1933) and Lewis (1963), adults' questions to children may serve two main functions:

1. They may be designed to elicit genuine information from the child, e.g. "Where is your red ball?".

2. They may have a regulatory and directive function. That is, they may direct the child's attention to his surroundings and the events

therein. They may stimulate and induce his curiosity to want to find out for himself. Some of these adults' questions may suggest alternative solutions to problems - alternatives that the child may not have thought of before. Or they may lead him to search his memory for answers which may already be somewhere in there. In short, through the adults' questions, the child's awareness and imagination may be awakened. He may, as a consequence of this, become more efficient and effective in his search for the meaning of both linguistic and non-linguistic events.

The asking of a question is inextricably linked to the perception by another, of the intention underlying it. We have shown that when the 4- and 5-year-old child's intention is not realised or only partly so, by the answer given to his question, he may repeat himself, or modify the answer or even query it. The adults' questions may be subject to similar scrutiny by the child. For example, if the child should have grounds for supposing that the adult is asking an obvious question, a 'trick', or a difficult question, he may just provide a perfunctory answer or a "No/I don't know" answer.

Inhelder, Sinclair and Bovet (1974) have observed, when testing children on class-inclusion tasks, that those subjects whose "attitude toward the questions" led them to "repeat the questions correctly" and think for a while before giving their answers, did perform slightly better than those who "had a marked tendency to modify the questions and make them more 'natural'". As the authors pointed out, those children who had a questioning attitude to the questions of the experimenters, benefited. That is, those children performed better who strove to understand what the experimenters actually meant, than the children who assumed an obvious and transparent meaning to the experimenters' questions. Although we are not told that any of the children did ask overt questions of the experimenters' intentions, it may be taken that the successful children

asked themselves, such questions. This may be deduced from the children's hesitations and the period during which they "thought for a while before giving their answers".

What is the relation between asking questions of oneself and asking others? We have suggested that it must be in the recognition of the existence of other minds who can function as conscious agents of purposes and motives, distinct from oneself. That is, the relation between self-addressed and other-addressed question-acts, must be rooted in the perception of a dependent or mutually sustaining relationship between the questioner and the answerer.

One of the causes of children's failure to communicate effectively on tasks based on the Glucksberg, Krauss and Weisberg (1966) paradigm, is their limited perception of the dependent relationship required between the speaker and the listener. We think this limitation is, in part, inherent in the task because as we have shown in the story-telling context (Chapter 3), those children who took an active interest in the stories, that is, those children who asked questions, also attended to the questions of other children. They contributed to discussions generated by other children, thereby demonstrating their knowledge of the dependent acts of questions and answers. This is in agreement with the findings of Garvey (1977).

We tried to stimulate the active participation of children in a structured two-person game (Chapter 4), by:

(a) building the inter-dependence of the speaker-listener dyad into the task. This is why the task was such that neither the hider nor the finder could independently of one another arrive at the mutually desired goal which was the retrieval of two hidden biscuits, that they could eat.

and (b) Leaving the communication channel open such that the children could ask questions of each other, about their respective roles and responsibilities in the game.

We hoped that these measures would make obvious to the children, the dependent relationship of the speaker-listener dyad. We also hoped that they would exploit this relationship for purposes of achieving mutual understanding of the intentions and actions of each other.

As our results have shown, this approach paid good dividends, at least, for the older children who spontaneously exploited the in-built co-operative measures between the speakers and the listeners. This was not so for the younger ones, who had to be directed by the experimenter to the advantages of soliciting their listener's participation.

Do children normally ask overt verbal questions of adult experimenters' intentions when they are doing psychological tests, or engaged on a quasi-school-room situation? We do not know of any systematic study done to answer this question. We suspect however, that it must be a rare phenomenon, for in a formal situation as opposed to a play situation, young children may not be able to explore the actual meaning of our requests and questions, when they are in doubt. They may lack the confidence to ask for clarification of our intentions, when those intentions elude them. They may consequently act perfunctorily and with little regard for the advantages of utilising the interdependence between the tester and the testee. It would be illuminating to explore this issue further in future research, because it seems to be at the heart of a common problem in testing the communication abilities of young children. It is about the problem of effecting an understanding of what we require them to do. We cannot always expect them to rely on verbal instructions alone (McGarrigle and Donaldson, 1975). But can we persuade them to ask, if they are in doubt about our intentions?

Only in one case did we find a child asking the experimenter about how close his actions were, to what he was supposed to do. This case was reported in Chapter 4. It concerns a four-year-old hider who, having instructed his partner on how to find the hidden biscuits, asked the experimenter:

"Kayode, have I told him right?"

Why is it so rare for a child of 4 to ask the experimenter about the test itself? What stands in his way? Our research leaves this question unanswered - a lead for further studies.

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