The development of communication: A study of referring expressions and other aspects of discourse in Algerian pre-school children

PhD Thesis

by

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To my mother

To Leila

To my children, Nazim and Moncef

" I do not say that we can here and now give definite answers to all these ancient questions, but I do say that a method has been discovered by which, as in science, we can make successive approximations to the truth, in which each new stage results from an improvement, not a rejection , of what has gone before"

Bertrand Russell "History of Western Philosophy". London: George Allen & Unwin, 1961, p. 789.

Abstract

In the present study, a total of two experiments constitute a follow up study of the development of communication: referring expressions and other aspects of discourse in pre-school urban Algerian children.

In the first experiment, the focus is on the differences between the use of definite and indefinite noun-phrase, in two conditions (free-play/structured play), and differences between the use of person pronouns (I, You) which are essentially deictic and the ones which are essentially intralinguistic or cohesive (3rd p: he, she, it) within the two conditions. The demonstrative pronouns and adverbs which are added in the grouping are less important with regard to the main factors of interest (definite vs. indefinite NP, and 1st and 2nd p. vs. 3rd p.), but in the global analysis they are of some interest as to the continuity from the more indexical function to the more intralinguistic or cohesive use of referring expressions.

The categories which are of interest in the second experiment, are those which, strictly speaking, are used anaphorically. The person pronouns (I,You) and the demonstrative adverbs (or locatives: here, there) which were under scrutiny in the first experiment, are dropped in the second experiment. These categories of discourse are hardly found, because of the nature of the experiment, the purpose of which being the evaluation of the more intralinguistic uses of referring expressions. Unlike the first experiment which was designed to tackle both the deictic

and intralinguistic uses of referring expressions by pre-school children, the second experiment was, thus, designed to measure the extent to which pre-schoolers engaged in some specific tasks (tasks which might prompt the use of some aspects of discourse), use referring expressions in their anaphoric sense, and track down these uses to their significance.

Overall, the results of the present study, together with examples from other experimental data, indicate that the function of the definite article may initially be predominantly exophoric or deictic, in as much as this function signals a particular object or the actions of one salient object singled out from a group of others, in the extralinguistic context. The results of the first experiment showed a predominant presence of a developmental function (the nominative use of the definite reference) and a consistency in the appearance of such a function across categories (the deictic uses) developmentally associated with this function. The person pronouns 'I' 'you' are typically 'exophoric' since they refer to aspects of the non-linguistic context and, by contrast 3rd p. pronouns (he, she, it, they) are essentially intralinguistic or cohesive. Similarly in the second experiment the results concerning the definite NP do agree with some recent findings about the deictic function of the definite article (which sometimes is used correctly when the object is alone, and at some other time it is used incorrectly in the instance of a non-specific reference). This, in fact, is quite different from an anaphoric or intralinguistic function: it grew out from the present data, that the apparently correct use of the definite NP is tied to situationally introduced referent and it is not truly anaphoric.

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Table of Contents

Chapter 1

General Introduction

The present research is an attempt to study experimentally referring expressions and some other aspects of discourse in Algerian pre-school children. It is firmly grounded in the ever increasing and multidisciplinary field of the development of communication. The development of communication subsumes both the development of communicative competence and the development of discourse as an aspect of 'communicative competence', or the ability to use language not just correctly but also effectively.

Children acquire language in order to communicate. This simple fact goes along with the increasing recognition, (among contemporary child language researchers and developmental psychologists) that language is intrinsically communicative and that its acquisition is viewed as occurring within and being dependent upon a social-communicative context (Waterson and Snow, 1978). The consequences of this emphasis on the social-communicative role of language by developmental psycholinguists in the late 70s, have been that more attention is paid to the child's intentions and to the acquisition of conversational skills, together with other components of linguistic ability. Other consequences include the recognition that non-verbal communication is a step towards the early use of language, and that what and how the child communicates must be the true object of research in language acquisition.

To get a general idea of the approach, the analysis and the procedure adopted in the present research, an attempt is made to review the literature on the subject of language development, from the notion of 'communicative competence' and its acquisition, and the pragmatics of the development of communication through to the development of reference in discourse. The pragmatics of the acquisition of communicative competence being intended to provide depth and scope to the present research topic.

Learning to communicate is, in one important sense, learning to use language appropriately in social contexts, and this involves what Dell Hymes (1971) calls 'communicative competence'. 'Communicative competence' includes the ability to express one's pragmatic intents (to express one's intentions and at the same time to get things accomplished in the world) and the knowledge of how to speak appropriately in various social situations. This shift, in recent developmental psycholinguistic studies, towards communicative competence put forward the issue that "An approach to language acquisition that recognizes the centrality of communicative competence to development enables us to understand language as a culturally situated social behaviour" (R.L. Schiefelbusch, 1984, p. 3).

In the second chapter of the present study, an attempt will be made to present the above view together with other dimensions of communicative competence. In doing so, I will concentrate on some characterisations of communicative competence, the ones which are

hypothesized to enable a speaker to understand the speech of others as a function of both the structural characteristics of speech and the social context. I will touch upon the need, already felt in the late 70s within that broad multidisciplinary area of child development, to develop somehow more comprehensive models of the development of communicative competence. Research within that period, and especially in the area of developmental pragmatics (Bates, 1976; Bates et al, 1979, Ochs and Schieffelin, 1979) has moved significantly beyond a deterministic cognitive explanation of language which originated in the developmental psychology of Jean Piaget. For J. Bruner (1978) a more comprehensive view of language development would require the student of child language to take into consideration a set of "generative skills", namely the conceptual, social and linguistic. One way to handle these skills is, according to J. Dore (1979), to build up a conversational model.

In the early 70s, a morphemic index of development, or the M.L.U. (Mean Length of Utterance unit), was used intensively to measure the child's grammatical capacity. However this index does not actually reflect the function of an utterance, nor the semantic relations expressed by such a morphemic unit. It appears that, in Dore's view (1979), MLU count correlated with the conversational status of the utterance will provide both a structural and functional index that will in some way offer an integrated measure of the development of communicative competence. Dore (1977; 1978; 1979) proposed what he called "conversational acts" or "conversational units", or units of language behaviour that reflect both the functions and the structures of children's utterances. Dore's

'conversational acts' are assumed to be based on some pragmatic considerations, i.e., they are acts which convey both a proposition and the speaker's attitude towards that proposition. These also appear to be the essential components of a communicative act or speech act: the propositions and illocutionary force. The 'proposition' is said, in Speech Act theory (Austin 1962; Searle, 1969), to involve the conceptual content of the utterance organised in terms of a predicate taking one or more arguments, and the 'illocutionary force', or what the speaker intends his utterance to be taken. Another condition in taking conversational acts as central elements of communicative competence has to do with the identification of particular acts based partly on their relation to others in the conversation. There may be some methodological advantages of conversational acts or C- acts, among these is particularly the attribution of intentions to infants' early vocalisation. Some work (J. Ryan, 1974) has already been done in that direction, which is a classification of cues used by mothers and caretakers, on the basis of a pragmatic analysis of performative aspects of speech developed by Austin (1962). This was done in terms of the 'aspects' the 'accompaniments' and the 'circumstances' of the utterance. However in attributing intention to infants' early vocalisation there appears to be a difficulty in trying to establish whether something was 'really' or consciously intended.

In any case, it appears that the progress towards the use of conventional means to communicate an intent depends, from the beginning, upon the child learning the appropriate pragmatic of indicating, requesting, or whatever before he learns grammatical forms.

The pragmatic perspective on the development of communication helped students of child language to redefine speech act theory as a theory of 'communication' or 'communicative competence' (Bates, 1976; Dore, 1975; Garvey, 1975); this is because speech act theory focussed on the use of expressions in speech event situations. Besides the works of Austin (1962) and Searle (1969) other philosophers of language considered the circumstances surrounding an utterance, and consequently the discourse in which it occurred. They attempted to identify rules that govern the way discourse is conducted. Among these, H. Grice (1975) formulated a set of conversational postulates that are perhaps susceptible to developmental influences and empirical research.

Grice's principles involve assumptions or presuppositions that participants in a conversation share about the contents of their exchange of talk and the way the conversation must be conducted. Very few studies have directly investigated children's awareness of Gricean maxims or principles. The apparent reason for this seems to be that they are too general to be easily subjected to research. It is possible to relate, indirectly, some specific presuppositional constructions (informativeness and relevance, for example) to Gricean principles which are partially instantiated in those specific presuppositional constructions. The "cooperative principle", one of Grice's most general principles, subsumes these presuppositional constructions under the assumption of 'quantity' and 'relation'. For De Hart and Maratsos (1984), informativeness and relevance partly concern correct usage of determiners ('a' and 'the'), proper names and pronouns, and that all these particular linguistic forms

partly involve the speaker's understanding of what the listener knows. These particular linguistic forms that carry presuppositions (definite and indefinite articles, proper names, pronouns) are directly related to the referring expressions, as elements of presuppositions, investigated in the present research.

In the third chapter, the most closely related studies to the present research are discussed in some detail within the development of reference in discourse. One of the most important accomplishments in pragmatic development, when talking about presuppositional usages, involves when not to take information for granted; more precisely it requires that the developing child learns when *not* to presuppose so that the listener will understand what is being said, since the latter does not hold the same assumptions as the speaker does (Bates, 1976a). 'Presupposition' which involves "the use of an utterance to comment upon information assumed to be shared by speaker and listener" (Bates, 1976a, p. 97), is a feature of communication that extends throughout one's life. From a Piagetian position, while pre-school children are still prone to egocentric speech they are in some way very much presupposing, and the gradual decline of egocentric speech parallels the development of presupposition. If, in such a view, pre-school children's speech appears to be predominantly non-social or egocentric in that it fails to take into consideration other interlocutors, from a Vygotskyan position (Vygotsky, 1962; 1978) this so-called 'cognitive inadequacy' appears to be very different. Vygotsky's view is that young children respond to and initiate dialogues with adult partners when engaging in

joint activities. Adult's utterances will guide children's attention and actions, and progressively adult dialogue forms will come to be used as overt private speech. Private speech takes its origins in social dialogues between adult and child. These dialogic strategies are internalized later on, by children, in the forms of covert private speech, or 'inner' speech.

An important assumption in child's language research in the Piagetian tradition is that the waning of the developmental processes of presupposition and egocentric speech is closely tied to the development of discourse. One recurring idea in the developmental literature on language development in the pre-school years, is that progress in the development of discourse depends on the child's increasing ability to understand the needs and resources of the listener (Bloom and Lahey, 1978).

Studies by Brown (1973), Maratsos (1974) and Warden (1976), on the acquisition and use of articles, uncovered an inappropriate egocentric use of the definite article in young children. Such findings attribute to young children a failure to take account of their audience's knowledge of the referent, when they use a definite reference or when they construct a referring expression. It appears that young children fail to recognize the need for an indefinite expression (use of an indefinite article) when they introduce a referent for the first time in discourse.

Children's referring expressions in discourse (definite and indefinite reference, pronouns, noun-substitutes and deictic indexical functions, proper nouns, etc.) have been studied longitudinally and cross-

sectionally from a variety of points of view, within the broad field of the development of communication. Most research on children's use of pronouns, for example, has concentrated on the indexical function of 1st and 2nd person usage. A contemporary psycholinguistic hypothesis (J. Lyons, 1977; 1975) states that deictic terms are logically prior to anaphoric ones, and that the former appear earlier than the latter. The young child appears first to use pronouns to refer to things and persons that are physically present in the situation in which he/she is involved, rather than those that linguistically refer to objects and persons known only through prior mention in an utterance. It can be said that basically a deictic pronoun does not need in its use some form of an internal representation (since it can refer to the world of objects directly), while an anaphoric pronoun will require some form of internal representation (to retrieve information about the antecedent which justifies the use of an anaphoric pronoun). Part of one of the hypotheses of the present study is that this function of deictic terms at a certain age is an example of a 'developmental function', whereby deictic terms are acquired earlier than sentential expressions belonging to the extended discourse. (c.f. works of Warden, 1976; Maratsos, 1976; Emslie and Stevenson, 1981). These terms appear to continue to function developmentally (the pronouns are deictically referential) for some time before the effective use of cohesive devices (all aspects of anaphora).

The basic findings about the acquisition of pronouns (Charney, 1980; Deutsch & Pechman, 1978) appear to agree that young children acquire the personal pronoun 'I' before 'you', and that these two are

acquired before 'he' or 'she'. This will be discussed in some detail in the third chapter of the present research. A problem, however, about all these observations, is pointed out in conjunction with the discussion of their results.

Are the tasks given to 2-year-olds suitable for reflecting their actual abilities? Could one obtain reliable responses, which are not experimental artefacts, from young children at the crucial stages of development? (S. Chiat, 1986). Do these results reflect young children's actual processing of particular linguistic forms or do they reflect more of the experimental situation and perhaps the strategies used by children in that situation? Some related questions will also be posed in connection with the sorts of experimental manipulation of either cognitive (pragmatic) or linguistic (lexical) sources of information. The intent in these studies concerned with the interpretation of pronouns by young children, is to disambiguate the relative contributions of these sources of information in the acquisition and use of pronouns (Tyler, 1983; Wykes, 981).

Other experimental studies of referring expressions have looked particularly at the functions that pronouns and articles can serve. Karmiloff-Smith (1979; 1981; 1985) Warden (1976) and Emslie and Stevenson (1981) have focussed on the notions of definiteness and indefiniteness in the use of articles, and the parallel notions of specificity vs. non-specificity and novel vs. familiar distinction coded by the articles. The indefinite article 'a' can serve many functions. It can be used to introduce a new entity (e.g. "I visited a new school yesterday") but it can also have a non-specific function (i.e. no specific entity in the mind of the

speaker, e.g.:"the old man wanted to buy a book", where any book on any subject will do).

In Karmiloff-Smith's view, developmental changes in the psycholinguistic behaviour of children reflect underlying representational changes that allow the above-mentioned functions to be coordinated. On the other hand, for Karmiloff-Smith (1979; 1981) the early deictic use of the definite referring expressions is *deictic* rather than *anaphoric*, and the reason for such use "could be that the child has one procedure for naming: 'that's + N', juxtaposed with quite a separate procedure for making reference, i.e. the use of the definite article or the pronoun deictically" (Karmiloff-Smith, 1981, p. 128).

In the same context of research, pre-school children in Warden's study (1976) fail to take account of the social context of their reference or of their audience's knowledge of the referent, when they construct a referring expression. For Warden children under 5 years fail to recognize the need for an indefinite expression when introducing a referent and, at the same time, the constraints on the use of the definite article, i.e., to indicate an already identified referent. The same conclusion about the egocentric use of the definite article is also found in Maratsos (1976) with 3 to 4 year olds but to a lesser degree (Maratsos' results do not agree with Warden's as to the extent to which this egocentric use is found in pre-school children). This will be discussed in more detail in the chapters dealing with the experiments of the present study, together with the existing, and sometimes conflicting, evidence as to the age at which the articles are acquired.

Problems concerning some aspects of the methodologies used by contemporary experimental studies of the article by pre-school children must be pointed out. The most common of such problems concerns the pictures used in the experimental tasks (the pictures often being difficult to integrate into a single story, and this may be masking, in a way, children's true abillity in using such and such linguistic form). Another problem often pointed out has to do with the situation in which the tasks are being performed. Concerning this latter problem, one essential argument in Emslie & Stevenson (1981) (talking about the appropriate/inappropriate use of the definite article) is that when children are telling stories to a listener who is familiar to the individual depicted in the pictures shown to them (the listener can actually *see* the pictures), the use of the definite article is appropriate. But in the situation where the listener can not see the pictures, even three-year-old children, can use the definite and indefinite articles appropriately (Emslie & Stevenson (1981). A problem, however, might emerge here. This use of definite and indefinite articles seems to be appropriate from the adult's, as addressee's, point of view, but it may not necesssarily be the case for the pre-school child. As was suggested earlier by Karmiloff-Smith (1981), children might just be 'juxtaposing' a series of sentences containing pronouns, but not necessarily linking them up. In the examples:

"That's a dog. The dog is barking." and

"That's a dog. It's barking"

is the pre-school child's use of the definite article "the" and the neutral pronoun "it" really anaphoric? In the situation where both the young child and the adult are looking at the same picture or watching the same scene involving a dog engaged in an action, the 'a' in "That's a dog" appears to function *deictically* (the child's 'pointing' to and 'naming' the individual in the picture), and not truly introducing a new entity. 'The' and 'it' may not be understood by young children as necessarily referring back to an already introduced individual, i.e. functioning anaphorically. In the situation where the listener (an adult or another child) can not see the picture, a young child as a speaker may refer to the content of the picture by "the dog's barking" or simply "dog's barking". A definite referring expression (e.g. 'the') might often function "exophorically" (referring to objects & things in the environment of the child, or reference outward) rather than anaphorically. An attempt will be made to show this in the discussion of the results of the present research in conjunction with other studies of referring expressions (Karmiloff-Smith, 1979; Warden, 1976; Hawkins, 1977).

The situation in the present study plays an important role, but it is seen from a different angle than the one used by Emslie & Stevenson (1981).

One hypothesis of the present study is that the cohesive uses of referring expressions, and their interpretations and recognition without difficulty by children, are relatively late developments (c.f. also works by Karmiloff-Smith 1977, 1979; Warden, 1976; Hickmann, 1980; 1985). To

be successful, a definite reference must refer to a definite individual. Moreover, the description we offer of that 'definite individual' will be sufficiently specific, in the given context, to identify uniquely for the hearer/participant (i.e. in the context of a conversation) the referent we have in mind. (see J. Lyons, 1977; 1981). Such specification of the uniqueness of the referent is cognitively more demanding than, for example, the semantic distinction involved in naming. In the former use (or 'identifying function') the speaker/participant is referring to a particular example(s) of a class of things (c.f. Emslie and Stevenson, 1981), and in the latter use (or 'nominative function') the speaker/participant is required to have only a grasp of the class membership, i.e., an individual class member. We can illustrate this with the example of the indefinite article 'a' as having a nominative and an identifying use. In a naming task the reply to the question 'what's that?' will be "a + noun", and in an identification/description task the reply to the question "tell me what's happening?" will be "a + noun is ...ing *a* + noun", e.g. "a dog is chasing a duck" (c.f. Warden, 1976).

3rd person pronouns are continuous with this cohesive use of a definite reference. They "create" referents linguistically in such a way that the presuppositions about their existence and specificity are thus available, and in the subsequent discourse the use of more 'presupposing' coreferential "definite forms" is to maintain reference to the entities introduced earlier in discourse, thus providing continuity in the context of speech. Thus 3rd person pronouns contribute to what Halliday

and Hasan (1976) called the "text-forming" function through cohesive intralinguistic relationships.

In the sentence "I saw a little boy in front of the house, *he* was holding a big umbrella", 'he' refers to a specific non-linguistic entity which is identifiable only through its indexical relation to previous (coreferential) noun phrase ('a little boy'). In contrast to 3rd person pronoun use, 1st and 2nd person pronouns refer to aspects of the non-linguistic context, though 3rd person pronouns ('he', 'she', 'it') may also have a more context-specific use, the referent being physically present. 1st and 2nd person pronouns are typically 'exophoric' (Halliday and Hasan, 1976), i.e., they refer to something in the environment of the speaker. 'Exophoric' reference is situational reference, and has been said to be a characteristic of children's speech (Bernstein, 1971; Halliday and Hasan, 1976; Hawkins, 1977).

The other hypothesis of the present study has to do with the play-space, or the distance between the two partners of the dyad (the subjects participating in the experiments are always in a dyadic interactive situation). Such a play-space between the children is indeed a critical factor. For a more natural situation, the children *must see each other completely*. Proxemic relations in this case can be decisive not only in matters of talkativeness (a richer referential content in children's messages) but also in matters of mutual relations and reciprocal socialisation. An empirical study was done in that direction by two child language researchers (B. Bokus and G.S. Shugar, 1984). Their hypothesis is that young children in a dyadic interactive situation are

more likely to produce longer utterances with an expected richer referential content, when there is a short distance between the members of the dyad, and short utterances which are lacking in referential content when the distance between the children is greater. In the present study the distance between the members of the dyad was as short as possible, and it was built, in the overall design, in order to be tested as a condition which is hypothesized to influence the pattern of production and construction of utterances. This will be shown in the chapters dealing with the experiments.

The situational opportunity just described and the nature of the stimulus materials (animate human beings in a series of pictures making up a unique story, a coherent whole) introduced in the second experiment (this being recognized as the factor of 'animacy') are hypothesized as triggering first, a richer referential content in children's speech, and second, as a potential influence on children's production of speech (longer utterances) and cohesive uses.

The analysis of children's errors over the two experiments of the present study, across the six months interval, will help explain the significance of the children's developmental errors in relation to the use and function of the discourse categories under study.

Chapter 2

Ways of characterizing the acquisition of communicative competence

2.1.Introduction

The study of the development of communication is one of the most exciting challenges to developmental psychologists and psycholinguists. Thus, within the broad field of child language, there has been increasing interest, if not an orientation, in developmental psycholinguists, in the last decade and in the current one, towards the acquisition of communicative competence.

From a sociolinguistic point of view (D. Hymes, 1964) the term 'communicative competence' covers a person's knowledge and ability to use all the semiotic systems available to him as a member of a given socio-cultural community; and linguistic competence, or knowledge of the language system is one part of communicative competence.

From a somewhat multidisciplinary viewpoint which emphasizes both the person and the context ('context' being taken in its widest sense to include the social and cultural factors), communicative competence is "the totality of experience-derived knowledge and skill that enables a speaker to communicate effectively and appropriately in social contexts". (R.L. Schiefelbusch, 1984, p. IX)

This definition has the advantage of considering the social and cultural context and to shape it into a new dimension already introduced by Gumperz and Hymes (1964), beside the 'knowledge' of the rules which enable a speaker to select well-formed utterances. The term 'linguistic competence' was introduced for the first time by N. Chomsky in the early 60s (N. Chomsky, 1964; 1965), to cover the two much discussed issues of the knowledge of a set of rules that underlie sentence construction, and the child's innate knowledge and capacity for linguistic universals, which are assumed to explain the structural principles common to all languages. But it happens that Chomsky's definition of 'competence' overlooked the particular cultural context. The reactions of a certain number of investigators was almost immediate. Thus, Gumperz and Hymes (1964) and Slobin (1967) include in their definition of communicative competence not only that 'linguistic knowledge' which enables a speaker to produce structurally well-formed utterances, but also the knowledge of both semantic reference and pragmatic functions: the utterances should be referentially accurate and their use should be contextually appropriate. In addition, this characterization of communicative competence enables a speaker to understand the speech

of others as a function of both the structural characteristics of speech and the social context.

Thus, to resume, a developmental sociolinguistic theory of language acquisition was taking shape in the last decade, and it distinguished itself from the essentially linguistic theory developed by Chomsky and his co-workers in the early 60s, in the way it views the role of linguistic input to children. It differs also from the Chomskyan-based approach to language development in another essential way, in that the nature of the behaviour acquired, or competence, has been refined to include more than simply grammatical competence.

For Gleason (1973), communicative competence involves knowing how to speak in different ways to different people. Baby-talk is one of the variants in the registers of an adult's "code-switching" repertoire. Baby-talk or BT is, for C. Ferguson (1977), a set of simplified registers to use with people felt to be unable to understand normal adult's speech. And for Roger Brown (1977), there are two principal components for BT:

1) communication-clarification (or the desire to be understood and to teach)

2) expressive-affective (or the expression of affection with the capturing of the addressee's attention as a secondary goal).

On the other hand, C. Ferguson (1977) found the following processes in BT, which are 'simplifying' (or replacing difficult consonants with easy ones, and pronouns by proper names), 'clarifying' (or speaking slowly, clearly and with many repetitions), and the expressive process (or use of hypocoristic or pet names - affixes, 'cute' euphemism and nursery tones).

Some researchers in the area of BT (Gleason, 1973; Anderson and Johnson, 1973) found that 5-year-olds, while they are not as adept at code-switching as for instance eight-year-olds, nevertheless show some baby-talk features when addressing two-year-olds or infants.

Thus, it was detected that some, but not all of BT features are present in four-and-five-year-olds, and it was found well-established in eight-year-olds (Anderson and Johnson, 1973). In a larger study, Shatz and Gelman (1973) found that four-year-olds talk differently to adults, peers and two-year-olds. It appears, then, that the children as young as four or five years must learn the baby-talk register.

This introduced a way of characterising communicative competence. But, in the meantime, other important developments were taking place in this ever expanding field of child language. In the late 70s, investigators and theoreticians in the field of child language, in the light of other developments in the broad multidisciplinary area of child development, felt the need to somehow develop more comprehensive models of the developments of communicative competence. The development of such models ranges from the cognitive developmental

view of the early 70s, inspired by Piaget and his followers, to the cognitive-pragmatic view of the mid-70s (Bates, 1976; Bates et al, 1979). The developmental psychology of Jean Piaget was becoming increasingly popular in America and in Great Britain, and this approach began to exert influence on theories of language development. Piaget's descriptions and explanations of the origins of intelligence in children (Piaget, 1952), presented the child as an active organizer of experience from birth onwards. This 'active organization of experience' involves the perception and knowledge about things and objects in the child's environment. Knowing about things, according to Piaget, implies action at two levels. First, he believed, children structure their world through interactions with things, and through interactions they adapt and organize schemes to promote the development of the intellectual system. Second, through the assimilation of objects into schemes, children recognize or perceive the objects. The application of schemes (through visual scanning, haptic (or pertaining to the sense of touch) manipulations, and so on, gives meaning to our sensory experience. In addition to this, Piaget's careful description of the child's preverbal behaviour and his analysis of the cognitive structures which are hypothesized to underlie preverbal behaviour were very appealing to students of child language. Thus, for one of the most prominent Piagetians of the Genevan School, Sinclair de-Zwart (1969), children's first, single-word utterances, could be expressions of action patterns or schemas. Prior sensori-motor development is for the Genevan School (Piaget and Inhelder, 1969; Sinclair de-Zwart, 1969; 1971) an essential prerequisite for the emergence of language. To this position, and the followers of Piaget in

America and Europe (McNamara, 1972; Nelson, 1973;; Brown, 1973; Bloom, 1973 and papers in Lock (ed.), 1978; etc.,), "the young child's months of sensori-motor activity have provided him with a great deal of this kind of uncoded knowledge about how objects can be related to one another, and it now remains to map all this knowledge in a linguistic system, so that he can tell himself and others what he knows implicitly" (J. Flavell, 1977, p. 38)

For Sinclair de-Zwart, the child begins to acquire language only at the conclusion of the sensori-motor period, because he/she is dependent on some intellectual accomplishments of that period, and language is only one aspect of a more general semiotic or symbolic function.

Research, in the mid- and late 70s, on a wider multidisciplinary basis, especially in the area of developmental pragmatics (Bates, 1979; Bates et al, 1979; Ochs and Schieffelin, 1979) has moved beyond a deterministic cognitive explanation of language. For this latter view, the development of language must be considered not just in a cognitive context, but also in a context of social interactions. According to this approach, these three aspects of development are not truly separate entities. In the same current of multidisciplinary research on the development of language, J. Bruner (1975a) advocated a more comprehensive approach than the previous ones , to language learning in the child.

For Bruner (1975a) a more comprehensive view of language development would require the student of child language to take into

consideration a set of "generative skills" which are, at least, the conceptual, social and linguistic. These skills (conceptual, social and linguistic) could partly be handled according to Dore (1979) by a conversational model. One of the main reasons behind the need for such a model is that it is rather difficult to interpret early speech, the child's meaning being different from the adult's, and the intention behind the child's utterance being often a puzzle. To take an example, if a child says 'Dat', pointing for instance to a stuffed dog in a truck, or, to take another example, if he says 'allgone' and is looking at his mother, this is not as easy to interpret as it might seem at first sight. In the first example, the child might mean only the object pointed at, he/she might mean "what is that object (stuffed dog) over there?" or "is that a dog?". The same thing could be said about the second utterance, "allgone". An adult might interpret it as meaning, that something - an object, a thing or a person or whatever - has disappeared. But is this the only intention in the child's mind? The nonverbal signals and the one-word utterances accompanied by pointing and looking are examples of the potentially imprecise and ambiguous quality of the young communicator's messages. Dore (1979a) emphasizes that the *function of an utterance* (in the early stages) relative to the ongoing conversation is to allow the adult to interpret the child's intentions. In the early 70s, there was an intensive use of MLU (Mean Length of Utterance) as a measure of the child's grammatical competence. But this morphemic index of development does not reflect the function of an utterance, nor the semantic relations this index expresses. MLU might be more useful when used with reference to what children can perform in actual conversation. MLUs, then, might

advantageously be correlated with functional acts, and it can be shown that the length of utterances varies with the purpose they serve. For example, experiments with children have revealed that responses to questions are shorter than the spontaneous descriptions and statements they produce in the situation where they themselves initiate the topic of conversation.

Dore's suggestion is that MLU count correlated with the conversational status of the utterance will provide both a *structural* and *functional* index that will offer an integrated measure of the development of communicative competence.

2.2. The development of communicative competence as 'conversational acts'

To counteract the old and heated debate of the primacy 'qua' importance of either language or thought as organizational processes, J. Dore (1979 b) proposes conversation as the immediate communicative context for language development, but remarked that conversational properties "cannot explain the abstract structure of the language the child acquires" (J. Dore, 1979 b, p. 339). Within the growing interdisciplinary field of the development of communication, the conception is that language evolves from a 'functional' pragmatic base (works by Bates and associates, 1976; 1977; 1979; Bruner and associates, 1978). The

orientation is, thus, towards Labovian sociolinguistics: the attempt is to demonstrate the sociological determinants of the use of speech. In "language in the Inner City" (1972), W. Labov pointed out that the various manifestations of linguistic competence are affected by variations in the settings, participants and topics of conversation (the empirical findings by Cole, Dore, Hall and Dowley, 1978, tend to support Labov's claims, for groups of nursery school children). The critical link between these views and the functionalist view of Halliday (1975) is that both directly or indirectly emphasize that the structure of what is actually acquired by children is determined by the functions for which language is used. The problem for Dore (1979b), then, is to find out about the types of relations between the 'pragmatic of communicative interactions' and 'the cognitive representation of linguistic knowledge'.

This third approach to this delicate and controversial study of *knowledge* and *use* of language (the 'know how to do' with the 'know about' language) proposed by Dore aims to separate the function of utterances (in other words, the pragmatic aspects of talk) from the structures which manifest them (or 'the abstract substance of linguistic representation'), and the possibility to identify, ontogenetically,the multiple relations between the two. To this end, Dore (1977; 1978; 1979) devised what he henceforth called 'conversational units', or units of language behaviour which reflect both the function and the structure of utterances children produce.

There are, according to Dore (1979a) several advantages in taking conversational units as central elements of communicative competence;

and this is true if one assumes some pragmatic considerations, i.e. to build up an utterance as some sort of a functional act which conveys both a proposition and the speaker's attitude towards that proposition. These are what seem to be the two essential tenets of a communicative act or speech act: the proposition and the illocutionary force. In Speech Act theory (Austin, 1962; Searle, 1969), the "proposition" involves a conceptual content of the utterance organized in terms of predicate taking one or more arguments. And "illocutionary force" is a kind of conventional 'force' associated with the "illocutionary act" (speech act), or the making of a statement, offer, promise, etc. This conventional force is based on certain conditions (or 'felicity conditions') which will be defined, in more detail, in the next section. This is one of the reasons why speech acts (which are the building blocks of a relatively well-defined theory of communicative acts) were taken by several investigators of child language as appropriate units for the analysis of the child's developing communicative competence. But more will be said about this later on. The second condition has to do with the identification of particular acts based partly on their relation to others in the conversation.

J. Dore (1979a) defines a conversational act as "an utterance in a person's turn at speaking in conversation which conveys information and expresses an attitude (intention, expectation, belief, etc.,) relative to that information" (J. Dore, 1979a, p. 342). And to the extent that utterances function as acts in a conversation, these are conversational acts or C-acts. These may present methodological advantages, and the central methodological value of a C-act as a unit of mutual display is that it is

always subject to 'immediate feedback'. Among the several levels of feedback, the most prominent of these is when, for example, a participant has not heard adequately, or understood, another participant in a conversational episode (in this case the first participant can obviously seek clarification). Another example of feedback is, for instance, when a participant in a conversation states a position, another participant may corroborate, or contest or evaluate or ignore, etc., the first participant's position. In this context of mutual display between participants in a social episode (i.e. conversation on situationally appropriate topics) Garfinkel and Sacks (1970) remarked that participants' formulations:

> "treat some parts of the conversation, to explain it, or characterize it, or explicate, or translate or summarize or furnish the gist of it, or to take notice of its accordance with rules, or remark on its departure from rules". (Garfinkel and Sacks, 1970, p. 350)

The few published articles and studies on repairs and formulations in children's speech indicate that both devices are pervasive in adult speech to children.

The other methodological advantages of conversational episodes and acts, according to Dore (1979a), have to do with adult's attributions of intentions to infant's early vocalizations. This appears to be perhaps the most important aspect of conversational feedback for the initial acquisition of language. In this respect, Ryan (1974) pointed out that during verbal interchange between mothers and infants, "the mothers actively pick up,

extend, comment, repeat, interpret and misinterpret what the child has said". (Ryan, 1974, p. 199) Mothers, and in general adults, use, then, a variety of cues to possibly interpret infants' communicative intents. Ryan (1974) (on the basis of a pragmatic analysis of performative aspects of speech developed by Austin, 1962) has adapted a classification of the cues used by mothers and caretakers. This was done in terms of the 'aspects', the 'accompaniments' and the 'circumstances' of the utterance, which include:

- the intonation patterns variously interpreted as 'insistence, protest, pleasure, request, etc.' (aspects);

- a set of cues for interpreting 'pointing, searching, playing with specific object, refusing' (accompaniments);

and finally

- another source of cues constituting the context of the child's communicative intention (circumstances).

In Ryan's words this has to do with "the presence or absence of particular objects or people, the relation of these to the child, any immediately preceding events of speech". (J. Ryan, 1974, p. 201)

But in attributing intentions to the infants' early vocalizations there appears a difficulty in trying to establish whether something was 'really' or consciously intended. Linguists and psychologists have come to speak of

the functions that communication or language serve and determine the way these functions work, in an attempt to overcome such difficulties. If these proposals do not answer to the questions of 'reality' and 'consciousness', they, nevertheless, express the hope that these ultimate questions may one day be dealt with. Thus, the fact remains that adults, in general, attribute communicative intent to young children's utterances with respect to certain functions of language. In that context, Jakobson has attempted a descriptive list of functions (1960). Jakobson's list of functions of language includes the 'referential', the 'expressive', the 'conative', the 'phatic', the 'metalingual' and the 'poetic' functions. The 'referential' function is that which is more closely associated with the symbolizing or representational aspects of language. The 'expressive' function is that which reveals the speaker's feelings. The 'conative' function is the use of language to influence the behaviour of others. The 'phatic' function, already introduced by Malinovski (1930), is described in Jakobson's writing, as that which contributes to the establishment and maintenance of social or communicative contact. The 'metalingual' function serves to explicate usually by reference to a code, or in J. Lyons (1977) words "any utterance whose primary function it is to verify that the interlocutors are using the same language or dialect, or using expression of the language in the same way, is said to be metalinguistic" (J. Lyons, 1977, p. 53). The 'poetic' function involves the use of language to reveal its inherent artistic possibilities. But contemporary pragmatists (e.g. Levinson, 1983) find that the categories provided by such a traditional approach to the functions of speech are not inspired by "direct empirical motivation". (Levinson, 1983, p. 41)

To summarize what has been said so far about communicative intentions in the young child, it appears that the progress toward the use of conventional means to communicate an intent depends, from the beginning, upon the child's learning the appropriate pragmatic of indicating, requesting, or whatever, before he learns grammatical forms; it may be that the pragmatics is constitutive with respect to his grammar. From this perspective, which has been called the 'communicative' perspective, and based on speech act theory (Austin, 1962; Searle, 1969), Dore (1974; 1975) has studied the emergence of communicative intents and showed not only that a systematic study of pragmatic development is possible, but that such studies can possibly yield valuable insight into the acquisition of the language code itself.

Here as in many studies of child language, in the last and present decade (c.f. papers on dimensions of communicative competence in Shiefelbusch et al, 1984) the intention to approach the development of communication from a pragmatic perspective is introduced. Pragmatics involves how people use language in a variety of situations to achieve personal and societal social goals. The most pervasive ideas that contributed to the study of pragmatics came from the philosophical study of language developed by J.L. Austin (1962).

The study of pragmatics involves a variety of orientations; these include the philosophy of language, linguistics, cognitive psychology and social anthropology. But the pragmatics of acquisition essentially seems to be derived from the linguistically oriented point of view (Dore, 1977;

1978; 1979; Bloom, 1975; Bloom et al, 1976; Halliday, 1975), and the cognitively oriented point of view (Bates, 1976, Bates et al, 1979; Parisi and Antinucci, 1978), though both of these views borrowed heavily for their taxonomies of children's discourse, from Speech Act theory (Austin, 1962; Searle, 1969; Grice, 1975), and the socially oriented point of view of the pragmatics of language of Dell Hymes (1971; 1972; Schegloff, 1971; 1972). Thus some of these students of child language often refer to Speech Act theory as a theory of 'communication' or 'communicative competence' in their studies of children's use of language (Bates, 1976; Dore, 1975; Garvey, 1975), essentially because Speech Act theory focussed on the use of expressions in speech events situations. To understand more about the foundations of communicative competence in pre-school children, in the following part are introduced, briefly, some of the concepts underlying Speech Act theory, and subsequently the development of communicative competence in the pre-school years.

2.3. Foundations of communicative competence and its early development

a) Speech acts, an overview

To begin with, we can say that to produce an utterance is to engage in a certain kind of social interaction. This fact, until the writings of J.L. Austin (1962), was not recognized as such by philosophers and logicians of language. Speech Act theory explicitly recognized the social or interpersonal dimension of language behaviour and subsequently oriented the discussion around such terms as 'mood' and 'modality' (but see the recent treatment of these terms by F.R. Palmer, 1986). The term 'Speech Act' is potentially misleading; we often use it to refer to the act of speaking as such (the production of an actual spoken utterance) or to something more abstract, its usual sense in linguistic philosophy and the philosophy of language, to take J. Searle (1969) distinction between two usually confounded types of reflection on language ('linguistic philosophy' - name of a method - attempts to solve particular philosophical problems pertaining to particular words or other elements in a particular language, and 'philosophy of language' - name of a subject - attempts to give "philosophically illuminated descriptions of certain general features of language ("reference, truth, meaning, and necessity"), J. Searle, 1969, p. 3-4). Moreover the non-linguistic communicative acts (e.g. a manual gesture) may be perfectly included in a 'speech act', in its Austinian sense, though Austin and his followers in building the theory of speech acts do particularly refer to language utterances.

Austin distinguished between *constative* (or content aspect of language) and *performative* utterances, or functional aspects of language.

A constative utterance is a statement which is either true or false; it describes some event, process or state of affairs. A performative utterance can be successful or unsuccessful, without there being any question of truth or falsehood. It is used to do something rather than to say something is or is not the case. (e.g. "I name this ship Liberty" or "I advise you to stop smoking". These are uttered to perform particular kinds of acts which could hardly be performed in any other way.)

In other words, a constative utterance involves *saying something* (asserting that something is or is not) and a performative utterance involves *doing something*, and these two aspects are possible by means of language.

Austin later realized that these distinctions broke down, the criteria for performative utterances can be applied in the same way to constative utterances (these are assertions which can fail just like any other kind of speech acts); he came then to develop, starting from the VIII William James lectures, in 1955, a new theory, that of locutionary, illocutionary and perlocutionary acts.

Finding that the constative/performative distinction can no more characterize different sorts of utterance, but, instead, to reconstruct

different aspects of the same utterance, he further distinguished the following aspects of speech acts: (c.f. D. Wunderlich, 1979)

1) a '*locutionary act*' involves

a) performing a '*phonetic act*' i.e.. the utterance of certain sounds.

b) performing a 'phatic act', i.e. the utterance of certain words (sounds of a certain type that belongs to a certain vocabulary)

c) and, generally, performing a 'rhetic act', where the results of the phatic act and its constituents are used with more or less definite meaning, in other words this act contains a particular sense and reference.

2) performing an *'illocutionary act'* involves a certain force to be exercized on the hearer in a conventional way and with reference to special circumstances of the situation

3.) and finally to say anything is often to perform a '*perlocutionary act*', i.e. certain non-conventional effects - as a result of the illocutionary act - are achieved on the hearer, with respect to his feelings, thoughts and actions.

The fact that questions, warnings, promises, condemnations, criticisms, identifications, etc., are regarded by Austin as 'illocutionary

forces' (of utterances), and not the meanings of the utterances, precludes him from using the concept of meaning for illocutionary act.

The 'illocutionary force' is characterised by a set of 'felicity conditions' which according to Searle (1969) may be classified into:

- 'preparatory conditions' (that concern real world prerequisites to each speech act),

- 'propositional content conditions' (that specify restrictions on, for example, the content of the complement sentence(s): 'I hereby promise that.....(s)'

and

- sincerity conditions (that state the requisite feelings and intentions of the speaker as appropriate to each action).

On the other hand, certain effects of speaking may appear to be essentially outside conventional control (the distinction between illocutionary and locutionary acts was done from the point of view of conventionality). Thus, the following words: 'amazing', 'persuading', 'encouraging', 'humiliating', 'offending', can not have explicit performative formulas, i.e. "I hereby amaze you ... etc.".* An explicit performative, e.g. "I ask you whether all the guests are French" has the grammatical form of a declarative sentence. But in so far as effects of speaking are conventionally produced, they belong to the illocutionary act. Austin

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* unaccepted sentence

(1962, 115 ff.) developed further the distinction between illocutionary and perlocutionary acts; this is done in some points which are:

1) that the speaker has to be secure that the utterance will be understood and accepted

2) that the hearer's attitude with respect to the social situation as a whole is altered in some way, which could not have been the case if the utterance had not been made and

3) that particular obligations are imposed with respect to following acts.

Austin reviewed all these concepts (1970, posthumous publication), but the challenge was yet to come as to the identification and classification of all possible forces of utterances. John Searle was among those young philosophers who took up the challenge; he developed what is considered to be the most comprehensive theory of speech acts, in the post-Austinian developments of the philosophy of language (c.f. J. Searle, 1969).

For Searle "speaking a language is performing speech acts, acts such as making statements, giving commands, asking questions, making promises, and so on; and more abstractly, acts such as referring and predicating" (J. Searle, 1969, p. 16). Searle tried to be systematic by

providing a more precise analysis of the linguistic rules that regulate speech acts. He viewed the speech act as the basic unit of communication. For Searle, to perform communicative acts is not only:

- to speak to someone else, but also it implies that:

- the acts intend what they say, (i.e. the communicative intentions of the acts are successfully communicated) and finally

- the acts have particular effects on listeners

He proposed four components of speech acts, which are:

- the utterance acts

- the propositional acts

- the illocutionary acts

- the perlocutionary acts.

All speech acts include an utterance act (utter something), a propositional act (refer or predicate), and an illocutionary act (assert, direct, deny, and so on). A speech act may or may not bring about the intended response from the listener (the intended perlocutionary force).

A proposition is, for Searle, "what is asserted in the act of asserting, what is stated in the act of stating" (J. Searle, 1969, p. 29) To take an example, when an interlocutor says "I admit that I lost your book", "I lost your book" is the proposition, and the illocutionary act - the act of admitting - is indicated by "I admit".

In other words, the proposition is essentially the conceptual content of the utterance, and the illocutionary force indicates the speaker's attitude towards the proposition. For some critics (Wunderlich, 1979), Searle's analyses are still, in a number of ways, unsatisfactory (partly because they are incomplete, partly because they isolate the speech acts from their preconditions and above all from their 'expected' consequences, and finally because he did not pay much attention to the hearer's role).

To resume this part, and in the words of a contemporary researcher in child language (P. Griffiths, 1979)

> "In performing illocutionary acts, speakers generally (...) convey messages with some *content* to their addressees. That is they may express a proposition about something (or some things) (...) the same content may be put to the addressees with any one of a variety of different *illocutionary forces* (commands, question, promise, etc." (p. Griffiths, 1979, p. 106. The words and the dots between brackets are added.)

Other philosophers of language began to consider the circumstances surrounding an utterance, and consequently began to consider the discourse in which it occurred. Their attempt was to identify rules which are governing the way discourse is conducted. Among them, H. Grice (1975) formulated a set of conversational postulates that are perhaps susceptible to developmental influences and empirical research.

2.3. b) Grice's conversational maxims

For Grice (1975), conversation is essentially a cooperative social enterprise, where the participants must accept the purpose or direction of the talk exchange in which they are engaged. By 'cooperative' is meant that:

utterances share common features (content being true and related to a common topic).

- there is some agreement about what is appropriate to say.

And in the expression "purpose of the talk exchange" it is implied that participants must somehow arrange their utterances in order to accomplish some shared concern. The consequence of this is that participants in a conversation expect each other to observe certain basic principles. Among these principles or maxims, Grice proposes one most general, the 'cooperative principle' which subsumes several assumptions about: (c.f. Grice, 1975, p. 45)

quantity:

1- Make your contribution as informative as is required (for the current purpose of the exchange.

2- Do not make your contribution more informative than is required.

quality: Try to make your contribution one that is true.

1- Do not say that which you believe to be false.

2- Do not say that for which you lack adequate evidence.

relation: Be relevant.

manner: Be perspicuous

1- Avoid obscurity of expression

2- Avoid ambiguity

3- Be brief (avoid unnecessary prolixity)

4- Be orderly.

But these maxims, as Grice remarked, are sometimes 'violated' as, for instance, when a participant intends to mislead. In this context, it is quite possible for a participant in a conversation to intend something that is not

forthcoming from the primary or literal sense of his utterance. But the speaker's intention can be inferred by all the participants in a conversation only on the assumption that the speaker is saying something relevant (i.e. some information relevant to the message being conveyed) and conducive to cooperation. This is, in Gricean terms, a 'conversational implicature', i.e. the conveyed information is not said by, for instance, speaker A, but is 'implicated' since speaker B is able to understand it on the basis of what A said, and the assumptions subsumed under the 'cooperative principle', the context, the background knowledge shared by the participants, etc., and also because speaker B assumes that all the above sources of information are available to both partners in the conversation (c.f. Dore et al, 1978, for a theoretical discussion of the notion of 'implicature', p. 353-55).

Thus Grice's maxims or principles involve assumptions or presuppositions that participants in a conversation share about the contents of their talk exchange, and the way the conversation must be conducted. Grice's principles seem to be not well understood by children as much as they are by adults. Children apparently fail to observe, for instance, the maxims pertaining to informativeness and relevance of their contributions to a conversation. If a child says "Nadia is bigger than me, you know" to a pre-school teacher who does not know who "Nadia" is, this is an example of an imperfect understanding of what a listener knows about a person or a topic. The same child might give more information than necessary about a person or a topic to a listener who happens to know what the child is talking about (as in "Hakim is my brother; he is

bigger than me, and he goes to school..." said to a friend of the family of the child). This implies that the pre-school child might understand the need to be informative, but may not realize how informative he must be in a particular case.

These last remarks bring us to the discussion of the development of the basic presuppositions which are underlying the use of language to communicate. In the field of child language, researchers who are interested in presuppositions very often cite Grice's conversational postulates, though very few studies actually directly investigated children's awareness of Gricean maxims (with perhaps the exception of Ackerman, 1978, who investigated kindergartners and school children's ability to recognize violations of these conversational principles, and also their ability to infer the pragmatic meanings of sentences on that basis).

The reason behind this is perhaps because the principles are too general to be easily subjected to research, but the possibility remains to relate indirectly some specific presuppositional constructions (informativeness & relevance, for example) to Gricean conversational principles which are partially instantiated in those specific presuppositional constructions. In their detailed study of the acquisition of presuppositional usages, De Hart and Maratsos (1984) remarked that informativeness and relevance, which are embodied by these presuppositional constructions, partly concern correct usage of determiners ('a' and 'the'), proper names and pronouns, and that all these particular linguistic forms partly involve the speaker's understanding of what the listener knows. More will be said about these particular

linguistic forms that carry presuppositions (definite and indefinite articles, proper names, pronouns) in the next chapter, since they are directly related to the present research. Before that, the question is: what elements of presupposition in children's early language can be found, and what kind of empirical data are available on these early presuppositional usages and the development, on the other hand, of speech acts?

2.3. c) Early presuppositional usages and the development of speech acts

According to Austin (1962), it is the speakers who use sentences who have presuppositions rather than the sentences: thus when talking about presuppositions and presuppositional usage, it is generally more accurate to refer to them as "presuppositions of the speakers" than "presuppositions of sentences".

Presupposition is a feature of communication that extends throughout one's life. For E. Bates (1976a), there are three possible definitions of presuppositions. The semantic or logical presupposition which refers to "information that must be true for a given sentence to be either true or false"; the pragmatic presupposition defined as "conditions necessary for a sentence to be used appropriately in a given context", and finally, the psychological presupposition which is "the use of an

utterance to comment upon information assumed to be shared by speaker and listener" (E. Bates, 1976a, p. 96-97).

The semantic presuppositions or (P1) truth-conditions of presuppositions are subsumed under the much broader pragmatic (or P2) definition, for the important reason that the enactment of a speech act of declaring entails a commitment by the speaker to the truth of a proposition or a sentence. And both (P1) and (P2) are subsumed under the psychological presupposition (P3). Moreover, the psychological presupposition subsumes the operations of deixis and anaphora, which makes it a relatively important concept as to the present research (more will be said about deixis and anaphora and the words that carry presuppositional usages, in the next part).

The psychological act of presupposing involves "a decision essential to every act of speaking - the choice of which elements to encode and which elements to take for granted" (E. Bates, 1976a, p. 97). According to Bates (1976a), pragmatic development involves learning when not to take the information for granted, or, in other words, it requires learning when *not* to presuppose, to help the listener to understand what is being said, since the listener does not hold the same assumptions as the speaker does. It also means that the child is gradually reaching the ability to talk about events that occurred in the past and to anticipate events in the future.

Now, what could be the situation at the stage of early presuppositional usage? Some investigators (Greenfield and Smith,

1976; E. Bates, 1976) have attempted to show that some elements of presupposition in children's early language can be practically studied.

In Greenfield and Smith (1976), it was pointed out that children, at the one-word stage, will encode whatever significant aspect of the situation is undergoing change, often omitting the given or unchanging aspect. The child at the one-word stage makes his production choices in order to avoid encoding information which one could take as presupposed, old, given and instead selects for encoding that which is new. To take an example, if a child is putting several objects into one big truck, he/she is more likely, in such a situation, to give the names of the changing objects rather than the unchanging truck which is a kind of background for the actions. In another situation, the child might be putting different objects in different locations, and if among these objects there is a truck, then he/she is more likely to utter the word "truck" among other words.

For Greenfield and Smith (1976), in one-word responses to questions (like: what do you want?) the child- or the adult for that matter - encodes only the new information and omits the information now presupposed on the basis of prior verbalization. One contemporary support for this view, came from the work of Weisenburger (1976) who noted in the one-word utterances of a two-year-old child that he tended to lexicalize those elements that were redundant because they were obvious or had just been mentioned. It appears, then, at least according to these writings, that children, at the stage of one-word utterance, show at least an early capacity for using the presupposition/assertion or the

given-new distinction for language production, comprehension and discourse.

Given elements are viewed as presuppositions and new elements as assertions. Bates (1976b) advanced the idea that the tendency, in very young children, to choose or to focus on the new rather than the given information has probably deeper roots. Infants, only a few days old, have been shown (c.f. for that matter, T. Bower, 1974/82) to attend to the novel stimuli more than the old backgrounds information.

It is probable that later, at the early stage of language use, children will focus more on the new elements of a situation than on those elements that are given; and so they are more likely to talk about the new elements.

For Bates (1976b) at the two-word stage children tend to follow a new information-old-information sequence (an example from Greenfield & Smith, 1976): when a child says 'nut' when picking up the nut and 'drop' when dropping the nut, the two-word utterance would be: "drop nut"" 'drop' being the new information is encoded first and 'nut', the old information, is encoded second in that particular event.

Bates sees the rules of order in the two-word utterances as a logical extention of the "new only" rule that applies to the one-word stage. Accordingly, the development of control over presuppositions begins with the one-word stage since, always according to Bates (1976b) hypothesis, at each selection of a piece of information to be encoded, the child "automatically presupposes the contextual information from which his

comment was selected", consequently, presupposing is "an integral part of every act of speech" (E. Bates, 1976b, p. 445).

According to Halliday (1975), if the child considered the information he was encoding as already known to the listener, he used a declarative structure; if he considered this information as new to the listener, as in the case where the listener has just arrived, he used an interrogative structure.

Bates and Halliday attribute to the child some ability to make the distinction between what can be regarded as old information and the new, in so far as the child's perception of that distinction determines what he/she will choose to say and/or how he/she will encode it.

But presupposition involves more than what has been suggested, in the literature on early presuppositional usage, as counterparts, i.e. new information/old information; comment/topic; figure/ground. These relations involve meanings that are, in fact, still organized at the perceptual-motor level with perhaps one or two verbal elements, later instantiations of presupposition involve a wider variety of constructions, which again involve a relevant syntactic and semantic development. We will see this, in more detail, when we will come to later presuppositional usage, i.e. words and referring expressions that carry specific presuppositions. In the meantime, let us turn our attention to the development of speech acts in the pre-school child.

As has been suggested in the previous pages, a number of researchers, in the mid- and late 70s, have attempted to study the

ontogenesis of speech acts, tracing back the emergence of primitive speech acts to early vocalizations and gestures (Dore, 1975; 1978; Bates et al., 1975; 1979). In this context, Bruner (1983) noted that:

> "The learning of speech acts may be easier and less mysterious than the learning either of syntax or semantics (...) Such primitive "speech acts" patterns may serve as a kind of matrix in which lexico-grammatical achievements can be substituted for earlier gestural or vocal procedures" (J. Bruner, 1983, p. 38, parentheses added).

Bates and her colleagues incorporated the speech act approach into their characterization of the child's transition from the pre-verbal to the verbal communication. Bates et al., (1975) identified three stages of communication in the very early years which are the perlocutionary, the illocutionary and the locutionary functions.* In Bates, Camaioni and Voltera (1975) it is a question of a girl of one year, Carlotta, who in a typical communication episode looked at her mother and uttered the sound "ha", then looked towards the kitchen and twisted her body and upper shoulder. The mother carried her to the kitchen, and there Carlotta pointed towards the sink. the mother gave her a glass of water, and Carlotta drank eagerly. This intentional prelinguistic communicative signal was referred to by Bates et al, as "proto-imperative". This was defined as the child's use of means to cause the adult to do something, or, in other words, the intentional use of adults to achieve some goal, and

* This theoretical background of the development of speech acts in the prelinguistic period was discussed in an earlier study (H. SAADI, 1984).

it corresponds to the illocutionary stage, (roughly between 10 and 15 months). In the perlocutionary stage, from birth to 10 months approximately, the child is said not to be aware of the communicative value of his signals.

The use of objects as a means to direct the adult's attention (Carlotta, for instance, looked at an object of interest, pointed at an adult, then returned to look at the object and pointed again at adult, then pointed at object, etc.,) to some event or object in the child's environment, is termed "proto-declarative". This also corresponds to the illocutionary stage, whereby the infant could use an object to obtain another object. In Piagetian terms this expresses means-end relationships (two aspects, two forms of knowledge, being coordinated into a single concept of tool use), and it corresponds to the 5th sub-stage of the sensori-motor phase of cognitive development. The infant's behaviour is, at this stage of development, truly intentional.

At the close of the illocutionary stage (15 up to 18 months) the child is already able to use linguistic symbols to obtain an adult's attention and eventually to draw it to desired objects and events. However, at this stage, communication is still tied to the *here and now* world of objects, people, actions and events; it relies on contextual clues to be clearly intentional, and it is ego-centred.

The stage where meaningful recognizable words begin to be used in communication acts corresponds to the "locutionary" stage, whose onset, at least in Bates et al' subjects, varies between 12 and 16 months,

which shows that there is a real overlap between the illocutionary and locutionary stages of communication. This argues, in a way, for a working hypothesis advanced by Bates et al (1979), that there is continuity between the behavioural and organizational skills that an infant has acquired during an earlier period of development, and the construction of more complex behavioural and organizational skills later. For example, from ten months and onwards, progressively, the unintended or perlocutionary signals are replaced with intended or illocutionary words, etc. Thus, for Bates et al, (1979), it would be most useful to study the transition between stages as this might strengthen the case for continuity. The word 'stage' being understood in the sense of an organizer marking the attainment of new skills, and which in the Piagetian sense means that it incorporates behaviours which have gradually been acquired during the previous stage (c.f. Bates et al, 1979; Bretherton et al, 1979).

At the locutionary stage, the child can ask for things by name and point to a thing, object or person, while saying its name. For Bates (1976b) the child is now beginning to learn "performative conventions", or the way his language encodes performative meanings which, according to her, are established by this time.

In Dore (1976), the speech of seven three-year-olds was transcribed from videotaped sessions. The children were interacting with each other and with the teacher in a free-play situation. In this study, Dore identified six illocutionary act types:

1) Requests, which solicit information, actions or acknowledgements.

2) Responses, which directly complement preceding utterances.

3) Descriptions, which represent observable or verifiable aspects of context.

4) Statements, which express analytical and institutional facts, beliefs, attitudes, emotions, reasons, etc.,

5) Conversational devices, which regulate contact and conversations.

and

6) Performatives, which accomplish acts by being said (this term was used more restrictively than Bates, 1975).

The coding of the children's utterances as illocutionary acts was made by using a number of features both internal and external to each utterance token. These features include the utterance's literal meaning, the utterance's intentional characteristics, the old-and-new information distinction, the speaker's nonlinguistic behaviour, and his prior and/or subsequent utterances, the behaviour of utterances of the other person, and the situational context. These features were, therefore, utilized in the analysis of each utterance, in order to determine its best speech acts classification. From a much longer list of illocutionary act types, Dore deduced the above categories, which apparently accounted for his

sample of three-year-olds. A later more elaborated version scheme of these categories, was developed by Dore (1978) into what he calls "conversational acts", whose communicative intents and characteristic functions were discussed in the previous section of the present study.

The interesting findings in these studies are that the most substantial changes which are noted in the 2 to 4-year-old children's speech are the increasingly differentiated discourse functions (c.f. for that matter, Keenan, 1977; and Dore, 1978) and the increasing ability to contribute new information on a topic in a child-adult conversation (Bloom, Rocissano and Hood, 1976). (The changes, here, are reflected in the degree to which a child of three continues the topic of the preceding utterances, which is that of an adult, and the way that the topic is continued).

Other specific types of illocutionary acts were presented in Garvey's study (1975). C. Garvey looked at 'requests for actions' between 36 dyads from 3 1/2 to 5 1/2 years, divided into two groups: the three to four-year-olds, and the four-to-five-year-olds. The two groups engaged in a spontaneous dyadic interaction, were found to produce both direct (e.g. "roll this tape up for me") and indirect (e.g. "wanta get on my car?") requests. In Garvey's writings, direct requests "express the content, H will do A, directly, either imperatively, e.g. 'open the door', or with a performative marker, e.g. 'I request that you open the door'" (p. 47, 1975), and indirect requests, which are of two types:

Type I indirect requests "embed the content, H will do A, into an utterance, whose matrix clause references one of the four sincerity conditions (outlined in Searle, 1969)" (p. 47, 1975). The four sincerity conditions which underlie a sincere request are sketched as follows, in Garvey (1975):

a) S (speaker) wants H (hearer) to do A (I want you to open the door).

b) S assumes H to do A (would you open the door?)

c) S assumes H is willing to do A (would you be willing to open the door?)

d) S assumes H will not do A in the absence of request (Will you open the door?)

And Type II indirect requests "embed the content, H will do A, into an utterance whose matrix does not reference one of the four sincerity conditions, at least in any obvious way" (p. 47, 1975).

On the whole there were indirect requests in her data, however these requests increased for the 5-year-olds. As to the direct requests, there were no instances of performative verbs (children, for instance, did not say things like "I request that you open the door").

Ervin-Tripp (1977) analysed the speech acts of children of various ages in various situations, with particular reference to directives (or the whole class of utterances which are used with the intention to get a

listener to do something). In Ervin-Tripp's data, children, after the age of two, were able to use a relatively complex vocabulary and syntax to perform the directive function which resulted in routines such as "where is the shoe?", and other questions with directive meanings, some goal-oriented constructives such as "you have to call us", or many utterances like "we haven't had any candy for a long time" interpreted, with difficulty,as a directive, and possessives like "That's my truck" (meaning "Get away"). At the age of four, according to Ervin-Tripp, children are already able to use "verbal strategies which have several steps to success", and around the age of six, children "do not require reference to a desired goal" (p. 178) (e.g. "Can I have a penny?", a six-year-old can use this directive without specifying the goal). However, her conclusion is that the hardest forms for children to learn are those that "do not explicitly identify what is wanted - question directives of an indirect type, and affirmative hints" (e.g. "That's where the iron belongs"). The difficulty lies probably in the degrees of indirectness of form. Although pre-school children around the age of four both recognize and produce indirect form of requests, as the works of Garvey (1977), Dore (1977) and Ervin-Tripp (1977) have shown, it is however still hard for pre-schoolers to be aware of the whole range of rules (grammatical, illocutionary, and social-interactional) in order to interpret an intent correctly. What children progressively learn or master is, in Ervin-Tripp's own words, to "conceal purposes". For Ervin-Tripp (1977), the major difference between adults and pre-school children, in terms of the use of conventional rules for interpretation of all sorts of intents, lies in the "systematic, regular,

unmarked requests which do not refer to what the speaker wants. Wide use of tactical deviousness is a late accomplishment" (p. 188, 1977).

But various problems with the speech acts model arise as to the attribution of meaning to the child's utterance. One of the difficulties lies in the decision about which speech act is associated with a given utterance, so much so that very often a subjective interpretation on the part of the listener seems to be unavoidable. The attempt to attribute meanings to the child's utterance is, as one critic remarked, talking about Halliday's (1975) functional approach to child language (H. Francis, 1979), largely based on intuitions rather than firmly based on an intersubjective interpretation of the functions of speech acts (which would make them more amenable to a systematic analysis). In this state of affairs, the child's utterance being affected by the listener's subjective interpretation, there must be some degree of confidence in the listener's ability to interpret the child's illocutionary acts and other aspects of the developing discourse (Bloom et al, 1976; Dore, 1977; Greenfield and Smith, 1976; etc.). On the other hand, when one comes to the question of defensible or non-defensible sample, the position one may adopt will perhaps depend on "personal predilections" as P. Griffiths (1980) pertinently remarked.

We remarked earlier, when talking about presuppositional usages, that one of the most important accomplishment in pragmatic development, according to Bates (1976a), involves when not to take information for granted, or, more precisely, it requires from the developing child learning when *not* to presuppose that the listener will understand what is being

said, since this latter does not hold the same assumptions as the speaker does. This accomplishment also means that the child is gradually acquiring the ability to talk about future events as well as past occurrences. Such an ability is in fact an expression of a developmental process in the late pre-school years, which is characterized as a move to distance one's self, in time and space. As a consequence, the 'pre-operational' child (in Piaget's terms, the child from 2 to 7 years) is no longer tied to the immediate, palpable environment.

For some researchers such as E. Bates (1976b) "the development of presupposition is tied to the decline of egocentrism" (p. 445), the development of presupposition being as was already suggested, a progressive negation of presupposition (egocentrism). On the other hand, for the Piagetians, there appears to be, around the same period of pre-operational thought, an inability to make the distinction between a personal perspective and a perspective of another person. This corresponds to the stage of egocentric thought. Piaget (1926/1959) put forward the hypothesis that pre-schoolers keep their thoughts for themselves. To the above position, while pre-schoolers are still prone to egocentric speech they are in some way presupposing, and the gradual decline of egocentric speech parallels the development of presupposition. The waning of these developmental processes is closely tied to the development of discourse.

It has been stated in the developmental literature (Bloom and Lahey, 1978) that progress in the development of discourse depends on

the child's increasing ability to understand the needs and resources of the listener.

In what follows, an attempt will be made to discuss some views of discourse development, but concentrating on what is of direct relevance to the present study, i.e. the development of reference, or more precisely, referring expressions in discourse.

Chapter 3

Discourse development in the pre-school years

3.1 The development of reference in discourse

3.1.1 Egocentric reference

It was briefly remarked at the end of the previous chapter that, progress in the development of discourse results from the child's increasing ability to understand the needs and resources of the listener. It was pointed out, in conjunction with this, that the gradual decline of two developmental processes (presuppositions and egocentric speech) seem to be closely tied to the development of discourse. In the last decade, detailed studies (Brown, 1973, Maratsos, 1974, Warden, 1976) of the acquisition and use of the definite and indefinite articles uncovered an inappropriate egocentric use of the definite article in young children. The findings were that young children fail to take account of their audience's knowledge of the referent, when they use a definite reference or when they construct a referring expression. Young children fail to recognize the need for an indefinite expression (the use of an indefinite article) when they introduce a referent for the first time in a discourse. In the adult model of discourse, the constraints on the use of the definite article are that it must indicate an already-identified referent, or the referent must be known by both parties. Thus, young children seem to be unable to adopt their audience's point of view. From the child's own egocentric viewpoint

a referent is specified as soon as he (as a speaker) is familiar with it; the young child fails to realize that his audience will only become familiar with his referent after he has identified it for them verbally. These arguments are based on Piaget's (1926) characterizations of preschoolers' private speech as egocentric.

The developmental psycholinguistic view which consists of studying children's conversations from the perspective of their ability to convey information, originates in Piaget's theory on the origins and functions of private speech (1926), and alternatively in Vygotsky"s (1962;1978) challenging view on the functions of private speech.

Young children are thus perceived as being less successful at conveying information to others than are older ones or adults. From this Piagetian perspective, the growth of the child's ability to take into account the perspective and knowledge of the listener has been investigated in a number of contemporary developmental studies. Piaget (1926) explored this by giving one child some information and asking the child to tell it to another child who was not present when this telling happened. He used three stories of one paragraph each and two explanations of how a simple object worked (e.g. a tap and a syringe). Ten pairs of six-year-olds and fifteen pairs of seven-year-olds were tested. In the six-year-old pairs, the speakers often failed to communicate a great deal of the essential details of the stories or explanations. This age-group communicated slightly more of the content of the stories than of the explanations; the only difference was that their explanations were understood slightly better by the listeners. The seven-year-olds were slightly better, in their

explanations, than the six-year-olds. The main problem noted by Piaget was that the speakers failed to specify the people and the objects which were referred to, and used pronouns and demonstrative adjectives ('this' and 'that') instead. This was recognized as being due to egocentrism; the speakers appear to be unable to distinguish what the listener knows compared with what they themselves know.

If, for the Piagetian position pre-school children's speech is predominantly non-social or egocentric in that it fails to take into consideration other interlocutors, Vygotsky's position about this so-called 'cognitive inadequacy' appears to be very different.(c.f. A.D. Pelligrini, 1984, for an interesting review of the Piaget-Vygotsky debate, but also Hickmann, 1986, and the volume edited by J. Wertsch, 1985). For Vygotsky (1962;1978), private speech takes its origins in the social dialogue between children and adults. To this view, young children respond to and initiate dialogues with adult partners when engaging in joint activities (e.g. 'peekaboo' play and joint referring to objects in the environment). The references used by adults in such contexts typically guide children's attentions and actions. With development, children internalize these adult dialogue strategies to regulate their behaviour. In other words children will progressively come to use those adult dialogue forms as overt private speech which originate in social dialogues between adult and child. Later on, children will internalize these dialogic strategies in the forms of covert private speech, or inner speech.

Research in the mid-70s (Bruner, 1975a, 1975b) and late 70s and early 80s (Rubin, 1979; Pellegrini 1981) seem to support Vygotsky's

position that children learn language by interacting with adults while both are engaged in dialogue. For Bruner (1974, 1975) pre-school children's acquisition of syntax may originate in dialogue; his hypothesis is that children acquire topic/comment structure (or, in the language of pragmatics, old/new information) by engaging in dialogue. And the works of Pellegrini (1981) and Rubin (1979) both support Vygotsky's view that private speech becomes more covert or otherwise internalized in the pre-school years. Much more recently, M. Hickmann (1985) used Vygotskyan developmental theory (emphasizing the interdependence of language and thought in development, which ultimately become one, in inner speech, when children internalize adult dialogue strategies) in her discussion of children's use of various cohesive and metapragmatic devices - or speech referring to speech - in discourse. M. Hickmann's study is treated in full detail in the next section of the chapter because of its relevance to the present study.

Other works on the development of communication and discourse, (Keenan (1976) Mueller (1972) Garvey & Hogan (1973)) and works in the referential communication paradigm (c.f. papers in Dickson, 1981, Schmidt & Paris, 1984) have attempted to show that the Piagetian position about pre-school children's speech is untenable, and that for their samples at least children produce discourse which is, for the most part, socially adapted. Bloom Rocissano and Hood (1976) found, however, that younger children (2 year-olds) did not sustain successive turns by adding their information to an adult's utterance. But in Garvey (1977), slightly older children could sustain more extensive sequences of

talk. Questions also have been posed about how children develop from an initial inability to sustain a topic or produce contingent talk, to a stage where they produce extended sequences of contingent talk (Mc Tear, 1978). Directly related to this is the ability to produce utterances that are semantically related to prior utterances of another speaker. This ability appears to increase substantially from the age of two to three years (c.f. Bloom, Rocissano & Hood, 1976). Bloom et al (1976) argue that children learn to share information in previous messages in different ways, in some instances the exchange of information (the sharing of information about a topic) is possible because both speakers are talking about the same event in context. In the Bloom *et al* study (1976), children were said to be learning to share the topic of a prior utterance and adding new information related to the topic. Another important part of the development of discourse which is developmentally and inextricably tied to learning to share information, is the learning of the conventions for shifting reference (or words in the language used that are not stable in reference, because their use depends on variations in the orientations of speakers and situations), deixis and ellipsis in the communication process. This ability to learn the conventions for shifting reference is, as Bloom and Lahey remarked (1978), one aspect of the more general process of alternation. The learning of the rules of language use, to decide which forms to use in which context, together with the ability to take into account the listener when formulating a message, are two major requirements for the development of language. The process of alternation is, in Bloom & Lahey's words:

> "the use of one of several possible forms that share the same essential meaning or referential function, but differ according to relations between content events and speech events, or even between speech events." (Bloom & Lahey, 1978, p.224)

To illustrate, if an object or a thing is near the speaker, 'this' is used instead of 'that' as in "Bring me 'this'one here (and not 'that'...over there)", and 'bring' is, for instance, used instead of 'take' because it is question of a speaker who is also a recipient e.g. "Can you *bring* the papers to *me*". Anaphoric reference, i.e. reference backwards to something already introduced in a prior message, is that other aspect of the process of alternation. For example, the pronoun 'it' instead of a noun already used in a prior message, as in the following sentences: "This book is mine. Give it to me". And the definite article 'the' is used instead of the indefinite article 'a' if the object has already been specified. This aspect of alternative forms of reference within the broad development of language use to meet different needs in different contexts, will be dealt with in more detail in the chapter entitled "Introduction to the units of analysis".

Now, what could be the real capacity of pre-school children for tasks which consist of talking about events and participants in the world of objects and persons, and the relation between these? What could be their capacity for the task of talking about, or taking into account, not only the relations between the events and participants (in terms of the content or forms of a language) but also the relations between speech events (e.g. conversations) and participants in speech events? The current hypothesis, in the developmental literature, Brown (1973), is that single forms or words used to talk about events and participants are learned first,

while alternative forms (shifting reference) appear later in children's speech because their use, and the rules which underlie them, involve judgement about the situation, the social status of the listener and the needs of the listener. A recent hypothesis (Karmiloff-Smith, 1979) very close to that one, is that forms are initially unifunctional before they become plurifunctional, and that would help to understand why deictic use appears before the anaphoric one (Lyons, 1975); 'I' and 'you' appear first, and later on 'he' or 'she' are learnt appropriately (Charney, 1980; Deutsch & Pechmann, 1978). But this will be dealt with in more detail in the next sections.

Shifting reference (pronouns - personal and demonstrative - definite and indefinite articles) in children's language was the subject of several studies in the 70s and early 80s (Bloom, Lightbown and Hood, 1975; Tanz, 1977; Deutsch-Pechmann, 1978; Solan, 1983; for the pronouns; Brown, 1973; Maratsos, 1974; Warden, 1976; Karmiloff-Smith, 1979; Emslie & Stevenson, 1981, for the indefinite and definite articles).

Children's referring expressions in discourse (these include definite & indefinite reference; pronouns - noun-substitute and deictic or indexical function, proper names, etc.) have been studied from a variety of points of view longitudinally and/or cross-sectionally, within the broad field of the development of communication. The present study is a follow-up study of referring expressions (two experiments which took about two months each to complete and separated by an interval of six months, and with the same children). In the next part of the chapter, experimental

studies dealing with definite reference, and pronouns, and so directly relevant to the present research, will be reviewed.

3.2. Experimental studies of referring expressions: The acquisition and use of pronouns

It is by now generally admitted that the acquisition and use of pronouns involves the interplay of various knowledge sources; these are the social, the cognitive and the linguistic (c.f. the recent work of Stevenson, 1988). Social cognitive and linguistic knowledge sources are required for the understanding of speech roles [i.e. 'I' (speaker) 'you' (listener) and 'he' 'she' 'they' (non-participants)]

One such important knowledge is, first, the realisation by the child, that when the mother, or the caretaker, uses the pronoun 'I' to identify herself and the pronoun 'you' to identify the child, she is referring to roles and not to particular individuals. With this knowledge in mind, the child must now realize that when he/she is speaking he/she must use 'I' to identify him/herself and not his/her mother, and 'you' to identify his/her mother and not him/herself. And if a third person, identified by 'he' 'she' is speaking, then either the child or the mother will be identified by the third person pronoun, though this last use seems to be more complex because of its associated anaphoric use (linguistic knowledge).

Social knowledge and non-linguistic (pragmatic) knowledge, are two major requirements in the production and comprehension of

language. Social knowledge involves judgement about shared knowledge (between speaker and listener). This shared knowledge is going to determine how things will be referred to. How a speaker will refer to an object or a thing will depend on what he/she assumes the listener knows. The use of determiners is a good example of this type of knowledge (for instance if I refer to an animal which lives in my house by "my cat" or "kitty" or "she's an Angora" will depend on what I assume the listener knows). On the other hand, pragmatic or non-linguistic knowledge involves inference from general knowledge about possible interpretations of a sentence or a speech act. In the example,

"John was late for his appointment with Tom and he was in a hurry to get a taxi", 'he' is compatible with either of the two antecedents (John and Tom) and neither syntax nor semantics could rule out that possibility ('he', 3rd p. sing. masculine is compatible with both John and Tom).

If we are able to make an inference, derived from our general knowledge, about the possible consequence of someone being late for an appointment, and to infer that 'he' refers to John in the example above, then we are able to infer a sense in which the pronoun is not indeed ambiguous. In this case we are making a pragmatic inference, and a linguistic interpretation alone can not help us disambiguate that sense.

Cognitive information involves the above knowledge sources, the social and pragmatic. This is especially true for the acquisition and use of deictic and anaphoric pronouns. Deictic pronouns such as 'I' and 'you' involve respectively the concept of self and the concept of other but also

the knowledge of social roles. The anaphoric pronouns require, for their interpretation, cognitive, or non-linguistic, information, because, as we have just seen with the above example (John was late...etc.) a linguistic interpretation alone is not sufficient for all their possible uses.

Thus the developing child is seen with the difficult task of learning these different concepts and skills as well as the learning of the ability to interpret the skills in order to produce and understand pronouns.

Most research on pre-school children's use of pronouns has, on the whole, concentrated on the indexical function of 1st and 2nd person pronoun usage. As was remarked earlier, a current psycholinguistic hypothesis (J. Lyons, 1975) states that deictic terms are logically prior to anaphoric ones, and that the first mentioned appear earlier than the second. This is because the young child appears, in first instance, to use pronouns to refer to things and persons that are physically present in the situation in which he/she is involved rather than the ones that linguistically refer to objects and persons that happen to be known only through a prior mention in an utterance. The description and characteristic use of pronouns is left for the next section; it is sufficient to know, here, that basically a deictic pronoun does not need in its use some form of an internal representation, (since it can refer to the world of objects directly), while anaphoric pronouns will need some form of internal representation to possibly retrieve information about the antecedent which conditions the use of an anaphoric pronoun. In connection with this point of view, this function of deictic terms at a certain age is an example of a 'developmental function', whereby deictic terms

are acquired earlier than sentential expressions belonging to the extended discourse. These deictic terms continue to function developmentally (the terms are deictically referential) for some time before the effective use of cohesive devices (all aspects of anaphora).

Studies which focussed on the deictic forms of the pronouns 'I' and 'you' and 'he' and 'she' (Charney, 1980; Bruner, 1983) maintain that young children from 18 months to 5 1/2 years acquire, appropriately, first the 'I', then the 'you' and later the 'he' or 'she'. Charney (1980) proposed that the earliest pronoun use is correct only when this use is referring to the child's own speech role, i.e., from the point of view of his/her own role as a speaker. The pronouns 'my' and 'you', for instance, are, apparently, used correctly earlier than the pronoun 'her'. S. Chiat (1981) proposed a psycholinguistic analysis of person distinctions to explain Charney's findings. In R. Charney's study (1980) which is an examination of both production and comprehension of person pronoun, every child whose production of 'my' passed the criterion of syntactic independence (which indicated that *my* functioned as an independent linguistic unit and not only in rote phrases) also passed the comprehension test. In Chiat's study (1981), which is an analysis of the errors made by young children in making distinctions of persons, possession and case in their spontaneous use of pronouns, three children who,presumably, used 'my' without comprehending it (a part of Chiat's own thesis (1978) is dealing with this) did not meet the criterion of syntactic independence. In this case they have only acquired *my* within rote phrases, i.e they produce an unanalysed whole containing 'my' which corresponds to a complex

concept including the notion of 'self'. But these children have not isolated the pronoun and determined its specific contribution to the expression of that complex concept. Consequently, they can not be said to have acquired the pronoun itself, and there is no basis for attributing a person-in-speech-role-referring pronoun to them. In Charney's findings, 'her', unlike 'my' and 'your', was not easiest in the speech role in which it referred to the child. For Chiat (1981) if 'my' was easiest when it referred to the child it was because the child initially produced unanalysed 1st person phrases which necessarily referred to the child himself/herself. On the other hand, if unanalysed 3rd person phrases occurred they would not result in a person-in-speech-role-referring stage for 'her'. The other reason invoked by Chiat was that if 'your' was easier when it referred to the child it was because comprehension is generally in advance of production, and in comprehension 'your' always refers to the child (provided the child is the addressee). Moreover 'her' refers to any non-participant, so that a child who understood 'her' even if he/she did not produce it, would not understand it as referring to himself/herself. Thus, the priority of comprehension over production does not result in what looks like a child referring bias for 'her' as much as it does for 'your'. In Deutsch & Pechman's (1978) study of the acquisition of pronouns by German children it is proposed that the relationship between speaker and hearer is particularly relevant for young children, and the consequence is that 'I' and 'you' are acquired before 3rd person references. (c.f. Cognition, 6, 1978, 155-168)

The basic findings about the acquisition of the pronouns which have been discussed so far seem to agree that young children acquire pronouns in the following order: *I* being acquired before *you*, and these two are acquired before 'he' or 'she'. However, one problem remains with all these observations. In some instances the tasks given to children of 2 years or less may not be suitable enough to reflect their actual linguistic abilities. It may be that it is more difficult to devise tasks which are intended to reflect 2-year-old linguistic abilities than the cognitive workload (i.e. demands) (M. Shatz, 1977) of the tasks itself. On the other hand, Chiat (1986) considers that it is difficult to obtain reliable responses which are not experimental artefacts from children at the crucial stages of development (in the case of pronouns around 2 years of age). The experimental ingenuity might yield interesting results. But do these results reflect young children's actual processing of particular linguistic forms (or more broadly, the socio-cognitive and socio-linguistic capacities) or do they reflect more of the experimental situation and perhaps the strategies used by children in that situation?

The same problem of methodological adequacy arises, together with another not less important one (c.f. Stevenson, 1988), when we consider some studies of children's inferences to interpret pronouns. This latter problem concerns the contribution of two sources of information, the cognitive (pragmatic) and the linguistic (lexical) in the acquisition of pronouns.

In Wyke's (1981) experiments on children's inferential abilities to interpret pronouns, for instance, it was reported that 5-year-olds have some difficulty in assigning reference to pronouns. These children apparently have difficulty when there is more than one pronoun in a sentence, when the subject pronoun does not refer to the subject noun phrase of the previous sentence, and when it is necessary to draw an inference to define reference. The following pair of sentences is an illustration of the above difficulty in assigning referents to pronouns:

Jane needed Susan's pencil. She gave it to her.

In the second sentence there are two pronouns of the same gender which contains no linguistic information (i.e., number & gender) to distinguish between presumed referents. So the only possibility was to interpret pronouns on the basis of general knowledge about how to draw the relevant inferences. In this typical case, children in Wyke's study performed poorly. In Wyke's first study, intended as a control task in her design, children were asked to draw the relevant inferences explicitly and they were able to do so. Wykes' design varied the presence or absence of gender information in order to directly manipulate pragmatic inference, and there was an attempt to include in her second study another variation concerning the ease with which young children can interpret pronouns, (sentence requiring simple inferences vs. sentences requiring complex inferences). But a problem arises as to the complex inferences 5-year-olds have to deal with, these inferences increasing the memory load and in many ways complicating the task for pre-schoolers. Are the sentences

used in Wyke (1981) suitable for 5-year-olds? The same question might be asked about Tyler's experiments (1983) with five-year-olds use of pragmatic inferences to interpret discourse (anaphoric expressions). In Tyler's study (1983), young children fail to use lexical information (gender information) in their interpretation of pronouns. Children from 5 to 9 years as well as adults were asked to press a key whenever they detected a mispronounciation of a word in sentences like:

> Mother saw the postman coming from a distance. The postman brought a letter from Uncle Charles who lives in Canada.

In subsequent examples, the pronouns, as well as the head subject in the second sentence were varied. The time taken by the subjects to press the key when detecting a mispronounciation was measured. The results were that the 5-year-olds took a longer time to detect the mispronounciation in the sentences which contain pronouns. The basic argument in Tyler's study is that young children can make pragmatic inferences to interpret discourse, or to recognize the implausibility of the second sentence in the following pair:

> Mother saw the postman coming from a distance. *Mother* brought a letter from Uncle Charles who lives in Canada.

But they fail to interpret pronouns as in the second sentence of the following pair:

> Every now and then, the princess goes to see the old shepherd. *She* takes good care of the sheep and....

The consequence of this failure, is that they do not, also, recognize the implausibility of the second sentence.

Tyler's (1983) position contrasts with Wykes (1981), in the sense that young children are not able to use gender information for the former sentence, and on the other hand, young children are able to use lexical or gender information before pragmatic inferences to interpret pronouns, for the latter sentence. But in both studies, the tasks appear to be very demanding, and thus not quite suitable for young children's use of inferences. This fact alone can not be overemphasized in that most studies concerning the interpretation of pronouns by young children, however fragmentary, do mention all sorts of experimental manipulation of either cognitive (pragmatic) or linguistic (lexical) sources of information. But these studies do not actually yield results which consistently disambiguate the relative contributions of the above-named sources of information in the acquisition, the understanding and use of pronouns.

Other experimental studies of pronouns have looked particularly at the functions of articles. Studies by Karmiloff-Smith (1979; 1981; 1985) Warden (1976) Emslie & Stevenson (1981) and Maratsos (1976) have focussed on the notions of definiteness and indefiniteness in the use of articles, the parallel notions of specificity vs. non-specificity and novel vs. familiar distinction coded by the articles.

3.3. Experimental studies of referring expressions: definiteness and indefiniteness

Directly relevant to the present investigation, the work of Warden (1976) was one of the first, among those cognitively oriented, to study experimentally definite reference in pre-school children. Warden pointed out that, although the nominative and identifying uses of 'a' are similar (both are concerned with the marking of unity rather than the marking of indefiniteness; c.f. Vendler, 1967, for the above remark), naming an item and identifying it remain distinctly different operations. As an example, in: 'that's a hammer', the ind. NP does not identify anything - the referent being already identified and is now being referred to by the expression 'that', whereas in the sentence 'there is a hammer in that drawer', the ind. NP identifies a particular item.

The nominative sense of 'a' is not affected by the contextual factors which constrain the use of the identifying sense of the article. A speaker need not take into account the listener's previous knowledge of a referent when he is naming it; whereas this is precisely what he must do if he wishes to refer to it.

In an earlier study (1974) Warden attempted to elicit referential speech from children between 3 and 5 years of age in a controlled experimental setting. According to his results, relatively few children below four years were capable of directing their use of language to such non-egocentric goals as describing events to an audience.

It will be made clear in the following pages, the 'a' in the use of identifying expression and 'the' in the definite reference, is a cognitively more demanding task than the one involved in naming (nominative function), which function involves only a grasp of the class membership - an individual class member.

The semantic distinction involved in identifying a definite reference requires from the child a specification of the uniqueness of the referent, i.e.; the speaker/participant is referring to a particular example (s) of a class of things (c.f. Emslie & Stevenson, 1981). Thus one can say that the indefinite article (in an ind. NP) serves an identifying function, and the definite article serves an anaphoric function.

Warden (1976) poses some questions about what we have called above the semantic distinction between identifying something and simply naming it. Do young children identify specific referents with an indefinite NP, or is the process of "pointing" too intrinsically definite for them to realize the need for an indefinite expression?

With a relatively small sample, Warden (1976) somehow established that adults make an appropriate use of identifying expressions and definite reference (c.f. table 3-1). On this question of appropriateness of use, some naturalistic studies, Bloom (1970), Brown (1973), predicted that children will master the nominative use of "a' before they use this morpheme appropriately in identifying expressions. As an illustration, in a naming task, e.g. "what's that?" the reply will be "a" +

noun. In a description task, e.g. "tell me what's happening?", the reply will be "a + noun is -----ing a + noun" (e.g. "a cow is chasing a duck").

In Warden's study, it would appear that the act of naming created a set for the indefinite article, thereby increasing the likelihood of an identifying expression in subsequent discourse.

In the 1st experiment in Warden's study (1976), there were assumptions from both adults and children that the experimenter, even blindfold, somehow shared their view of events (although the children may be hypothesized to be less sensitive to such contextual factors). Warden's second experiment was designed to obviate such weakness in the design of the first experiment.

Are children's referring expressions sensitive to changes in the social context? In other words, did the first experiment reflect the children's assumption that, in that context, the referents were already identified, enabling them to use identifying expressions, regardless of context? The other hypothesis which was also examined, was whether a previously identified referent is more likely to be referred to if it is isolated rather than if it is a member of a group.

The suggestion is that the group situation is more likely to emphasize the need for an identifying expression when talking about one member of that group.

The adults (in Warden's second experiment) used fewer definite and more indefinite referring expressions than the children, in the two

experimental conditions (the 'isolated condition' and the 'social condition')

It was then suggested that definite reference might be more likely to occur if the referent was isolated as the presence of the other group members might emphasize the need for an identifying expression. The statistical results 'disproved', as it was claimed, this hypothesis; neither the adults, nor the children discriminated reliably between isolated and non-isolated referents in their use of definite and indefinite referring expressions. But again, in this experiment, the adults seem to have made certain presuppositions regarding their audience's knowledge of referents, presuppositions which the experimental task was intended to eliminate.

The researcher, then, designed a 3rd experiment, one similar to experiments within the referential communication paradigm (subjects in pairs, seated opposite each other, and being unaware of the contents of the cartoon stories the speaker is going to tell -- the roles were reversed afterwards -- to the listener who was instructed to try to remember the story, because he was going to repeat it afterwards).

Children, in Warden's 3rd experiment, from 3 to 9 were divided into four age-groups: 3;0 - 3;11, 5;0 - 5;11, 7;0-7;11, 9;0 - 9;11.

For Warden, young children fail to take into account the social context of their reference or of their audience's knowledge of the referent, when they construct a referring expression. They fail to recognize the need for an indefinite expression when introducing a referent for the first

time in a discourse; consequently, they also fail to recognize the constraints on the use of the definite article, namely that its use indicates an already identified referent.

The explanation for that failure to identify a referent is that a pre-school child is unable to adopt his audience's point of view. From his own egocentric viewpoint, a referent is specified as soon as he (the speaker) is familiar with it; he fails to realize that his audience will only become familiar with the referent after he has identified it for them verbally. The other argument is that five-year old children can be non-egocentric in their uses of referring expressions, for example, when using demonstratives, but that they are still grappling with the implications of non-egocentricity for the dual function of the indefinite article. The ind. article either indicates an indefinite referent or a specific, but previously unidentified referent. In the former, a speaker need only consult his own knowledge of a referent; in the second, he must take account of his listener's knowledge.

Children may be forced to rely on the definite article until they have mastered the identifying function of the indefinite article; and this mastery will depend on an awareness of their audience's point of view.

This much discussed failure, in the pre-school child, to take account of someone else's point of view, or in other words 'egocentrism', which for Piaget and his followers is a serious barrier to communication, has also been dealt with in some experimental studies of semantic acquisition (use of definite and indefinite reference) by Maratsos (1976),

and the age at which different semantic distinctions conveyed by the articles in definite and indefinite referring expressions are acquired, by C. Emslie & R. J. Stevenson, (1981).

We have seen, in the introductory chapters to this research, that Piaget (1926) proposed 'egocentrism' as an explanatory concept, and that he used the term 'to designate the initial inability to decenter, to shift the given cognitive perspective (manque de decentration)." (c.f. Piaget's comments on Vygotsky's 'Thought and Language', 1962/1986, A Kozulin editor, p. 262).

The work of Maratsos (1976) was one of the late 70's experimental studies to question not the claim that the child sometimes fails 'to place himself at the point of view of his hearer', but the suggestion that he can not do this. A group of 4-year-olds in Maratsos' study (1976) seem to have mastered the non-egocentric use of the articles, though the existing experimental evidence is conflicting as to the age at which the uses of the articles are acquired. For Warden (1976), the egocentric use of both identifying and definite expressions is still occurring in children up to the age of 9; and for Emslie & Stevenson (1981) by the age of 3 years, children have mastered the uses of both identifying and definite expressions.

The experiments in the present study were more supporting Warden's findings on the approximate age of egocentric use of definite reference, than the experiments realized by Emslie and Stevenson (1981). But we will have more to say about this later on. Maratsos (1976)

devised a number of procedures to test children's competence in comprehending articles. In one of these procedures, children saw a boy-doll go up to three dogs in three cars and begin talking to one. The children were told either "suddenly *the* dog drove away", or "suddenly *a* dog drove away". They were then asked to indicate which dog drove away. If they were told "the dog drove away", they should have picked the dog being talked to, or the contextually specific dog. If told "a dog drove away", the choice is one of the two other dogs, or the contextually non-specific dog.

Maratsos found that approximately 85% of children answers were accurate (correctly choosing referents).

In other tasks used by Maratsos -- tasks where there is a lack of contextual support from the toys -- children were asked questions which were intended to elicit either definite or indefinite articles based on short stories.

In one of such stories, a man goes to the jungle to find a lion or a zebra. One version of the story ends:

> "He looked for a lion or a zebra everywhere. He looked and looked. Suddenly, who came running out at the man?"

The correct answer (unless the child decides to introduce a new character) is 'a lion' or 'a zebra', since no particular lion or zebra was mentioned in the story. The other version ends:

"Then the man found a lion and a zebra together. Who came running out at the man?"

Here one would expect the answer: 'the lion' or 'the zebra', because a particular lion and a particular zebra where referred to in the story.

The results, in Maratsos' (1976) study, showed that 3-year-olds were very good at producing answers requiring the indefinite article (in the 1st version), but they frequently failed to use the definite article when a particular referent had been established for them (second version).

Maratsos' conclusion is that memory load makes it difficult for these children to encode both class membership information and specification of the uniqueness of the referent (identifying function), and children in Maratsos' study and in the present study, responded on the basis of class membership alone (the nominative function).

But if in Maratsos' study there exists a group of 4-year-olds (high 4's group vs. low 4's group) who have apparently mastered both the definite and indefinite articles, by contrast, children under 5 years, in Warden's study, still fail to take into account the listener's knowledge of a referent, their referring expressions continue to be predominantly definite. Warden (1976) suggested that it is only at 9 years that children have a full grasp of the articles in referential speech.

The discrepancies between the results of Maratsos' (1976) and Warden (1976) as to the age at which children are supposed to show mastery of both identifying and definite expressions, may well be due to task difficulty (cognitive requirement of the task placing too great a demand on the pre-school child, e.g. in the cartoon pictures (line drawings) in Warden (1976), one of the pictures (picture 2) is described as "a cow stops the dog and the hen is behind the cow"), and the experimental procedure devised by the two researchers (the instructions to the child, and contextual variables such as 'shared perception' or 'prior knowledge' illustrate the task difficulty).

It seems that in Maratsos (1976), the story completion (the lion and the zebra story) was difficult to interpret by 3 and 4-year-olds, and it might be that the children have been concentrating on the task itself rather than the need of the listener, the 4-year olds group considered to be egocentric may have assumed that the listener was already familiar with the referents. In Warden (1976), the procedure adopted is akin to the technique used by researchers using the referential communication paradigm, i.e. placing a screen between the subjects, but adjusted in such a way that subjects can see only the top of their partner's head, and instructing them to tell about the picture to the partners. But a problem remains, which is the extent to which pre-school children understand that they have to talk to each other and not to the experimenter. This problem was pointed out in the preliminary discussion of the 1st experiment of the present study. And, if one assumes that children understand the instructions (continual emphasis by the experimenter that the person who

tells the story will have to tell it well so that the other person can understand it), to what extent can we prove that children are using egocentric definite reference or not?

A number of methodological criticisms were made by Warden (1977) and Emslie & Stevenson (1981). For Warden, (1977) Maratsos utilizes an experimental context in such a way that the children's audience was always an adult experimenter who introduced the tasks and provided the verbal and non-verbal context for their utterances. This weakness also pointed out by Emslie & Stevenson (1981), was that the rising 4-year-old children may have assumed that the experimenter was familiar with the referents of their referring expressions, and therefore may be inclined to use the definite article. The other weakness pointed out by Warden was that the experimenter controlled the verbal context and did not, in fact, allowed the children to initiate such a context for their referring expressions. In Warden, the emphasis should be on the word *conversation* (using articles in conversation with a variety of listeners, particularly with the same age partners so that there be no assumption of prior knowledge attributed to them) because asking subjects for a name in response to a question as in Maratsos' study (1976) may have biased their responses towards the nominative indefinite article. (e.g. "article + noun")

Subsequent work on articles and their acquisition, but this time in terms of the functions these words fulfill, was carried out by Karmiloff-Smith (1977; 1979) and Garton (1983; 1984). Instead of attempting to trace the emergence of the definite and indefinite article and their correct

and incorrect use in a grammatical sense, Karmiloff-Smith and Garton carried out experiments to elicit a range of different uses of the articles, and other determiners such as the demonstratives 'this' and 'that'.

3.3.1. Karmiloff-Smith's study of postdeterminers and reference

Karmiloff-Smith (1977; 1979) devised a number of experiments with French-speaking children between 3;0 and 12;0, designed to study the plurifunctionality of determiners. Much of her experimental work was concentrated on production tasks (1979), though in a previous paper (1977), an experiment in addition to a production task experiment, was focussing on a comprehension task, involving children between 2;10 and 7;11. Karmiloff-Smith (1977) analysed young children's comprehension of the words 'other' and 'same' which are used anaphorically as post-determiners, with the intention to give emphasis to the contrast between indefinite and definite articles 'a' and 'the'. . But, to put it in Roger Brown's (1973) terms, in devising comprehension tasks "one puts a somewhat unusual communication burden" (p. 406) on the indefinite article 'a'. Such criticism was already levelled at aspects of the Maratsos (1976) and Warden (1976) studies, in the previous discussion, which was, briefly speaking, that what the child can do in an experimental task is not necessarily equivalent to what the child does in language use and understanding. In other words, in placing unusual communicative burdens on certain morphemes in order to create a linguistic contrast

(the/a) (and narrowing down the situational context to one cognitive contrast, e.g. singletons/groups of identical objects) are we actually observing the child's normal language processing procedures or are we observing *ad hoc* experiment-generated procedures?

In the view of Karmiloff-Smith, in the area of articles, the semantic distinctions of the type mentioned above (the/a) would not be made only on the article distinction in a natural language usage, but instead by adding relevant linguistic emphasizers such as 'the same X', 'another X', 'the only X', 'one of the X', or by some other means, including intonational stress, pronominalization, etc. Her second experiment, which was a production task, was thus designed to look, on the one hand, at how children organize various linguistic means to make the above named contrast, and on the other hand, to whether children between 3 and 8 years place the sematic burden on the article contrast alone.

Her hypothesis, following Maratsos (1976) was that, if the pre-school child is able to distinguish, in a comprehension task, specific from non-specific reference only on difference between two unstressed articles 'the' and 'a', then, it will be probably easier for the children to make such a distinction if the meanings of articles are emphasized by the addition of postdeterminers 'same' and 'other'.

In Karmiloff-Smith's study (1977), there were six basic situation types using familiar objects in four basic contexts. In context (A), children were presented with completely identical objects (e.g. blue plastic ducks, green toy-Volkswagen, etc.,); in context (B) objects of the same class

differing only in colour (e.g. blue or pink plastic lambs, red or blue toy-Fords, etc.,); in context (C) objects of the same class differing by essential parameters (e.g. brown-wooden standing cow versus white-plastic saloon car, etc.,); and in context (D), objects which were the only members of their class (e.g. a horse, a truck, a toy-watch, etc.,). To these experimental contexts, it was added a girl-doll and a baby-doll. The experimenter asked the child to act out a series of sentences which have the following design, where, in sentence type (a) the key word is in object position:

e.g. "La fille pousse un X et puis le garçon pousse (la meme/une autre) X"

("The girl pushes an X and then the boy pushes (the same/another) X") and in the sentence type (b), the key word is in the subject position: e.g. "une X pousse la fille et puis (la meme/une autre) X pousse le garcon" ("An X pushes the girl and then (the same/another) X pushes the boy"). All through the experiments, sentences were repeated and children were encouraged to talk about familiar objects they possessed. A total of forty seven children between the ages 2;10 and 7;11 years participated in the experiment.

The results of this experiment showed that overall the order of change of interpretation from 'same kind' to 'same one' is, quantitatively speaking, a function of age and the extralinguistic context (i.e. the objects used in the experimental procedure) within each age group.

The three-year-olds interpreted 'same' as meaning 'same kind', and 'other', according to her results, is often interpreted as meaning 'other kind'. It seems that these two expressions are interpreted in, what Karmiloff-Smith calls, their 'descriptor function', meaning 'same kind', i.e. members of the same class (e.g. X is wearing the same suit/dress as Y), or, in other words, as modifiers which tell the child about class attributes, and not in their 'determiner function', meaning 'same one', i.e. the same element (a singleton) within a class (e.g. X is wearing the same suit/dress as yesterday).

The determiner function of these expressions thus understood, helps distinguish a subordinate class of possessed objects from a superordinate class of similar ones.

The four-year-olds interpreted 'other' as meaning 'other one', i.e. in its function of postdeterminer, but 'same' was apparently still interpreted in its descriptor function, meaning 'same kind'. It was only in 'conflict' situations, i.e. situations in which the child was hesitating between the competing interpretations 'same one' and 'same kind', that there was significant increase in correct 'same one' interpretation.

With the five-year-olds, there was a substantial increase (a very significant change) in success rate. This age group was interpreting 'same' to mean 'same one', but in the first few experimental items, as reported by Karmiloff-Smith, many hesitations preceded correct responses in situations where Xs were identical or similar. But from 6

years onward, children interpreted more systematically, both 'same' and 'other' as postdeterminers.

It appears that, from this experiment (1977) and from other experiments in Karmiloff-Smith (1979), for children under five years the word 'same' is clearly a sort of modifier, with a descriptor function in the sense of 'same kind'. It is only after six years that 'same' was interpreted as referring anaphorically to the same referent as the antecedent refers to.

Karmiloff-Smith's other experiments (1979) on determiners indicate that the function of the definite article may initially be predominantly exophoric or deictic, which means that it (the function) serves to signal a particular object or the actions of one salient object singled out from a group of others, in the extralinguistic context. Karmiloff-Smith's results are also consistent with Warden's (1976) and Hickmann's (1980; 1985) analyses of both definite and indefinite forms in children's narratives, whether or not these narratives are elicited in the presence of appropriate extralinguistic context.

Following Karmiloff-Smith's approach, Garton's (1983; 1984) study of English-speaking children argued for an adoption of the child's perspective on his developing language and examined the context and use (and non-use) of article forms. She attempted to show that 3-year-old children were sensitive to adult language which was addressed to them, and that their article usage reflected the form of the question.

One essential result in Garton's experiment (1984) was that, to the question form "What did the farmer do?", the bulk of 3-year-olds responses involved a full sentence with the definite article (e.g. "the farmer knocked over *the* cow")., and to question form "what did the farmer knock over?" the responses consisted mainly of the indefinite article accompanied by a noun ("the farmer knocked over *a* cow"). Garton proposed that the tendency in the children to use a particular sentential form was influenced by the type of the question asked by the adult, this in turn led to the form and function produced. The main argument in Garton (1984) is that because children are not totally consistent in their article usage (at least in her study), their production of articles does not correspond to adult usages. In an earlier work (1983) Garton argued that a contrastive categorisation of the articles ('the' and 'a') and the demonstratives ('this' and 'that') does little to help the interpretation of the data, and that we should instead describe children's ability in terms of the determiners used, and those omitted, and in terms of the function noted in the different contexts.

After the work of Warden (1976), discussed in an earlier section, Hickmann's studies (1980; 1985) of discourse cohesion in pre-school children are of particular interest to the present study, in so far as her work and that of Karmiloff-Smith (1977; 1979) show that intralinguistic uses of linguistic forms (definite article, pronouns and demonstratives) in the creation of referents (i.e. being used anaphorically and not just deictically) are a relatively late development.

3.3.2. Other experimental studies of anaphoric reference

1) Hickmann's study of discourse cohesion

Hickmann (1985), in her discussion of children's uses of various text-forming (cohesive) and metapragmatic devices (or speech referring to speech) in discourse, used Vygotskyan developmental theory, which, roughly speaking, emphasizes the interdependence of language and thought in development. By contrast to Piagetian developmental theory that treats cognition and language as separate entities, with language being, to this view, the product of cognitive development, Vygotsky's approach considers, on one hand, language development and cognitive development in constant interaction and, on the other hand, the uses of language as necessary for the development of certain higher mental functions. Hickmann (1985) hypothesized that the ability to establish relationships among the utterances of ongoing discourse (and at the same time the ability to represent language in various ways through speech), would have implications for both the child's social and cognitive development. According to this line of research, and in M. Hickmann's own terms "the metapragmatic capabilities of language transform the child's developing ability to plan, organize, and interpret pragmatic uses of signs in interactive situations: they transform this ability to participate in gradually more complex interactive events with other agents, as well as his ability to reflect on, talk about and reason about the interactive events" (Hickmann, 1985, p. 254). M. Hickmann's analysis focussed, on one hand, on the intralinguistic uses of referring expressions (anaphoric uses)

which helps the children to 'create' referents linguistically, and subsequently maintain reference to these linguistic means, and on the other hand, on the pragmatic uses of speech (as, for instance, when a speaker uses speech in one situation in order to represent speech uttered in another situation).

In her study, English-speaking children from 4 to 10 years of age as well as adults, were asked to narrate 'stories' in the following situation:

- Film-narrative situations: a group of 10 children, in each of the age groups studied, was asked to narrate short film-strips to an interlocutor who had not seen them and who was subsequently asked to tell them back, but also to answer some questions about them. In the dialogue between two characters (puppets representing common animals), the 'participants' talked about two referents (or "the non-participants" which were not present in the film). In other filmstrips, the two referents consisted of two animals (animate "non-participants"); in some other films, they were two objects (inanimate "non-participants"). In an example of a type of film type I, (inanimate "non-participants") a dog "interacts" with a frog:

Frog: "Hi, it's my birthday today. Do you want to come to my birthday party?"

Dog: "No, I can't go to your party. I'm very sad. I bought a candy bar and a flower for your birthday. The flower smelled good and the candy bar looked good. But now the candy bar is

sticky and the flower is dead. I don't know what happened" etc...

Children in narrating these films, had to report in narrative form the sequence of speech events that took place in the dialogue. They had to rely on *speech only*, because, as it was specifically built in the design, they could not assume that their interlocutor was aware of the contents of the film, and also because there was nothing pertaining to the non-linguistic context which could be related to the contents of the film.

In the picture-narrative situation, the same children were asked to narrate two picture sequences to an interlocutor who this time was blindfold, and thus could not see the pictures. In this situation, though the non-linguistic context related to the contents of the narratives (pictures present throughout narration) was present, text-forming or cohesive devices were still necessary, so as to create referents linguistically since the interlocutor was blindfold. It was assumed that this task was easier than the first one for many reasons. The children did not have to remember the content as in the first task (filmstrips), since the sequence of pictures was present: this situation also allowed the children to use linguistic forms deictically rather than solely within the linguistic context; and the sequence of events within the picture sequences which are logically related did not, at first sight, involve speech events.

Hickmann categorized referring expressions into "effective" "ineffective" and "mixed" forms, where the 'effective" forms consisted of means of introducing referents (e.g. indefinite articles), "ineffective

expressions which presuppose the referents on first mention (e.g. definite articles), and "mixed" forms, those which were neither effective nor ineffective (which include 'definite' article associated with 'topic' or existential clauses, insufficient definite descriptions, nouns without determiners).

The results show, in the film-narrative situation, that the 4-year-olds produced a small proportion of effective referent-introducing forms, i.e. only 36% of the forms were effective, a relatively high proportion of these forms in the 7-year-olds, i.e. 56%, and about 89% in the 10-year-olds, which seems to indicate that only the 10-year-olds are using effective forms in order to create these forms systematically and consistently more frequently than in effective and mixed forms.

What these results suggest is that children under 7 years have not yet mastered cohesive uses and have difficulties in interpreting referring expressions. Some inconsistencies in the 4-year-olds in the use of intralinguistic devices and metapragmatic frames were pointed out. Children of this age tended, in general, to focus their stories on participants rather than explicitly on their speech. In general, when reporting speech events that occurred in another speech situation, the 4-year-olds did not clearly separate between the reported message and the narrative message in the preceding speech situation (i.e. reproducing simply the dialogue between the participants, in the first and second person, without very often any third person forms).

If the 4-year-olds have difficulties in using effective referent introducing forms (to introduce linguistically animate referents), to create a presupposition of the existence and specificity of these referents, the 10-year-olds, however, tended to create these effective forms consistently when they mention participants. Overall, it appears that 4-year-old narratives, in Hickmann's study, did not depend strictly on children's own speech, but basically on either nonlinguistic context (deictic indexical relationships) or on adult's guidance in the form of questions.

On the other hand, though 7-year-olds tended sometimes to begin their narrative by reporting the speech of the participant without mentioning the other participant, overall this age group, nevertheless, showed an emerging ability to use only linguistic means to organize their own discourse.

To summarize the above findings, both Karmiloff-Smith (1979) and Hickmann (1985) pointed out a *progression across age* in the discourse functions that the same linguistic forms (e.g. definite articles, pronouns or demonstrative) may have. These two researchers showed that intralinguistic uses of such expressions in the creation of referents (i.e. anaphoric use and not just deictic use of referents) are relatively late development.

In the same line of research but with a shift of emphasis on deixis as expressed in a number of different formal systems of grammar, i.e. through determiners, adverbs, pronouns, prepositions, lexical verbs and tenses, R. Wales (1986) stresses the importance of earlier deictic uses

For R. Wales (1986), deictic devices often enter crucially into children's conversational discourse, as has been already reported by Keenan and Schieffelin (1976).

The proponents of the cognitive view of the development of deixis, maintain that it provides a linguistic mechanism for expressing the domain of joint speaker-hearer attention. Naming is a natural candidate for such a mechanism (c.f. works by Bruner (1975; 1983), and applications by Bridges (1978), Mc Shane (1980), Ninio (1980), Gopnik (1982) and Bruner (1983), and the general discussion of the first experiment of the present study.

At this point, one can thus notice a kind of general trend from terms which are used correctly in their linguistically referential function (or deixis), to the gradual construction of a system of differential linguistic markers (full NPs, pronouns, etc.,) which are used in their linguistic referential function (or anaphora).

Always in the same trend of research, some other workers (Chipman and deDardel (1974), extended the investigation of definite articles to pronouns, and from the principle of 'specific' and 'non-specific' (referent) to the corollary principle of 'all' vs. 'some'. That was also what Tanz (1977) did with children between 3 and 5 years.

2) Tanz' study of the definite pronoun 'it'

Tanz (1977) replicated an experiment done by Chipman and deDardel (1974). These latter focussed on the possible interpretation of the definite pronoun 'it' in sentences in which 'it' referred to substances and collections. A typical sentence in Chipman and deDardel experiment reads like this: "there is a Play-Doh there. Give it to me". These researchers then recorded the children's answers to the above sentence. All the children in Chipman and deDardel (1974) understood that 'it' referred to the substance previously mentioned (i.e. interpreting 'it' anaphorically), the younger children, however, (3-year-olds) gave only a piece of the Play-Doh, rather than all of it, to the experimenter. Their conclusion is that children interpreted 'it' to mean 'one piece' of the substance previously mentioned, and that children did not understand that 'it' in "give it to me" contains implicitly the quantifier 'all', specifically when 'it' refers to substances and collections.

For Tanz (1977), children in the Chipman and deDardel study (1974) might have interpreted the definite pronoun 'it' as the indefinite pronoun 'some', because they tended to give to the experimenter more than one piece of the substance or collection when requested. In Tanz' study, requests included N Phrases with definite article (e.g. "give me the Play-Doh") NP with indefinite pronoun 'some' (e.g. "give me some Play-Doh"), and requests involving plural nouns and the definite pronoun 'them', as in the following sentence: "there are flowers on ``the table. Give them to me". Her results were somewhat different from those

obtained by Chipman and deDardel (1974). In Tanz' study, the youngest children almost always gave to the exerimenter all of the substance or collection requested, and children of the age-range studied by her usually responded appropriately to the requests using 'the' and 'some'. In general, it appears that in Tanz's study (1977) children observe the distinction between the definite and indefinite pronouns as it bears on quantity from the earliest age studied (3;5 - 5;0). The failure to realize that the definite anaphoric pronoun 'it' refers to all of its antecedents (e.g. "there is a cup of 5 marbles on the table. Give it to me"; there is a furniture on the table. Give it to me", the mass-noun "furniture" stands for 4 pieces of furniture) reaches about the same degree or is equal to the failure to realize that the definite NP refers to all of the matter in question. Thus, the problem of quantity extends to definite references in general, rather than being limited to the pronoun. On the other hand, suggestion is made that the plural definite pronoun 'them' is more problematic for the younger subjects than are plural definite NPs. Tanz concluded by saying that "the quantitative implications of plural definite referring expressions are easier for children to grasp in full noun phrases than in pronouns" (Tanz, 1977, p. 235). Thus, it appears that according to the results of some researchers (Tanz, 1977; Maratsos, 1976) children can differentiate definite from indefinite reference to some extent reasonably early, though it might take some time for that differentiation to become reliable for an adult listener; for some others (Karmiloff-Smith, 1977; 1979; Warden, 1976; Hickmann, 1985, and the present study), cohesive uses and interpretations of referring expressions are a relatively late development,

and, on the other hand, early definite reference is exophoric rather than anaphoric.

In the 1980's, some workers (Emslie and Stevenson, 1981; Power and Del Martello, 1986) brought some slight improvements to the procedures used by Maratsos (1976) and Warden (1976): quality of the pictures (bright coloured vs. black & white) in Warden (1976), reconsideration of the interactants, (the experimenter trying to interfere the less possible).

Emslie and Stevenson's main expectations as to a correct usage of the indefinite and definite articles for first and second mention of a referent, are that pre-school children should go through three stages. These are, first, the nominative use of 'a', leading to an overuse of the indefinite article; second, an overuse of the definite article for first mention of a referent (Emslie & Stevenson did not specify the age at which children reach such an 'egocentric' stage); and finally a correct usage of both the articles in their anaphoric use (first and second mention of a referent). Their hypothesis is that a simple unambiguous task should eliminate the overuse of the definite article, if egocentric responses are due to tasks demands, and children should progress from an overuse of indefinite article 'a', directly to a correct (adult) use of referring expressions. They found no evidence for an egocentric stage in which definite expressions are used instead of identifying expressions, and their results, in general, indicate that the nominative use of the indefinite is mastered before its identifying use, and at 3 years of age children seem to have mastered the use of both identifying and definite expressions. They

slightly agree with Warden's data (1976) (nominative expressions acquired before identifying expressions), but are, in fact, more consistent with Maratsos' data (1976), as to the age level. These results also contrast with Karmiloff-Smith (1977; 1979) and M. Hickmann's data (1985), and the data of the present study.

More recently and in the same vein as Emslie and Stevenson, Power and Dal Martello (1986) conducted experiments on Italian pre-school children. They postulated a kind of pragmatic rule governing the choice between the definite and indefinite article which can be formulated as follows: when a speaker S mentions a referent (say, a rabbit) to a listener L, the listener's current state of knowledge must be taken into account by the speaker (S) in deciding whether to use the definite or indefinite article. In the case where L is already familiar with the referent (by experience or by report), S should use the definite referring expression (for instance the pronoun 'it'). But when L is not yet familiar with the referent, S should use indefinite article 'a'. Two types of errors, that a speaker might be prone to in using articles, were reported in Power and Dal Martello (1986):

(1) the 'incoherent error'

and

(2) the 'egocentric error'

In the first type (1), Speaker (S) might use the indefinite article in a context in which listener L was already familiar with the referent (which might give

L the false impression that a new individual was being introduced into the story).

In the second type (2), S might use the definite article in a context in which L was not yet familiar with the referent. Besides Maratsos (1976), some other workers observed this type of error, which corresponds to an overuse of the definite article for information that is actually new to the listeners, in children between 3 and 5 years (c.f. Bresson, Bouvier, Dannequin, Depreux, Hardy and Platone, 1970; Bresson, 1974). Children in this age range wrongly assume that whatever is known to them is also known to their listener and, thus, can be presented as given. In Bresson et al. study (1970), children seem to experience the same difficulty as that described in Warden (1976), in their acquisition of the indefinite article. Children acquiring the French pronominal system experience a further difficulty than those acquiring the English pronominal system. The French language has several forms for the article: 'un' or 'une' for the singular, and 'les' for the plural. Six-year-old children in Bresson et al study (1970) use the definite 'le 'la' 'les' instead of 'un' or 'une' (38% of the adult appropriate use of the definite articles), and did worse with the plural indefinite 'des': they used the definite article 'les' 76% of the time, instead of the indefinite article 'des'.

Power and Dal Martello (1986) found that children in the age range 3 to 5 years did a large number of 'egocentric errors' in their use of articles. But although Power & Dal Martello's findings are somehow consistent with Warden's data (1976), as to the 'egocentric error' in the 5-year-old (38% in Warden, and 39% of error-rate in Power and Dal

Martello (1986), they, however, are more in agreement with Emslle and Stevenson (1981) for the 4-year-olds, in one of their experiments (18% in Power and Dal Martello, and 15% of error rate in Emslie and Stevenson). It could be said that these differences with Warden's study (1976) in the results, are partly due to the circumstances of the experiments (difficulty of the stories in Warden's study, as was remarked earlier, and for the 5-year-olds in Power and Dal Martello's data (1986), the backgrounds of the children, rural vs. urban). In Power and Dal Martello's study, the assumption is that there are less opportunities to listen to stories at home, and still less for rural children to tell stories themselves, than urban children do have.

The early use of the definite article which is tied to situationally introduced referent, and thus not truly anaphoric (c.f. p.95) has also been extensively studied from a different perspective, within Bernstein's sociological theory of linguistic codes by Hawkins (1969; 1977). In the following section, Hawkins' study will be discussed in relation to anaphoric reference.

3.3.4. A sociolinguistic view of anaphoric reference vs. exophoric reference

Hawkins (1969) investigated the use of pronouns in a sample of 312 British children from two geographically separated areas of London (180 working class, and henceforth WC, and 148 middle class, and henceforth MC). From this sample Hawkins selected 139 children from

WC and 124 children from MC, according to strict criteria of social classification and intelligent quotient, and the average age was five years.

Two verbal tasks, in Hawkins (1969), were presented to the children: first, they were requested to tell a story from a series of four picture cards. In the first verbal task, the first picture showed some boys playing football; in the second the ball goes through the window of a house; in the third a woman is looking out of the window and making a threatening gesture, and in the fourth children are moving away. Hawkins provides two stories which he constructed on the basis of responses obtained. The middle-class version reads like this:

> three boys are playing football and one kicks the ball - and it goes through the window - the ball breaks the window - and the boys are looking at it - and a man comes out - and shouts at the boys - because they've broken the window - and so they ran away - and then that lady looks out of her window, and tells the boys off.

and the working class version:

> they're playing football - and he kicks it - and it goes through there - it breaks the window and they're looking at it - and he comes out - and shouts at them - because they've broken it - so they ran away - and she looks out - and she tells the boys off.

Hawkins' hypothesis was that middle class children use nouns, but working class children use pronouns more frequently. In order to quantify his results, Hawkins distinguished the following types of pronouns, basing

himself on Halliday's (1961) grammatical categorization and R. Hasan's study of narrative cohesion (1968). Narrative cohesion is usually achieved by the use of grammatical items which either refer backwards (to something already mentioned) or forward (to something about to be mentioned). Backward reference is anaphoric reference or, in other words, when a grammatical item is anaphorically given, the listener can identify the referent of this item just by going back to find out when that referent was lastly mentioned in his active memory for conversation (c.f. the recent detailed analyses of grammatical devices for sharing points by Brian Mc Whinney, from a psycholinguistic perspective, 1984). Forward reference is cataphoric reference. This means that an item which is cataphorically given can only be distinguished by reference to information in subsequent discourse. The following examples illustrate anaphoric and cataphoric pronouns:

- The boy kicked the ball and it broke the window (anaphoric, when 'it' refers backward to 'the ball')

- It was the ball that broke the window (cataphoric, when 'it' refers backward to 'that broke the window')

A third way of establishing givenness (i.e. presupposition), in the definite and indefinite pronouns category, is by exophoric reference, or reference 'outward' to the context of situation (through situational reference). In this way, pronouns relate to the external context (concrete external objects or persons). In other words, the pronouns (or the grammatical items) refer

not to something already or about to be 'mentioned', but to something in the environment of the speaker.

If, for example, one is standing on the edge of a football field and the players are clustered around the goal, one might say "they've scored!" and there would be no doubt who 'they' referred to. On the basis of this, Hawkins also included items in the quantification, these items permitting the choice between anaphoric and exophoric reference:

1) 'this' 'that' occurring as head of the nominal group (e.g. anaphoric: 'go away, that's what she said'; exophoric: 'that's a little boy')

2) 'this' 'that' occurring as 'modifier' (e.g. anaphoric (rare): 'the boy broke the window... so the lady told that boy off'; exophoric: 'these boys were playing football'

3) 'here' 'there' occurring as head of the group after a preposition. This referent is always exophoric, e.g. 'on here' 'up there' 'along there'.

Hawkins' results were that there was no real difference between the classes (MC and WC) in the frequency of anaphoric pronouns, both in the picture narratives and in the description. In contrast, there were substantial differences in the use of exophoric pronouns (MC children used on average 2.84, MC 4.12; c.f. Hawkins, 1969, p. 132). However, these differences were not significant, most children of both classes were

using at least *one* exophoric pronoun. The other categories of exophoric pronouns, listed above, reached the significance level (P. = .05).

Hawkins' conclusion is that working class children are using more pronouns of the exophoric kind, than the middle class children. In other words, WC children seem to be seriously limited in their possibilities of modification and qualification, since those children are using, instead of nouns, more frequently pronouns than middle class children. For Halliday and Hasan (1976), exophoric reference is a characteristic of children's speech, because this is what they call 'a neighbouring speech' or the language of children's peer group. And neighbouring speech is highly exophoric because children have a tendency to relate to things, and to relate to each other through things. Halliday and Hasan (1976), as well as Hawkins (1969) emphasized the 'restricted code' nature of exophoric reference, in the Bernsteinian sense, and for Halliday this 'neighbouring language' is a positive feature, in that this highly coded non-redundant speech is a characteristic of both the neighbourhood and the small close-knit social groups. For Bernstein (1971) and for Halliday (1976), this speech becomes 'restricted' if it is transferred to contexts in which it is simply inappropriate.

Thus, for Hawkins (1969) "the working class children...tend to use pronouns instead of nouns as 'heads', which reduces the possibilities of both modification and qualification, and they rely on the listener's awareness of the situation to achieve comprehension" (p. 135). Middle class children are being more specific and more elaborate "...they are

referring to the objects and the characters, by name, not just by the vague he, she, it, they". (p. 134)

What is then the significance of Hawkins' investigation? This work clearly points to certain characteristics of working class children's pronominal usage, and these characteristics, according to Hawkins may well have important 'cognitive consequences' which, in other words, might lead WC children to communicative misunderstandings. The essential difference with the present investigation, is that the tendency to use the pronouns instead of nouns as heads of a sentence is not a characteristic of only the lower-classs children, but is found invariably at certain age (4-5 years) in all classes mixed together (c.f. Experiment. I), at least in the sample of pre-school urban Algerian children investigated for their use of referring expressions (common nouns, pronouns, and deictic uses).

It is indeed difficult, if not improbable, to reach a significance level as to the difference, between the so-called WC and MC children, in the use of exophoric reference. Exophoric reference was used overwhelmingly by children from 4 to 5 years in both experiments of the present follow-up study, as we remarked earlier in conjunction with the discussion of cognitive studies of referring expressions, but in all social classes without distinction.

On the other hand, there are in Hawkins' study a certain number of problems in the experimental procedure, and some weaknesses in the analytical accuracy. First, there is indication of the significance level, but

there is no listing of the data so that the reader will have a general view of the scores for the individual variables, and there is no possibility to check the way in which the data have been manipulated (no mean duration of the utterances of both classes). This might indicate that if WC children use pronouns with greater frequency than MC children, this could be function of the longer mean duration of their utterances. Secondly, there is no clear indication about the cases in which nominal groups could be replaced by either anaphoric or exophoric pronouns, and this could have been a relevant information for readers who need to understand the choice of which type of reference in which nominal group, in that only the use of exophoric pronouns revealed classes differences. In her study of determiners and reference from a cognitive perspective, Karmiloff-Smith (1979) noted that, given the above situation in which either an anaphoric or an exophoric interpretation of the definite article is possible in French, pre-school children, no matter which social class they belong to, prefer the exophoric reference.

Another problem, in Hawkins' study, pertains to the test situation: whether a test situation will justify the interpretation of a non-specified use of exophoric pronouns as poor communicative behaviour. Since the experimenter was present when the children constructed their stories (and thus did actually see the pictures), as was pointed out by M. Stubbs (1976) and P. Trudgill (1975) it is, in fact, possible that the working class version of the story is more appropriate in that specific context in which the children and the interviewer have the same information available to them. On the other hand, always assuming that the children and the

interviewer have the same opportunity to look at the picture, it is quite possible that the children coud describe details of the picture which the adult (the interviewer) was not able to recognize and identify. At all events, it is hard, as noted J.R. Edwards (1979), to accept that "the working-class version is any worse than the other, unless one assumes the correctness of middle-class style" (Edwards, 1979, p. 38).

3.3.5. Questions related to the present study

The preceding experimental studies of the development of referring expressions discussed here so far were the most closely related to the present research. These studies are perhaps the most consistent and equally significant attempts to study developmental trends in the use of definite reference, though the data on such trends remain conflicting.

The present study is an attempt to investigate pre-school children's cohesive use of linguistic signs, through their use of deictic, intralinguistic (anaphoric) and ultimately cohesive (or 'text-forming" functions of speech, Halliday and Hasan, 1976) or metapragmatic use of referring expressions (in other words the use of speech in one situation to refer to speech uttered in another situation). The aim of the present study is to show that there is a kind of continuity/consistency in the anaphoric-cohesive use of referring expressions in 4 and 5 year old children. A definite referring expression, as it will be shown in the section on the units of analysis and in the subsequent chapters dealing with the experiments, used

consistently is continuous with an anaphoric use of a 3rd person. These two uses imply an understanding of the cohesive or text-forming function.

The final aim in the present research is towards relating the hypotheses stated in the introduction to the psycholinguistic hypothesis (J. Lyons, 1975) that the use of linguistic signs to indicate interlinguistic relationships (that contribute to the cohesive function of speech) within the linguistic context is a further development of the early deictic use of referring expressions (the ones used to refer to non-linguistic entities of the immediate environment of the child). This is consonant with the developmental hypothesis (Brown, 1973; Warden, 1976; Karmiloff-Smith, 1979; Tanz, 1980; Hickmann, 1985; Wales, 1986) which states that within the universe of child discourse, the forms used to refer to entities non present in the non-linguistic context of discourse, are a logical outgrowth of these early deictic uses of referring expression ('this', 'that' 'there', etc.).

In trying to actually tackle the hypotheses of the present study and the problems involved within their statement, we will pose some research questions within the framework of the hypotheses. If there is a continuity between the earlier and possibly easier uses of the indefinite referring expressions, determined unambiguously as having only a nominative function (requiring only a grasp of class-membership), and later uses of the indefinite and definite reference determined as having an identifying function, (i.e. requiring a specification of the uniqueness of the referent), how can we account for such a continuity?

Is there enough proof of egocentric speech? Is the use of the definite reference consistent with the expectation of the audience/listener?

All these questions and some other related ones will be dealt with in the course of the analysis of the present data and their discussion. In the meantime the question is: what are the referring expressions this research is designed to tackle? In what follows, the units of analysis (reference and referring expressions) will be introduced and defined in some detail, before the description and discussion of the experiments themselves. This will be followed by an overview of the grammar of definite referring expressions in Arabic.

Chapter 4

Introduction to the Units of Analysis

4.1. The act of reference: a developmental history

When characterising as referential the behaviour of a one-year old, the 'concept of referring' is interpreted very broadly. The earliest and most central aspect of reference seems to be simply focusing one's own (and later another's) attention on some aspect of a situation. This broad referential function (as focussing attention or 'framing' some aspect of the world) may be similar to what A.R. Luria (1959) called a "directive function" of speech. Early reference in a child is presumably "intentional" only in the sense that the child is paying conscious attention to the referent, and the sign that carries the function is voluntary. It is only later in development that children become aware of *the act* of reference as having social effect (directing the attention of others) and later still, of conventional verbal means for carrying out various referring intentions.

The pointing gesture is usually taken as referential because of its developmental history (growing out of the orienting or attentional

behaviour of the child) and because it is a deliberate gesture. Kates (1980) judiciously contrasts the grasping and pointing gestures as follows: in a grasping gesture, she says, " the eye serves as a tool guiding the hand", and the hand is used as tool "to reach some object" but "in a pointing gesture the hand is used as a tool serving the eye, as it focuses on some object". In both cases "the focus is not on the hand (the tool), but on the object of desire or attention that is the direct or indirect target of the gesture" (p.53).

Ontogenetically, it seems that the pointing gesture serves as a function of drawing the child's own attention, first; in the next step the pointing plays a communicative function, the gesture, then, is used to focus the objects for someone else [c.f. for more detail works by Bruner (1975;1978) & colleagues in the mid-and late 70s, and Bates and her associates (1976;1977;1979 a & b) in the late seventies (c.f. also the 2nd chapter of the present study)

4.2 Paradigmatic or referential function

Researchers in child language consider such behaviours as'shift of gaze', 'gestural accompaniment', 'controlled intonation', 'persistence of behaviour', as indices of a communicative, referring intention, and therefore of genuine speech.

It is possible that children first use some verbal sign to refer to different things, with no underlying paradigm, and gradually learn to use different words to refer to different things. This line of thought was already framed in some earlier works on child language. M.M. Lewis (1936) distinguishes three functions of earliest child utterances:

a) to accompany some action

b) to declare something or, more accurately, to draw the attention of others to some object;

c) to manipulate or draw attention to some object as a demand that some need in relation to that object be satisfied.

There have been attempts, in the literature, to relate the second and third functions to, respectively, what E. Bates calls *'declaratives'* (or declarative utterances) and what Piaget called *'imperatives'* (or imperative utterances). Once children learn that words can be used to focus attention, whether one's own (the directive function of speech) or a listener's (the communicative function of declarative and imperative speech), they are able to discover the important fact that *certain words* draw attention to *certain things*. As this is usually put, children learn that things have names. Once children recognize this, they must discover what these names are.

In McNamara's study (1982), children naturally represent their environment as occupied by objects. When they first hear a word in the presence of a salient object, they automatically take a word as applying to *the object as a whole.* McNamara's theory - from a somewhat multidisciplinary point of view, psychological, linguistic and philosophical - of how a child learns names, is an alternative to Quine's (1960) viewpoint but without the behaviouristic overload:

> "Situations suggest to a child particular interpretations of what a name refers to. He tests out the names on well-disposed adults who, by some signs, say *yes* or *no.* But...how does the child know that the adult's assent relates to the name's being applied to an object as a whole and not some of its qualities, and for that matter how do adults know what the child meant by the word and that they are giving assent to the right thing?" (McNamara,1982,p. 186)

Of relevance, in this context, is Quine's answer to a closely related question: child and adult reach agreement because they are biased by nature to do so. Quine proposes that the child is endowed with " a prelinguistic quality space" (1960; p. 83) which is "innate" (1969, p. 123). This the child shares with adults, and it guides his hypothesis-forming about stimulus equivalence in the domain of qualities.

In McNamara (1982), 'referring' is a 'primitive' of cognitive psychology and 'unlearned' or, in other words, an 'explanatory concept innately given' and it occurs to a human being in certain circumstances in

part because of what he observes, and in part because of the structure of his mind" (p. 173-4). Within the psychological act of referring, reference would be that relation between words and objects that is established by the act of referring. Following this line of thought (i.e. from McNamara's position), as a result of the child's experience with words, names acquire permanent reference, in that they have been used to refer in a long series of acts of referring. On the other hand, reference is some kind of aptness agreed upon conventionally, to perform particular acts of reference. We can say that children are guided to the set of names by clear cases of names, i.e. proper names. This set includes what McNamara (1982) calls "sortals" or 'primitives' which places an object in some natural kind, like 'dog', or some artificial kind like 'brush'. These 'primitives' change from the predicate status to the subject status. If we assume that the child has the ability to grasp the semantic force of proper names, we can say, then, that he is able to learn that 'sortals' perform the function of proper names. The following pair "Minou is sick" and "the cat is sick" might well be part of the child's experience with words. The same thing can be said about names not in the referring position, i.e. names which only describe (attribute words, for instance). When they are clear cut, they guide the child to the set of descriptors in predicate position.

Proper names appear to be prototypes of referring terms, they are never used to predicate. Even if they have an associate sense or whatever, their function can not be predicated.

Common nouns, when used in referring positions, refer to a class of objects. Besides their referring function, common nouns also have a

descriptive one. As an illustration, when we say "All dogs are animals" and "Fido is a dog" we infer "Fido is an animal". Dog, in the first instance *refers* and *describes*, in the second, it only describes.

Here are then introduced, developmentally, the terms of analysis and the actual psychological and linguistic task of delineating the act of referring and its function as this is laying firmer ground for the latter and more specific referring expressions within the context of actual discourse.

4.3. Discourse reference

4.3.1. Reference and referring expressions

In semantics, when discussing lexical meaning, 'reference' denotes a function by which speakers, or writers, indicate through a linguistic expression the entities they are talking or writing about. According to J. Lyons (1981), reference is a relation that holds between linguistic expressions and what they stand for in the world or universe of discourse, and on particular occasions of its utterance. And always according to J. Lyons (1977)

> "whenever we talk of an *expression* in a given sentence as having *reference*, we are assuming that the sentence in question has been, or could be, *uttered with a particular communicative force in some appropriate context of use*" (1977, V.1 p .180. The emphasis is added).

There could not be better introduction to our terms of analysis. This sentence encapsulates all the known psycholinguistic constraints or conditions and possibilities that befall on a speaker of a language and shape the pragmatic or illocutionary force of his speech. It is only when these conditions ('appropriate conditions of use') and pragmatic intentions (or strategies of discourse) are fulfilled, or observed, that a reference, within the context of interactional discourse, is successful. Whether the expression which refers to and describes an entity, must be true - or correct - of the entity, is left to formal semantics. What is of interest to the discourse analyst is, whether the reference is successful in so far as it allows the hearer to identify, when receiving an actual linguistic message, and so a referring expression, the speaker's intended referent. Thus, the referential function of a referring expression depends on the speaker's intention on the particular occasion of use.

As the practical discourse analyst is interested in the 'actual' use of linguistic expression in a definable context for a particular purpose (Yule & Brown, 1983), the 'potential' use of linguistic expression may lead to philosophical discussions (truth conditions, existence and uniqueness - c.f. J. Lyons, 1977; 1981). And as the present work is concerned solely with the analysis of pre-school children's discourse, only a summary of these issues will be made.

J. Lyons (1981;1977) in his treatment of reference in relation to speech acts, uses the term 'singular definite reference' to include 'definite expression' and 'referring expression'. A definite expression refers to

some definite entity and identifies it, in part, by means of the descriptive content of the expression. 'The man', 'John's father' are definite expressions. 'The man' could be factorised, semantically, into two components:

1) descriptive ('man')

2) referential (definite article 'the')

'The' is non-descriptive, because it does not identify the entity that is being referred to by means of any of its context-independent properties. And 'man' is more or less descriptive of the referent according to the specificity or generality of its sense. Definite descriptions involve existential presuppositions; if one deliberately violates an *existential presupposition* in using what purports to be a definite description one fails to express any proposition at all. Referring expressions of all kinds involve existential presuppositions. On the other hand, when one is referring to fictional or hypothetical entities, one is presupposing that these exist in a fictional or hypothetical world.

To illustrate the semantic universal or the concept of 'existence', and the term existential presupposition, let us take the following example: "John wants to marry a girl with green eyes", when "*a girl with green eyes*" is used as a referring expression (technically a 'specific indefinite reference', but we will see this and other terms of discourse in more details in the coming pages), this presupposes or implies the existence of some individual who satisfies the description, in much the same way as would the *definite noun-phrase* (c.f. further developments) 'the girl with

green eyes' used as referring expression in the same context. If the *individual noun-phrase* 'a girl with green eyes' is constructed as non-specific there is no presupposition, or implication, of existence at all (this is characteristic of descriptive noun-phrase, definite or indefinite) occurring with verbs denoting what Russell (1905) and Quine (1960) and others have called propositional attitudes, i.e. denoting belief, doubt, intentions, etc.

The interpretation of the above example would be as follows:

- $(\exists x)$ (x is a girl with green eyes and John wants to marry x)

- John wants $(\exists x)$ (x be a girl with green eyes and John marry x)

Let us avoid the controversy over "truth" and "existence" in philosophical discussions of reference, and move to the other term, 'uniqueness'. We can, instead, assume that condition of uniqueness goes along with, but not as a necessary condition of, the notion of successful reference. In saying for instance, 'the cat has not been in all day', we will be understood as referring to a definite individual and that the description we offer will be sufficiently specific, in the given context, to identify uniquely for the hearer the referent we have in mind. There is no need to go further into the discussion of these controversial notions of existence, truth condition and uniqueness, as this might lead us too far from the actual task of what is precisely the content of referring expressions, and their context of use, before moving to the actual use of referring expressions by pre-school children in a specific speech community. We can, in the meantime, assume that "the fundamental problem for the linguist [we can

also say for the developmental psycholinguist], as far as reference is concerned, is to describe the way in which we use language to draw attention to what we are talking about". (J. Lyons, 1977, V.1 p. 184).

4.3.2. Specific and non specific use of referring expressions

1. Indefinite noun-phrases

To begin with, indefinite noun-phrases (or noun-phrases which are not definite) when used as complement to the verb 'to be' and when they appear in linguistic context as 'referentially opaque' are not used as referring expressions (e.g. "X is looking for a rubber". Rubber = any rubber, and thus non-specific. C.f. Lyons, 1977, pp.187ff for an extended discussion of the specific non-specific distinction). Constructions or contexts, according to Quine (1960) are opaque when they fail to preserve existentiality, i.e., truth-functionality.

An indefinite noun-phrase can be either an indefinite pronoun or a noun-phrase introduced by the indefinite article (e.g. 'a man', and also phrases like 'such a man'). Indefinite noun-phrases (used with specific reference or not) when used can subsequently be referred to by means of *a demonstrative* or personal pronoun, or a definite noun-phrase. To be more precise, noun-phrases introduced by 'some' or 'any' may be employed specifically or non specifically. In some examples (for instance, when such indefinite expressions as 'something' or 'someone' are used)

paralinguistic clues (e.g. intonation) may actually help the listener to understand the speaker's intention to refer to a particular individual.

- someone [I know who] won't do it.

- someone [I don't know who] has left his bag here.

Intonation is particularly important in very young children. Before two, the child uses intonation as a cohesive device before he acquires the pro-forms (anaphoric reference, substitution) and the system of grammatical ellipsis. In Halliday's work (1975), Nigel, from the age of two, used what linguists call contrastive focus. To illustrate, let us take the following examples of conversation drawn from Halliday (1975):

A - Put cereal down *on table*

B - *It is* on table.

Here, [is], in B's sentence, is a contrastive prominence. If A replies by giving new information and contrasting it with B's information, A has, presumably, realized the *relation of coherence*, making it by the cohesive device of intonation (e.g. "Nigel' table"). This is in fact, the beginning of the use of some pro-forms and elliptical patterns, but at this age (2 years)

the understanding of the rules of these grammatical patterns, or their linguistically defined rules, is still very incomplete.

Somehow between 2 1/2 and 3 1/2 years, children begin systematically to delete information which is textually presupposed and to use pro-forms. The work of Thomas Thieman (1975), provides some evidence on the way nursery school children (between 44 and 66 months) transform full forms to more compact or reduced forms, though many more direct examinations of coherent episodes of discourse are still needed to determine *when* and *how* children actually use these cohesive devices.

2 - Proper names and definite noun-phrases

A name, even a proper name, must depend for its referential assignment on an identification of a particular individual in a particular context. This assignment of reference depends on the type of predicate attached to the referring expression.

Successful reference, in context, many depend crucially on selecting the most appropriate 'name' with which to identify an individual for a particular hearer or audience.

A definite noun-phrase (c.f. Hawkins, 1978; and Van Der Auwera, 1980) includes a referential and attributive use. The referential use

involves a specific individual (e.g. "the thief"). In the attributive use the intention is not necessarily referential (e.g. "the thief" = whoever did the theft). Donnellan's (1966) attributive uses of a definite noun phrase are generally treated as intended references. Though they may not pick out an individual in the world', they will pick out (or even establish) an individual in the hearer's representation of the discourse.

The focus, in the present study, is on the singular definite referring expressions thus introduced. These comprise:

1- Definite and indefinite noun-phrase (common nouns)

and

2- Pronouns

Pronouns can be:

-1) Noun-substitute

-2) Deictic or indexical function

The sub-class of pronouns includes:

indexical function	1) 'I', 'you', 'we', etc., (personal pronouns). 2) 'this', 'that' (demonstrative pronouns)

And within the indexical function we can include - 'here', 'there' which are demonstrative adverbs (c.f. the following lines).

Because of the impossibility, at this stage, of determining other forms of reference in the subject, let us concentrate, for now, on the deictic or indexical function.

3 - Deixis

According to J. Lyons (1981) 'indexicality' and 'deixis' can cover more than the 'personal' and 'demonstrative' pronouns. They might include demonstrative adverbs ('here' and 'there'), tense (past, present, future), and also such lexical differences which, in English, are exemplified by the verbs 'come' vs 'go' and 'bring' vs 'take'.

There is still no systematic and theoretically well-motivated distinction between the terms 'indexicality' and 'deixis'. Both of these terms can be explained from an etymological point of view, on the basis of the notion of gestural reference.

Deixis is to be defined, first and foremost, as a matter of spatio-temporal location in the context of utterance. Thus, within the deictic context, every act of utterance - or locutionary act - occurs in a spatio-temporal context whose centre can be referred to as *here* -and *now.* The demonstrative adverbs 'here' and 'now' (or their equivalent in some languages) must be related to the place and time of utterance: 'here' refers to where the speaker is and 'now' refers to the moment of utterance (or some period of time that contains the moment of utterance). The demonstrative adverbs 'there' and 'then' are complementary and are negatively defined with respect to the the preceding adverbs: 'there' means 'not here' and 'then 'not now'.

When speaking of deictic context, one is usually drawing attention to some kind of speaker-based egocentricity (the 'I' referring normally to the person who is speaking).

The personal pronoun 'I' and the demonstrative adverbs 'here' and 'now' are referring expressions which single out and identify the logically separable components of the spatio-temporal centre point of the deictic context. Going a little further in our linguistic distinctions (c.f. J. Lyons, 1981) we can say that there is a pure deixis- or the set of expressions whose meaning can be accounted for in terms of the notion of deixis, and

'impure deixis' - or the set of expressions whose meaning is partly deictic and partly non-deictic. The 'I' and 'You', within pure deixis, refer to the locutionary agent and the addressee without conveying any additional information about them. 'This' vs. 'that' and 'here' vs. 'there', when used in spatio-temporal reference and pure deixis, identify the referent (an entity or a place) in relation to the location of the locutionary act and its participants.

Within impure deixis, 'he', 'she', 'it' encode the distinctions of meaning that are traditionally associated with the terms 'masculine' 'feminine' and 'neuter'. These appear to be clearly non-deictic, because they are based upon properties of the referent which in fact have nothing to do with his/her or its spatio-temporal location, or role in the locutionary act.

Further distinctions can be made of the notion of deixis. As a matter of fact 'primary deixis' is specifically distinguished from the more sophisticated and elaborated adult-like, 'secondary deixis'. We are more often concerned with primary deixis, when dealing with children's speech. Terms of gestural reference, within the framework of deictic context, can account for primary deixis. The English demonstratives - or their equivalents in some other languages - can be analysed in terms of the notion of spatio-temporal proximity to the deictic centre. 'This' and 'there' refer to entities and places located in the place where the speaker is. 'This' and 'There' also refer to points or stretches of time located in the period of time that contains the moment of utterance. On the other hand

we can shift indefinitely far from the centre the boundaries of place and time.e.g.'here' can point to 'this' room

or

'this' galaxy

'now' can point to 'this' moment

or

'this' year

Reinterpreting or displacing the spatio-temporal dimensions of the primary deixis involves pointing to secondary deixis. Secondary deixis can be, in some cases, called metaphorical. This other dimension of deixis, very close to what linguists call subjective modality, introduces some other cases of demonstratives: 'this' vs. 'that', can be expressive, this expressivity being identified as that of emotional or attitudinal dissociation. To take an example, if someone is holding something in his hand, he will normally use 'this' rather than 'that' to refer to the thing or object in his hand (this is so by virtue of the spatio-temporal proximity of the object). Now, if he says "what's that?", then his use of 'that' will indicate for the participant(s) his dislike or aversion: this would mean to the participant(s) that this person is distancing herself or himself emotionally or attitudinally from what he/she is referring to.

In the following section, an overview of the grammar of definite and indefinite referring expressions in Arabic (the language spoken by the children of the present study) is given, before the introduction to methodology of the present research.

4.4. Definite referring expressions in Arabic: an overview

In the following pages, there will be an attempt to describe, briefly, the grammar of the definite and indefinite articles, and some other forms of determiners and reference in Arabic.

4.4.1. Definite article

The definite article JÍ (?al; 'the' in English) in Arabic is invariable and is always prefixed. When attached to a word used in isolation, the initial glottol stop of this article will not be represented and the remaining 'al' will be separated from the word it defines by a dash, e.g.:

** al-kita:b (the book)

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* The transcription system in this work is intended to give the Arabic examples a reading form. This reading transcription is used instead of a strictly phonetic one.

When prefixed to a word beginning with one of the letters (c.f. table 4.1):

t ṯ d ḏ r s š ṣ ṭ ẓ l n

the 'l' of the definite article is assimilated to the sound it is annexed to, e.g.:

al - + ṯalj —> aṯ-ṯalj (the snow)

al - + tayr —> at-tayr (the bird)

al - + tamrînu —> at-tamrînu (the homework)

When the definite article is in a junctural position it may be represented by 'l' - or the sound it assimilates to only, as in the following example:

quwatu š — š ira (purchasing power)

The attachment of the definite article to the word it defines is done purely on grammatical grounds. To do otherwise would involve a violation of the rules of Arabic syllabic structures. According to one of these rules, only the following types of syllabic structures in junctural position are allowed: CV, C.V and CVC.

4.4.2. Determination and interdetermination

In Arabic, a noun or an expression is indeterminate or indefinite when it is used in isolation, for example:

ghorfatu^{n} = a room.

table 4.3. Arabic Consonants

Nature	Arabic letters	Phonetic transcription[1]	Point of articulation
Bilabials	ب م و	b m w	the lips
Labio-dentals	ف	f	the lower lip applied on the upper incisives of the lower and upper teethridges
Interdentals	ث ذ ظ	ṯ ḏ ẓ	the tip of the tongue placed between the incisives of the lower and upper teeth ridges
Dentals	ت د ط ن س ز ص	t d ṭ n s z ṣ	upper incisives or their alveolaridge on which the tip of the tongue is applied The tip of the tongue is applied a little above the incisives
Pre-palatals	ج ش ي ر ل ض	ǧ š y r l ḍ	Anterior palate
Post-palatals	ك	k	posterior palate
Velars	ق خ غ	q ḫ ġ	roof of the palate and posterior part of the tongue
Pharyngeals	ح ع	h ʿ	Walls of the pharynx
Laryngeals	ه ء	h ʾ	Larynx

[1] i.e = reading transcription used for the examples in Arabic, in the present work.

The 'tanwin' 'u^{n}' (in Arabic ٌ or ٌٌ) or the doubling of the vowel 'u' ('ُ' in Arabic), which is suffixed to the word, represents the form grammatically equivalent to the indefinite article 'a' in English, in the absence of a separate recognizable form.

When this word (e.g. ghorfatu^{n}) is determined, it is:

1) accompanied by the article ?al (c.f. previous statement on the definite article):

   dalakati al - ghorfata = she scrubbed the room

2) annexed to a determinative object:

   ghorfatu at-tabḥi = (the room of) the kitchen

In this kind of relationship, the 1st term being determined by the 2nd, it takes neither an article nor a 'tanwin', the 2nd term plays the role of the determinative object and takes the article only if the meaning requires it. The following examples might be taken as an illustration of the case:

ka^{c}ku ^{c}idin = a feast cake

ka^{c}ku ?al-^{c}idi = the cake of the feast

There are in Arabic multiple combinations of these terms. To take but a few examples, the 1st term may have the value of an adjective:

ǧaddatu^{n} ḍa^{c}ifatu ?al-binyati

= a grand-mother of a weak physical constitution.

And the 2nd or 3rd term may be a suffixed pronoun:

Ummu faridun = the mother of Farid (Farid's mother)

Umuhu = (literally: the mother of him) his mother.

4.4.3. Demonstratives and pronouns

A few words, here, are necessary about demonstratives and pronouns, to have a complete picture of the broader system of determination and reference in Arabic.

Demonstrative pronouns in Arabic can be 'masculine' or 'feminine'.

	proximity	feeble distance	extreme distance
masculine	h a d̲ a (this one)	d̲ a i k a (that one)	d̲ a l i k a (that one)
feminine	h a d̲ i h i (this one)	t i : k a (that one)	t i l k a (that one)
plural) masc.) fem.	h a u l a i (these ones)	a w l a i k a (those ones)	a w l a i k a (those ones)

Note: a long vowel is marked by two dots; a long consonant is marked by doubling the symbol.

The demonstrative adjectives are demonstrative pronouns followed by the article ?al, e.g.:

d a l i k a al-quimtari

(that schoolbag there)

In the demonstrative the feeble distance (from the speaker) is marked by suffixing the 'k', the extreme distance (from the speaker) by infixing the 'l' between the demonstrative and the suffix. Sometimes, they have not the 1st syllable 'ha' which helps in drawing attention, and they become: d i h i ; d a.

The interrogative pronoun 'man' (مَنْ) is invariable. It is equivalent to "who?", "whose?", "whom?', in English. It is used only for persons, e.g.:

m a n h a d a: = who (is) this one?

The interrogative pronoun 'ma:' (مَا) is equivalent to 'what', 'which' in English. It is used for things in general, e.g.:

m a : f i: d a k a ?al-ghorfatu

= what is it in that room?

The personal pronouns which are isolated are always used as subjects, they are used in the singular and plural, e.g.:

hua ğa: lisu^{n} = he (is) sitting

anti fi: ?al-fina:' = you are in the courtyard.

Personal pronouns isolated or subjects:

person	1st Person		2nd Person		3rd Person	
gender	feminine	masculine	feminine	masculine	feminine	masculine
Singular	ana (i)	ana (i)	anti (you)	anta (you)	hia (she)	hua (he)
Plural	hahnu (me)	nahnu (me)	antuna (you)	antum (you)	huna (they)	hum (they)

In the case of the verbs used in isolation, as a general rule, the exclusion of inflection is indicated by a dash following the element which constitutes the base or root of the verbal unit, e.g.:

Kaṣar (to break)

In case where the retention of these inflections is found necessary, the dash is still used to separate the two elements, e.g.:

Kaṣar-tu (I broke (something))

On the other hand, when used in a context, the verbal unit is fully represented and without the use of a dash, e.g.:

?ana: kasartu l-qualam

(I broke the pen)

To end up this overview, a few examples about pre-school Algerian children's use of certain forms in Algerian colloquial Arabic (which has basically the same grammar as Modern Arabic, but with a few exceptions)

might be useful. In the personal pronoun category, there is often a redundancy of the 1st person in the young child:

ana ᶜndi (Me I have)

ᶜndek (you have)

ᶜndna (we have).

And in negation, we usually find the following forms from an early age:

ᶜndi ma ᶜndis˘

(I have) (I have not)

ᶜndek ma ᶜndeks˘

(you have) (you have not).

There is, in fact, in Arabic no verb which corresponds to the verb 'to have' in English. It is approximately replaced by the preposition ᶜndî (to) which is followed by personal pronouns which are used as suffixes:

ᶜndî (I have)

lana: (we have)

The personal pronouns used as suffixes to a noun are equivalent to the possessives in English and in French:

my, yours, his, etc.

mon, ton, son, etc.

e.g. sahnî = (the plate of me) my plate.

In the interpretation and discussion of the experiments, the first few examples of children's sample speech are given both in the reading transcription of Arabic and the English equivalent. All the remaining other examples are given directly in the English translation, in order to ease the reading of the speech sample.

Chapter 5

General Introduction to Methodology

5.1. A theoretical stance

5.1.1. Rationale: on studying language development in non-western cultures

Studying language development is one of the most challenging tasks for developmental psychologists. Certain methodological problems have been pointed out by some researchers in child language, but the most telling of these problems were in the area of cross-cultural research. Ervin-Tripp (1972) (and later on, Bowerman, 1981) discussed two types of methodological bias (linguistic and sociolinguistic), when the samples of children investigated are linguistically and/or culturally heterogeneous.

The major methodological problems which arise are due to the fact that most of the investigators doing comparative studies, or studying non-western children for themselves, do not belong to the cultures under study. An inadequate knowledge of the child's language and culture, and the use of an unfamiliar (for the child) standardized procedure (which

even for European children has some disadvantages) threaten the validity of the comparative research in question. In the same way, an investigator who uses a so-called 'standard' dialect, or in some cases, a 'standard' language in tasks which are intended to assess children's spontaneous speech, when in fact this 'standard' language is less familiar to some children than some other dialects, is possibly linguistically biasing his study. The other bias, socio-linguistically speaking, arises when an investigator transplants experimental techniques to test children's linguistic abilities to social groups for which these techniques were not at first intended (these being mostly developed in Western societies). If such biases can be avoided, then, the one expected outcome is that many investigators from Western societies will reappraise or reevaluate, in the light of cross-cultural practices, their theoretical and methodological arsenal.

A first attempt to adjust standard experimental techniques to cross-cultural settings, was done in the mid-sixties. A "Field Manual for cross-cultual study of the acquisition of communicative competence" (Slobin, 1967), which is the result of neighbouring disciplines like psycholinguistics and sociolinguistics, combining the investigation of grammatical development, language use in its social context, and a description of the belief systems surrounding language socialization, was developed. The idea was that Western researchers, choosing field sites where already anthropological stations were existing, will, in a space of a few months of study, have some knowledge of the language and culture under study. Most of the research following the methodological proposals

of the Field Manual omitted important dimensions of adult-child speech interaction (adult input mainly) (Blount, 1969; Kernan, 1969; Omar, 1973). It soon appeared that the research designs were inappropriate, since a certain number of variables - unexpected cultural variables which any viable research must be able to anticipate - were not controlled. While the goals of the Field Manual are worth pursuing, "a more holistic approach" as remarked one researcher (B. Schieffelin, 1979) "is needed to deal with various aspects of the development of communicative competence and language socialization in a unified manner. At the same time, such an approach must be flexible enough to handle diverse and unpredictable cultural situations" (B. Schieffelin, 1979, p. 76)

In the late seventies Bambi Schieffelin conducted a research project on communicative competence in Kaluli children, using an ethnographic approach. This study was based on anthropological work done in Papua - New Guinea where the Kaluli people were living (the anthropological work being conducted by her husband, E.L. Schieffelin), a few years before her study began. Her work, usually considered as a positive account of the development of communicative competence in a non-literate and non-western society, takes into consideration not only the point of view of an outside observer, but also the point of view of the participants, "to interpret and understand the events observed by the investigator" (B. Schieffelin, 1979; p.77). The participants view being, in other words, the "emic" element of a cross-cultural strategy.

Following a distinction in linguistics between *phonemics,* or the examination of the sounds used in a particular language, and *phonetics,*

or the generalisation from phonemic studies in individual languages to a universal science covering all languages, Pike (1966) has coined the terms 'emic' and 'etic'. 'Emic' studies apply in only a particular society, while 'etic' studies are universal aspects (culture-free) of the world, or at least in more than one society (c.f. Berry, 1974; 1980; Narroll et al, 1980).

As an example, if an ethnographer is using an 'emic' approach, he must seek to clarify and understand the conceptions and formulae (or constructions) used by the people under study to define what happens to them.

Schieffelin's ethnographic approach involves not only a detailed account "of an event, series of events or even a whole way of life" from the point of view of a researcher who does not belong to the culture being investigated, but it also incorporates that 'emic' element which emphasizes the significance of the described events from the point of view of the participants.

According to Schieffelin (1979), the research process, within an ethnographic approach, involves more than just collecting various types of data (i.e. representing spontaneous speech, observing child case study behaviour, interviews about the socialization practices). It involves, more importantly, the use of the above experimental techniques to "raise questions about, provide answers for, and contribute to the interpretation of the others (i.e. the people under study) throughout the whole course of study" (B. Schieffelin, 1979, p.77, the words between brackets are added).

To illustrate this, information about certain cultural traits and events (e.g. the traditional way in the preparation, the giving of and taking of food, in, for instance, Papua New Guinea, and food tabooed in infancy) may help disambiguate between what people say about bringing up children and what they are actually observed to do.

B. Schieffelin's work is undoubtedly a remarkable contribution to methodology in the field of language development across cultures; it is nonetheless not without weaknesses. A stay of two years among Kaluli people, however they may help the understanding of the culture and language of these people of the Papuan Plateau, is, indeed, far from being sufficient to allow an investigtor, not belonging to the culture under study, to bring to the fore the full range of cultural and/or linguistic variables, or the potential behavioural differences. This is so even though her primary goal was not "to elicit speech from children for the purpose of linguistic analysis" since she "could not presume to know the culturally appropriate ways of speaking to and interacting with children" (p. 80), but, " to investigate the ways in which Kaluli people interact with and speak to their children" (B. Schieffelin, 1979, p. 80)

It is precisely that 'abstraction from the components of communicative events' - to take one expression used by Hymes (1974) to identify aspects of the ethnography of speaking - which is so criticized in earlier approaches to patterns of speech activity using separate frames of references which the work of Schieffelin seems to consider. The investigation of communicative activities is a whole, if the goal is to

understand (taken in the scientific sense to mean to describe and explain) ways in which an ethnic group interacts with and speaks to its children. Therefore one must view these patterns of activities intermingled with the linguistic code in what Hymes (1974) describes as "the organisation of the elements and relations of the speech act and speech events, themselves part of a system of communicative acts and events characteristic of a group"[1].

The present study explores ways in which Algerian children talk about (or describe) objects and objects relations, events and activities, through language. It differs from Schieffelin's work in, essentially, two ways. The investigator can be presumed to know "the culturally appropriate ways of speaking to and interacting with (Algerian pre-school) children" (the words between brackets are added). Secondly, the investigator uses a different experimental setting where the situation and the tasks are manipulated in order to create the maximum of opportunity for the children to use certain forms, which yield more of a sentential (anaphoric) type of discourse, when talking about objects, events and relations that the tasks describe. (This will be made clear in the chapters on the experiments).

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1 For Conklin (1962) "an adequate ethnographic description of the culture (Goodenough, 1957a) of a particular society presupposes a detailed analysis of the communicative system and of the culturally defined situations in which all relevant distinctions in that system occur" [Lexicographical treatment of folk taxonomies" in "Problems of Lexicography" F.W. Householder & S. Saporta (eds), pp. 119-141. Publicatlon 21 of the Indiana University Research Center in Anthropology, Folklore and Linguistics.] Via Hymes (1974) p. 17.

B. Schieffelin's work (1979) is essentially an ethnographic and anthropological description of the development of communicative competence. Children's talk within that approach, is seen as a social activity. The present study does not fulfill such purposes, but is is rather from a wider perspective of a developmental pragmatic approach, which also includes Schieffelin's work, and it combines different levels of analyses. These levels include the understanding and use of information not explicit in the literal meaning of a meaning (conversational implicature) and presuppositions, and, a little more in detail, the necessity for using information from the listener and the context for deciding among alternative forms of messages (e.g. definite and indefinite reference).

5.1.2. Methodological dilemmas

When assessing language and communication, it is not sufficient to control for such variables as age, sex, socio-economic status, (and sometimes such other child's attributes as intelligence and personality) which covary with the child's linguistic behaviour, to cite but the ones which, in practice, are the most commonly studied and possibly controlled in any within culture investigation. As it will be seen in the following paragraphs, it is not just a problem of building up a test which will look for differences in, say, the frequency of the use of turns at speaking, initiation of topics, or the number and quality of pragmatic functions or speech acts,

between children of the same sex and same age, and having the same socio-economic status.

Even within a group of normal pre-school children from the same geographical area, matched for the above variables, and having approximately the same pre-school education (e.g. 4 and 5 year-olds attending the same nursery school for 1 and 2 years already), there are substantial differences in the way language is used for communication, the role language plays for each particular child - because of some complex phenomena the most prominent of which are the socio-psychological and socio-cultural variables.

The psychological and social dimensions of the expansion of communication open the perspective from which the pre-school child can be viewed as "an active and interactive member of a changing and expanding set of interpersonal contacts and relationships in which both interactions and communications become increasingly complex and varied" (C. Garvey, 1984, p.XV).

With the cultural variable are associated a number of other variables which are inextricably mingled with that broad variable that makes it, in terms of experimental or statistical control, an overwhelmingly complex task for the researcher in child language.

A substantial proportion of research in child language in the last two decades, and in the present one, in fact replicates experiments which have not been entirely conclusive. The main reason behind this is that most researchers subscribe to appealing theories of child language which

are not always supported by the evidence, and as a consequence, these researchers often sacrifice sound experimental methodologies which are not in line with the so-called theories. Examples in the literature are numerous (reports in the "Journal of Child Language" are revealing in this respect, c.f. L. Waterhouse, 1980). What Waterhouse (1980) calls 'bankruptcy' of a theory may have been discovered by internal or external analysis, i.e. by discovering some logical inconsistencies, within the theory, or by finding no data to support the theory.

To take but a few examples, some papers in child language development, discussing Clark's model of the acquisition of meaning (E.V. Clark, 1973) recognized only Clark's model for word meaning acquisition, while some others recognized a variety of such models. According to Clark's Semantic Feature hypothesis, children frequently begin by using actual words knowing only a partial set of semantic features. As an illustration, from the standpoint of the adult's word meanings, the word 'zebra' might include the following semantic features: [living], [animal], [wild], [four-legged], [mane] and [striped]. A pre-school child might begin, for example, with only two features of, let's say, 'cat', and thus take 'cat' to mean [living] and [four-legged]. In the event of seeing a tiger, the child might call it 'cat', since the semantic features which identify 'cat' for the pre-school child are shared by the tiger. This child might, as well call a 'zebra': "dog", since most semantic features that identify 'dog' are shared by the 'zebra'.

One possible explanation for the recognition of such a model (Clark, 1973) could be that the most salient parts of the model were understood, but the less salient parts were easily confused by most people. Interpretations of the theory appear to be, however, most probable on one point, which is the notion that the model predicts that the child's feature accretions should proceed developmentally from the more concrete to the more abstract.

Another good example of misinterpretation in the literature on the subject are, in psycho-linguistics, Chomsky's models of grammar (1965;1964). With regard to the above remarks (theories not always supported by evidence), some researchers, attracted by the Transformational Model, disregarded the most critical aspects of the theory, and attempted to prove those parts of the theory which apparently fit their data, and so try to give to this theory of language acquisition an empirical fit. Chomsky's model was, in fact, never offered as the sort of empirical account, rival to the learning theory paradigm, of how the child acquires a language. Chomsky's model could be said to be a description of the problem of language acquisition, a sort of description which states that the acquisition of language by the child is a question of mastering the rules of a generative grammar. And the strong claims developed by Chomsky were somehow subject to empirical testing in the decade which followed the publication of the 'Aspects of the Theory of Syntax" (1965). Now, the set of beliefs about the nature of theories which sprang from the Chomskyan paradigm are decidedly metaphysical because, as Wanner and Gleitman (1982) argue cogently, they can not be confirmed or

disconfirmed by empirical means, but only that different metaphysical beliefs can be compared according to the degree of success of the scientific programmes they support.

To sum up the speculations in child language research, one serious problem is the generalisation from the data of one subject, or even three subjects, to whole populations of children, this being followed, sometimes, by claims of universality - spelled out as universal principles of linguistic behaviour, extrapolation to a universal range of individual variation of a typical behaviour, or using interchangeably bicultural studies (based on samples of children from only two countries or two cultures) and cross-cultural studies (bearing on *several* different cultures) for some hypothetical cross-cultural universals pertaining to literacy, language use, child-rearing practices, etc.

However, it can be argued that longitudinal studies which focus on a small sample, or even a single or two subjects, might have some advantage. A detailed analysis of a relatively small sample is often thought to be preferable to a more superficial analysis of a much larger sample where many interesting aspects of discourse might be easily overlooked (c.f. McTear, 1985).

5.2. The data of the present study

The present research is about the development of communication in Algerian pre-school urban children. The sample of pre-school children,

in this research, is expected to represent the major social strata of such large urban area such as Constantine. In the large Algerian urban areas (whether it be Constantine, Algiers or Oran), the most often used language (at home and outside home) is colloquial Algerian Arabic, which is an outgrowth of local dialects but having a large proportion of Arabic together with certain words from foreign codes such as French or Spanish.

A majority of the population of Algerian children speaks this colloquial Algerian Arabic (I do not include Berber speaking children, since they represent another important cultural sub-group within the same broad culture, and these could be studied separately).

Ninety six children with equal proportion of boys and girls representing the three main social classes [workers, owners - "petits proprietaires et commerçants" - and learned people (teachers, intellectuals in general) etc.,] are studied cross-sectionally for their early speech, or, more precisely, on referring expressions and other aspects of discourse in the 1st experiment.. The age-range goes from 3 1/2 to 5 years. More detail about the age sub-divisions within the sample will be given in the chapters dealing with the experiments. The same sample of children, with few exceptions, is used in the second experiment, some six months later. Thus, these two experiments present themselves as a kind of longitudinal study. Details about the method (i.e. procedure, materials, subjects, etc.,) are provided in the chapters concerning the separate experiments.

This study involved taperecording the spontaneous speech of all the children in the samples, in the specific setting of the "garderie d'enfants" (a kind of nursery school) which are the only places where it is materially and socially possible. 'Socially' because in the particular Algerian setting, the difficulty when it comes to arranging home visits with the parents, for the sake of taperecording speech situations and speech events (i.e. mother-child interaction, mother-child-sibling(s) interaction, and maternal interviews) is almost insurmountable.

Chapter 6

Referring expressions in Algerian pre-school children

Experiment I

6.1 Method

6.1.1 Rationale

The following description and analysis concerns the first of two experiments which constitute a two-part study of the development of referring expressions and other aspects of discourse in pre-school urban Algerian children.

The aim of this study is to look at possible sources of variation, eliminating any which may be of no consequences, so as to show up major aspects of the speech forms used by the children. Potential sources of variation include differences between the sexes, age-group differences, social economic status differences or differences between school environments. These will either be tested for or taken into account as far as possible in the design. For example, the school populations covered the three main social strata and random selection of children was

made. Also, the schools themselves constituted the whole population of 'jardins d'enfants' in the city of Constantine.

6.1.2. Subjects and materials

The children investigated were selected from three 'jardins d'enfants' in Constantine which they had attended for at least one year. The first experiment was completed over a period of three months, from January 1985 to the end of March of the same year. A total of sixty children were selected randomly from a pool of ninety six who participated initially in the experiments. Selection took into account both age and sex. The overall age-range of the sample was from 3:3 to 5:0, with a mean age of 4:4. However a division into equal sized age-groups (3:7 - 4:3 and 4:4 - 5:0) was made to investigate any age differences. Also there were equal numbers of girls and boys so that any differences between the sexes could be assessed.

The sixty children were tested in dyads, each child interacting with a partner of the same age. Dyads were chosen so that there were equal numbers of boy/boy, girl/girl and boy/girl pairings.

The collection of data took place during the morning playtime between 10 and 11 o'clock. Before the actual experiment started, the

investigator spent about two weeks in warming-up sessions designed to introduce himself to the subjects and thus gain their confidence. The test sessions were conducted in a corner of a quiet room provided with chairs and tables, with pictures on the walls (either drawn by the pre-school teacher or taken from colour magazines for children, and representing various animals, and sometimes persons, engaged in typical activities), and toys of different sizes and colour in another corner of the room. The testing room was used at other times by the teachers and was, thus, familiar to the children. each dyad spent approximately 10 to 15 minutes in the testing room with the experimenter.

The set of pictures presented to the subjects was hand-drawn by the pre-school teachers and all the pictures were selected from among a wide range which had been or were still being used in the pre-school classrooms.

The main picture in the experiment was drawn on thick white paper, 40cm x 30cm and represented the following scence:

- two girls (one in a yellow dress and one in a pink dress) were offering each other flowers coloured in yellow, red and blue and were standing near a blue river crossed by a bridge. All around there were flowers and tall grass on the ground, also some trees - roughly represented in green - while in the sky a bird, coloured grey, was flying and another one was nesting on the ground. There was also the profile, clearly delineated, of mountains on the

horizon, a cloud above the mountains, a yellow sun, and two differently coloured butterflies.

Four other pictures were also used in this experiment in addition to the large picture and were comparatively smaller (25cm x 20cm each). They represented various animals and objects already familiar to the children frequenting the 'jardins d'enfants'. The four pictures used were as follows:

1- entitled "les canards" (the ducks)

Ducks on a pond with one about to pick up a snail on a green leaf, while another one was shown as though looking at the snail about to be picked. The contents of the picture were coloured in green, brown and yellow.

2- entitled "les poussins" (the chicks)

Chicks were represented in various activities. Some were just breaking or had just broken their egg-shells, one was about to pick up a worm, another one was attracted by a snail, yet another one was running, and, in a corner, two chicks were resting against each other, eyes closed.

3- A hen followed by her two chicks (drawn in red, grey, orange and yellow).

4- A representation of a house with two open windows, a tall green tree on either side and the ground covered with flowers. On a hill, a wide-spreading tree with a sun, coloured orange, above the tree.

6.1.3. Procedure

Two situations were given to the subjects, the structured-play condition and the free-play condition. In the structured-play condition the child participant either names or describes the picture he/she has in his/her hands to the other partner in the dyad. The other member of the dyad, who has an identical picture, names/describes in his or her turn the contents of the picture.

Although the children did not know it, each had an identical picture. Instructions had also been given at the beginning of the session as part of the game, that they were not to look at each other's pictures. To make sure the injunctions were observed children sat on opposite sides of a table facing each other at a distance of approximately 50cm.

The instructions continued as follows:

Experimenter: Look at this picture (and name the child), isn't it nice? Can you tell (and name the other child) about your picture?

After the child had made a response, the same instruction was then repeated to the other member of the dyad. It happened sometimes that, in the middle of the game, a subject after taking a turn wanted to speak again, although the verbal instruction was directed to the partner. The experimenter then intervened by saying "Let ....x (a child) speak, this is his turn, do you understand? When he finishes you can speak again, okay?"

The question about the picture was designed to produce a dialogue between the children and was used as a repeated prompt after each turn at speaking, to elicit more speech from the children until one of the children was not able to describe the picture further. If a child, within a turn, happened to utter a word while pointing to a part of the picture, he was encouraged to produce a whole sentence while taking a turn. As the data show (see examples in the appendix), it was often the case that children omitted syntactic structures, essentially grammatical categories, and used only the word corresponding to the recognized object, or, sometimes the archetypal answer "I've got...".

One main difference in procedure from other studies of referential communication is that no screen was used to separate the children. This

was decided upon, firstly, because the purpose of the study was not to compare and contrast critical attributes of the pictures themselves, such as in the studies of Whitehurst and his colleagues (1987), but to investigate the children's use of linguistic signs. Secondly, it was decided not to use a screen as a consequence of one of the hypotheses raised for this study. In the situation created for the subjects, in the first experiment, the play-space (close-range, far-range) is a critical factor; in other words, for more naturalness of the situation, the children must not see each other completely, and proxemic relations are important for a richer referential content of their messages. A study on which this view is based has been conducted by Bokus and Shugar (1984). Their hypothesis could be stated in this way:

> - In a dyadic, free-play situation, children are hypothesized to start interaction with a same age partner by constructing utterances following two different patterns depending on the proxemic relations of their fields of action: they produce short utterances lacking in referential content if the mutual distance is greater, and longer utterances with an expected richer referential content if the mutual distance is lesser.

More will be said about this hypothesis, in conjunction with the discussion of our results. For now, it is sufficient to say that in our view the distance between the two partners of the dyad can be decisive, not only in matters of talkativeness but also in matters of mutual relations and reciprocal socialisation. In the structured play condition, the mutual distance is less than 50 cm, and in the free-play condition the distance is

still less (the table separating the children is smaller than the one used in the previous condition).

In the free-play condition, there is less or no guidance, less or no elicitation. In this latter condition, the experimenter tries to interfere as little as possible with the choice of the child, except by asking, at the very beginning, the question which actually leaves the child free to decide on whatever he wants to talk about: "What do you like to talk about?" or "What do you like to play with?"

Children either chose to tell a narrative (of events, toys, or persons they have chosen to talk about) or to tell about a picture picked up among the set of pictures described a few pages above, and designed for the purpose of a free-play situation. The experimenter was listening, and occasionally used the prompt "uh uh", or simply nodded. But when the child showed signs of wanting to go further in a narrative, for instance (some children, used the expression "now, I'm going to tell you ....." and repeated it many times, or just said "and ..... and"), the experimenter added the usual questions "yes, and what's next?" "and do you like it?" or "is it nice?", or a need for clarification "and what's its name?".

The recording from each experimental session was analysed according to the following procedure. The experimenter placed into categories as shown in table 6-1:

1- speech directed to the child by the experimenter

2- repetition: when there is a desire on the child's part to participate in the conversation, the repeated form or forms are counted. In general each time a participant takes a turn, the forms of interest, whether repeated or not, are counted.

3- A form within the same sentence, if repeated, is counted only when it applies to a different new entity.

Two other people aided the experimenter in the translation of speech from Algerian Colloquial Arabic to English. Examples of both the Algerian Colloquial Arabic and the English equivalent are given later. It should be noted that no written form of the Colloquial Arabic is used so that a phonetic transcription devised by the author is used.

6.1.4. Results and discussion: preliminary considerations

a) the scores

The first reason why there are sometimes very high scores (c.f. table 6-1) in a condition for certain children, compared with the very low scores for certain others, is that some children spent more time than others with the pictures. The mean time spent with a dyad was normally

Table 6-1

Common nouns

	Age-range: 4;4 - 5;0				Age-range: 3;4 - 4;3			
	Definite NP		Indefinite NP		Definite NP		Indefinite NP	
Subjects	SP	FP	SP	FP	SP	FP	SP	FP
Sk	3	3	9	2	Re	0	1	11	1
Sou	1	21	7	11	Su	2	0	12	7
Re	2	4	10	4	Ly	3	1	14	3
Ah	1	4	8	8	Am.	2	2	11	2
A2	2	3	13	2	Al.	8	0	9	0
MT	2	1	11	2	Ac	7	0	8	0
La.	7	0	15	0	Si	3	1	10	7
Ab	3	0	17	0	Sam.	5	8	17	4
J	5	0	20	0	La.	0	0	9	3
Nac	0	0	14	0	Sar.	1	1	6	1
Fi	1	3	11	2	Ou.	7	8	14	2
O	7	8	10	2	Nab	1	2	11	2
Nab	4	0	6	0	Al.	2	0	7	0
Nad	2	2	8	2	Mat	1	0	12	0
My1	1	3	10	2	Lam.	1	3	15	12
Nas	2	1	9	4	ME	1	4	7	11
Sof	2	0	7	1	Nal.	2	0	7	0
Fa.	3	2	8	2	Ch.	2	0	6	0
Am	1	0	14	2	Sk.	2	16	7	5
H	2	1	10	2	Me,	2	3	9	5
My2	1	1	8	4	Al.	2	6	10	6
SA	2	2	10	4	Sam.	8	0	14	4
Sch	2	0	8	1	F	5	5	10	4
Al	1	4	9	3	Bi.	0	5	0	0
Soffa	1	3	9	5	Ma2	0	3	0	1
Sar.	0	9	4	3	Nar.	2	5	3	2
ML	10	15	9	6	J	2	0	2	0
Y	8	12	8	5	Ly2	1	2	5	5
Ami.	4	14	8	5	Bo	2	0	5	7
Ry	5	6	10	6	Lo.	1	1	13	0
Ss=30	T: 84 $\bar{X}$=2.8	T: 122 $\bar{X}$=4.06	T: 290 $\bar{X}$=9.6	T: 80 $\bar{X}$=2.6	Ss=30	T: 75 $\bar{X}$=2.5	T: 77 $\bar{X}$=2.5	T: 264 $\bar{X}$=8.8	T: 94 $\bar{X}$=3.13

around 10 minutes. However there were dyads who spent up to 15 minutes whereas some dyads spent only between 5 and 10 minutes, these later getting tired, bored, or perhaps becoming suddenly shy and non-responsive.

On the other hand, those who had sometimes high scores in one condition have low scores in the other condition and vice versa e.g. some 4-year-olds have high scores in the SP (structured-play) condition in one category and low scores in the same category but in the FP (Free-play) condition; some have high scores in the FP condition in a category, but low scores in the same category in the SP condition. Overall the majority of the scores in both categories (in the case of the Indefinite and Definite Noun Phases) are higher in the SP condition than in the FP condition. There are probably many reasons for this. One reason pertains to the nature of the situation itself. In the structured play situation, children are again and again encouraged to tell more about the picture they have in hand. By contrast, in the free-play situation, there is less or no guidance, less or no elicitation. Therefore, one consequence of this is that the amount of words produced in the structured play condition is substantially greater than the amount of words produced while being in the free play condition.

b) Quantitatively, the children produced more referring experessions in the SP condition than in the FP condition in the Indefinite Noun Phrase Category (c.f. table 6-1), in what is designated in the literature on the acquisition of articles, the nominative function (Warden, 1976; Maratsos, 1976; Emslie & Stevenson, 1981). The use of the

definite N Phrase was, quantitatively, much less in both age-groups and the difference between the two conditions did not show a difference across age groups (c.f. tables 6-1, 6-1a, 6-2) (note in table 6-1a, main effect A: age, B: linguistic forms).

These findings support, partly, the above named researchers, whose hypothesis is that children around age four master first the nominative function of the indefinite article and only later master the 'a' in the use of identifying expression, and 'the' in the definite reference. From a cognitive point of view, the semantic distinction in the first use (nominative function) involves only a grasp of the class-membership (an individual class member), whereas that involved in identifying a definite reference requires from the child a specification of the uniqueness of the referent, i.e. the speaker/participant is referring to a particular example(s) of a class of things. Research in this area tends to show that the first use (naming) is cognitively simpler than the second (identification of a definite reference).

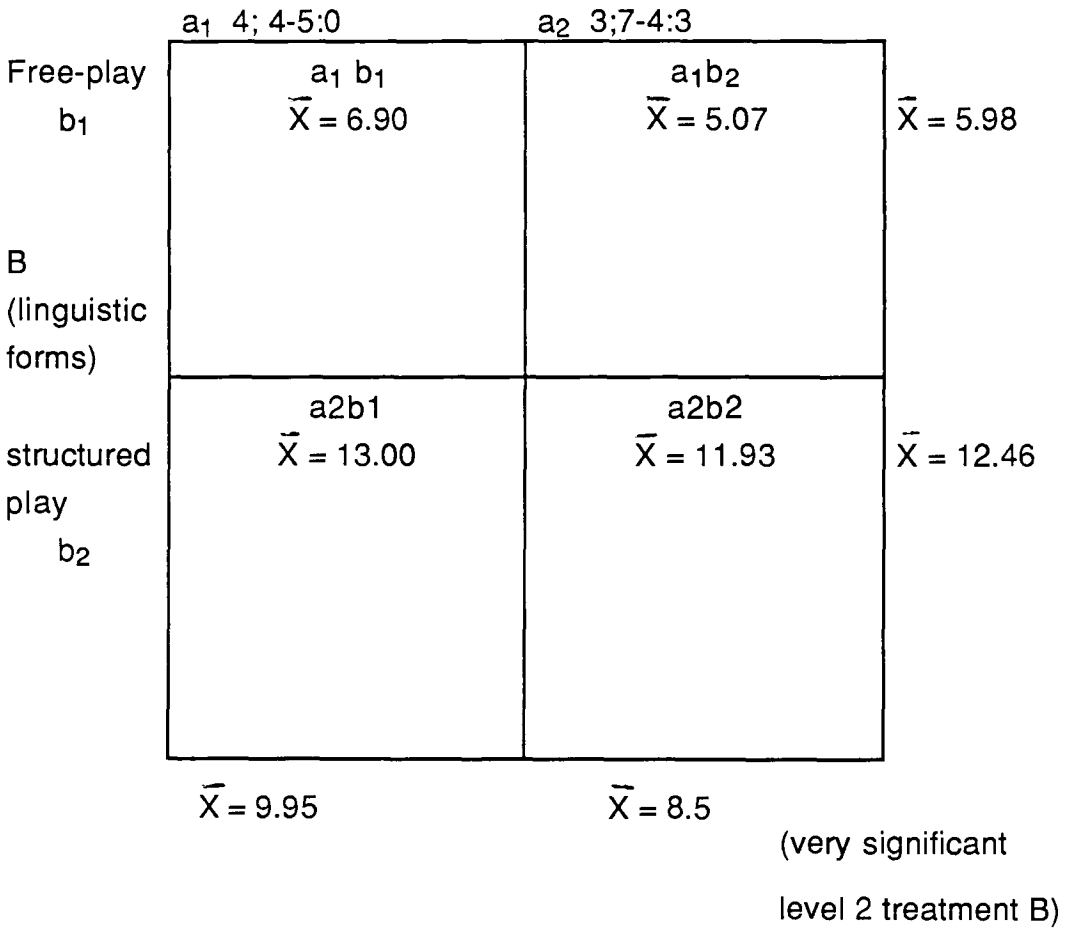
6.2. Results and interpretation

A linear regression and correlation analysis was carried out on the data scores between experimenter and dyads for each speech category. This analysis showed generally fairly high and significant correlations indicating a systematic linear relation between the scores. Values for r

Table 6-1a

Two-way Anova mixed design (1 between-subjects and 1 within-subjects variable): cell means

A (age)



(very significant

level 2 treatment B)

Table 6-2

Pronouns

Age-range: 4;4 - 5;0

	Personal P.				demonstratives			
	1st & 2nd p.		3rd p.		Demons. p. (this-that)		Demons. Adv. (here-there)	
Subjects	SP	FP	SP	FP	SP	FP	SP	FP
Az.	13	1	0	1	3	0	0	0
MT	16	2	0	1	0	0	0	0
Ru	18	9	1	8	2	0	0	2
Ah	17	7	2	11	1	0	0	0
SA	18	0	1	0	4	0	0	0
Sch.	19	6	1	2	2	2	2	0
Ad.	9	5	0	5	1	0	0	0
Sof	5	3	0	5	2	0	0	0
Fi.	10	3	1	2	5	0	0	0
O.	11	8	0	12	2	1	1	4
Nab.	14	0	0	0	0	0	0	0
Nas.	13	0	0	4	1	1	1	0
Sof.	17	0	0	0	7	0	2	0
Sk.	16	2	1	6	1	1	1	0
Am.	16	0	3	7	4	4	2	0
Ha.	10	0	0	0	0	0	3	0
My[1]	10	0	0	1	2	4	3	1
Lo.	4	0	0	0	20	0	1	0
Ab.	5	0	0	0	35	0	1	0
J	27	1	1	4	8	0	5	0
Nao	23	1	2	1	9	3	3	0
Nad.	12	2	0	15	0	0	0	0
My[2]	16	6	2	10	1	0	0	0
Sag	0	6	2	15	3	4	0	2
Sqo	1	15	1	13	4	3	0	1
ML	27	6	2	18	4	5	6	1
Y	28	6	4	15	4	0	4	2
Ami.	18	7	0	5	9	1	3	0
R.	17	5	1	3	6	2	1	0
Fa.	2	29	9	9	0	5	0	2
Ss=30	T=412 X=13.73	T=130 X=4.33	T=46 X=1.53	T=173 X=5.76	T=140 X=4.66	T=36 X=1.2	T=39 X=1.3	T=15 X=0.5

Age-range: 3;4 - 4;3

	Personal Pronouns				Demonstratives			
	1st & 2nd p.		3rd p.		Demons. p. (this-that)		Demons. Adv. (here-there)	
Subjects	SP	FP	SP	FP	SP	FP	SP	FP
Ly[1]	5	1	0	2	0	2	0	6
Bo.	5	0	0	4	1	8	1	0
Ad.	9	0	0	0	2	0	0	0
My[1]	7	0	1	0	0	0	1	0
La.	31	0	11	0	16	0	0	0
ME	18	0	5	0	8	0	0	0
Sam.	9	1	5	2	4	0	5	0
Fe.	10	7	3	10	8	2	0	0
Bl.	0	1	0	5	0	5	0	0
Mu[2]	0	3	0	1	0	3	0	0
Ru.	12	0	1	0	1	0	0	0
Sa.	21	0	0	0	0	0	1	2
Ly[2]	12	4	1	2	1	0	0	0
Am.	10	3	2	2	2	0	0	0
San.	12	7	7	7	9	1	2	0
Lam.	3	0	2	0	7	7	0	0
Sar.	1	3	0	1	4	0	0	0
Ou.	1	1	6	5	9	2	6	0
Na	0	6	1	1	11	0	5	0
San.	11	4	2	3	3	2	1	3
Nad	12	0	2	0	1	0	1	0
Ch.	8	0	0	0	2	0	0	0
Al.	2	3	6	7	7	2	0	0
Ac	2	2	6	2	9	0	2	0
Nab	0	4	5	14	5	12	1	2
S	0	15	7	12	6	0	0	1
M	18	3	0	3	2	17	3	0
Ach.	17	10	1	2	0	0	5	0
Nar.	4	4	5	5	10	1	3	1
J	1	8	0	6	17	1	4	2
Ss=30	T=241 X=8.03	T=90 X=3	T=79 X=263	T=96 X=3.2	T=134 X=4.46	T=65 X=2.16	T=41 X=1.36	T=17 X=0.56

and the strength of linear relationship, r^2, are given in table 6-3. The index of multiple coefficient of correlation is: R=0.4906, for the pronouns, and R=0.493 for the common nouns, $p \leq .05$.

Given the results of the correlational analysis, a one-way analysis of covariance was subsequently carried out, with the experimenter's score used as a covariate and subsequently to see whether there were differences in the scores of the subjects due to the 'sex' of the members of the dyads (i.e. the dyads being originally distributed equally, in the design, into Group 1: boys/boys, Group 2: girls/girls, and Group 3: girls/boys). The results, in table 6-4, showed that overall there are no significant F-values at the 5% probability level (with 2 and 24df the 5% significant value is F=3.40). In general experimenter effects go hand in hand with dyad responses, and the analysis shows no between-sex differences.

Finally a series of factorial analyses of variance (three-way anova, with repeated measures on two factors) were performed on the individual scores for each type of production (see table 6-5. Factor A is the age-groups, Factor B the linguistic forms and Factor C the experimental conditions (FP or SP)).

Table 6-3
Coefficient of Correlation & Coefficient of Determination for Experimenter and Dyad production

Def. NP		Ind. NP		1st & 2nd p.		3rd p.		this. that		here, there	
SP	FP	SP	FP	SP	FP	SP	FP	SP	FP	SP	FP
r= .631	r= .793	r= .57	r= 3.83	r= .694	r= .558	r= .496	r= .758	r= .395	r= .814	r= .056	r= .593
r^2= .398 **	r^2= .628 **	r^2 =.325 *	r^2= .147	r^2= .482 **	r^2= .311 *	r^2= .246 *	r^2= .574 **	r^2= .156	r^2= .662 **	r^2= 3E-03	r^2= .352 *

* = significant, $p \leq .05$ SP = structured condition

** = significant, $p \leq 01$ FP = free condition

Table 6-4
Ancova (due to space, only the F-values & adjusted means are given)

Def. NP		Ind. NP		1st & 2nd p.		3rd p.		this. that		here, there	
SP	FP	SP	FP	SP	FP	SP	FP	SP	FP	SP	FP
F= .86	F= .59	F= .21	F= 2.32	F= .05	F= 2.15	F= 2.4	F= .51	F= .32	F= .85	F= .82	F= .88
adj. Means for treatments	"	"	"	"	"	"	"	"	"	"	"
gr1= 6.76	gr1= 6.46	gr1= 19.47	gr1= 5.77	gr1= 5.97	gr1= 27.15	gr1= 3.14	gr1= 9.92	gr1= 11.65	gr1= 3.47	gr1= 2.83	gr1= .76
gr2= 6.6	gr2= 5.26	gr2= 18.08	gr2= 3.94	gr2= 6.72	gr2= 17.32	gr2= 5.35	gr2= 9.47	gr2= 9.37	gr2= 3.28	gr2= 2.65	gr2= 1.14
gr3= 4.92	gr3= 7.96	gr3= 19.41	gr3= 8.62	gr3= 6.06	gr3= 19.96	gr3= 2.15	gr3= 7.32	gr3= 7.92	gr3= 2.11	gr3= 5.29	gr3= 1.58
t Tests*	"	"	"	"	"	"	"	"	"	"	"
gr1=t= .79	gr1= .49	gr1= .59	gr1= .85	gr1= .29	gr1= 1.99	gr1= -1.55	gr1= .16	gr1= .47.	gr1= .17	gr1= .08	gr1= -.59
gr2=t= .129	gr2= -.64	gr2= .03	gr2= -1.36	gr2= -.04	gr2= 1.55	gr2= .75	gr2= .98	gr2= 2.81	gr2= 1.25	gr2= 1.15	gr2= 1.33
gr3=t= .45	gr3= -1.09	gr3= -.55	gr3= -2.13	gr3= .25	gr3= -.51	gr3= 2.17	gr3= .73	gr3= .29	gr3= .97	gr3= 1.11	gr3= -.64

With 2 & 24*df*, the level of significance is 3.40. No F is significant.
*** t tests are between pairs of groups. None are significant at the 5% level.**

Table 6-4b
Means (of treatments)

Def. NP		Ind. NP		1st & 2nd p.		3rd p.		this. that		here, there	
SP	FP	SP	FP	SP	FP	SP	FP	SP	FP	SP	FP
gr1= 6.55	gr1= 7.82	gr1= 19.27	gr1= 5.73	gr1= 23.5	gr1= 5.75	gr1= 2.92	gr1= 8.33	gr1= 10.17	gr1= 4.92	gr1= 2.83	gr1= .83
gr2= 6.67	gr2= 3.33	gr2= 18.56	gr2= 3.89	gr2= 18.28	gr2= 6.23	gr2= 5.63	gr2= 10.0	gr2= 10.38	gr2= 1.63	gr2= 2.63	gr2= .75
gr3= 4.2	gr3= 8.2	gr3= 19.2	gr3= 8.7	gr3= 23.5	gr3= 6.4	gr3= 2.2	gr3= 8.8	gr3= 8.9	gr3= 1.7	gr3= 5.3	gr3= 1.8

The justification of the use of parametric tests, such as Anova, is that, in the present data, it was possible:

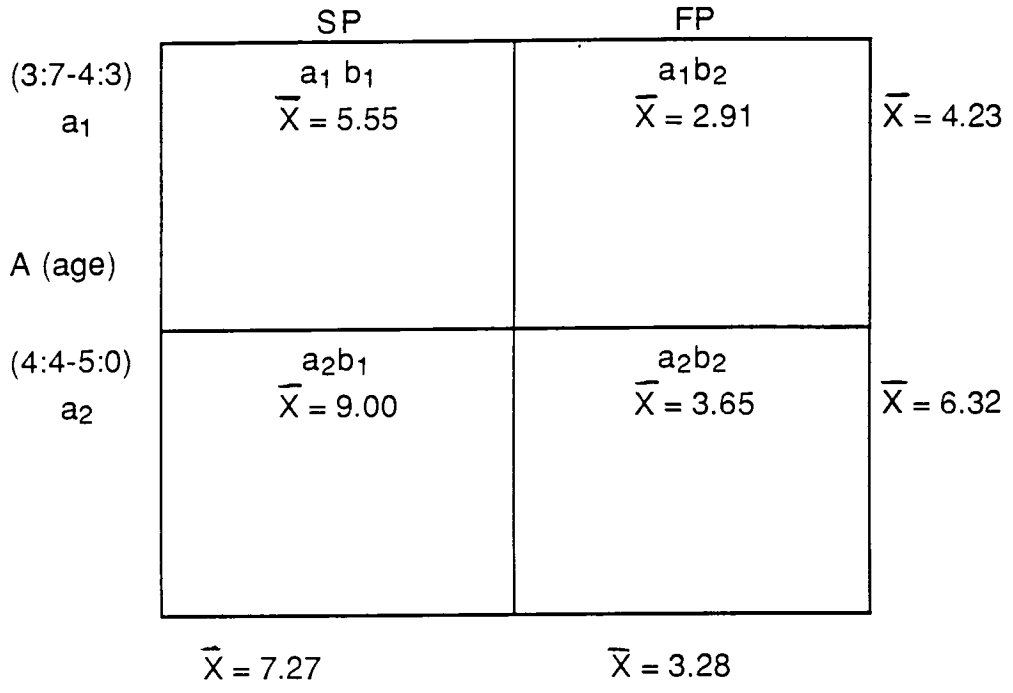
1- to use numeric scores, and there are more than two variables in the statistical design, with levels within each variable that produced interactions, which only a powerful parametric test can handle.

2- people (children) have been assigned to groups randomly to keep the observations independent (subjects are assigned at random to experimental groups, and the experimental treatments are assigned at random to groups). And it is assumed that the population of children from which the sample is drawn, is normally distributed.

Though this last assumption is difficult, thorny and controversial, some researchers consider the violation of this assumption a serious matter that leads to invalidity of parametric statistical tests. But because such tests as F and t-tests are robust (operating well even under assumptions violation, provided that they are not gross and multiple), violation of the assumption is not so serious (c.f. P. Gardner, 1975). It is assumed that variances are homogeneous from group to group within the bound of random variation (the age range in each sample group is about equal). On the other hand homogeneity of variance is not important as long as there are equal number of subjects in each experimental condition. The present study meets the basic criteria (enumerated above) for the use of parametric tests. In such tests the original scores can be used directly or

Table 6-5a: pronouns

B (pronouns: 1st & 2nd person)



C (conditions)

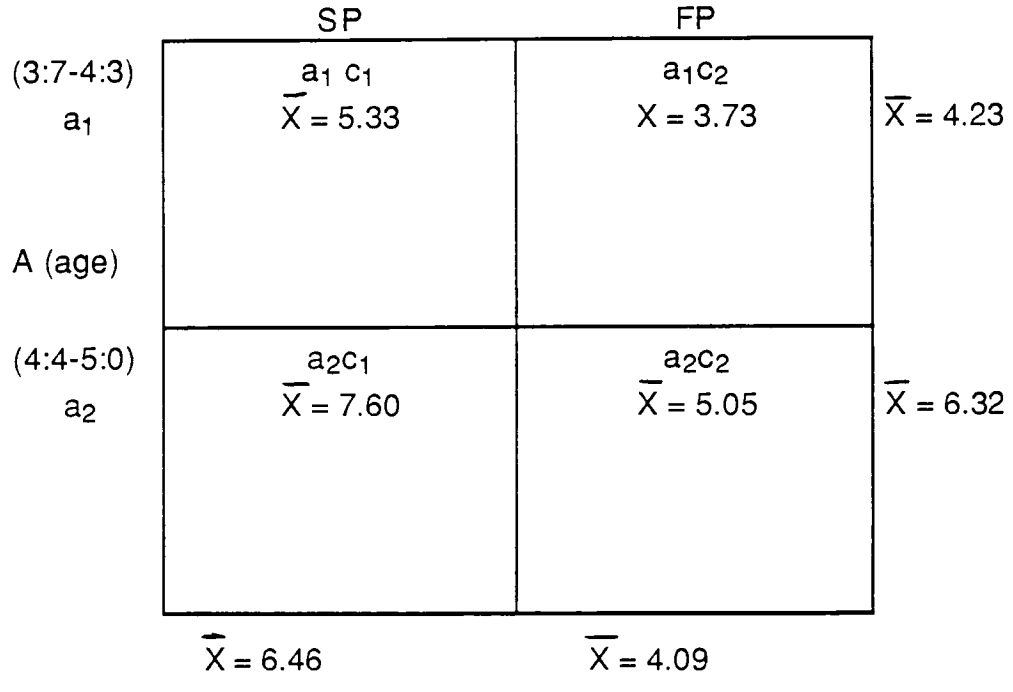


Table 6-5a: pronouns

B (pronouns: 1st & 2nd person)

A (age)	SP	FP	
(3:7-4:3) a_1	$a_1 b_1$ $\bar{X} = 5.55$	$a_1 b_2$ $\bar{X} = 2.91$	$\bar{X} = 4.23$
(4:4-5:0) a_2	$a_2 b_1$ $\bar{X} = 9.00$	$a_2 b_2$ $\bar{X} = 3.65$	$\bar{X} = 6.32$
	$\bar{X} = 7.27$	$\bar{X} = 3.28$	

C (conditions)

A (age)	SP	FP	
(3:7-4:3) a_1	$a_1 c_1$ $\bar{X} = 5.33$	$a_1 c_2$ $\bar{X} = 3.73$	$\bar{X} = 4.23$
(4:4-5:0) a_2	$a_2 c_1$ $\bar{X} = 7.60$	$a_2 c_2$ $\bar{X} = 5.05$	$\bar{X} = 6.32$
	$\bar{X} = 6.46$	$\bar{X} = 4.09$	

Table 6-5b:

Three-way anova with repeated measures on two factors: cell means

B (linguistic forms)

	1		2		
	(conditions)				
	SP^1	FP^2	SP^1	FP^2	
(3:7-4:3)	$a_1b_1c_1$	$a_1b_1c_2$	$a_1b_2c_1$	$a_1b_2c_2$	
A (age)	$\bar{X} = 8.033$	$\bar{X} = 3.067$	$\bar{X} = 2.633$	$\bar{X} = 3.20$	$\bar{X} = 4.23$
	$a_2b_1c_1$	$a_2b_1c_2$	$a_2b_2c_1$	$a_2b_2c_2$	
(4:4-5:0)	$\bar{X} = 13.667$	$\bar{X} = 4.33$	$\bar{X} = 1.53$	$\bar{X} = 5.76$	$\bar{X} = 6.32$
	$\bar{X} = 10.85$	$\bar{X} = 3.7$	$\bar{X} = 2.09$	$\bar{X} = 4.48$	

transformed. The second experiment will depend on the results of the 1st experiment, and its design will decide for the use of the appropriate tests.

In the present experimental study, measurements are made for the purposes of making comparisons across children of aspects of their language in order to provide evidence for development.

The results of the factorial Anova are very striking and are as expected, in the sense that the values are in the direction of the predicted means showing important effects of certan factors (categories) under specific levels of treatment or condition, as will be discussed. The results of the two-way anova mixed design (1 between subjects and 1 within subjects variable) (factor A = age; factor B = linguistic forms) showed a highly significant main effect B (linguistic forms) which represent the definite and indefinite Noun Phrase categories ($F = 58.79$; with 1 and 58 df, the 1% significant value is $F = 7.08$). Because of this we can conclude that the means for B_1 ($\bar{X} = 5.98$) and B_2 ($\bar{X} = 12.46$) differ very significantly, i.e. the production of certain linguistic forms (indef. NP) is substantially greater under the SP condition than under the FP condition (c.f. table 6-1a). The main effect A (age) is non-significant across conditions and categories, which indicates that there is no significant difference between the two age-groups in the definite and indefinite N Phrase and under the two conditions.

The results of the two-way anova also showed that there is a nonsignificant AxB interaction ($F = 0.21$, $P = \leq .05$). This indicates that the A effect (the difference between A1 and A2) is independent of B, that is,

we have approximately the same difference between A_1 (age $_1$) and A_2 (age $_2$) regardless of the conditions (structured/free play) and linguistic forms (definite/indefinite NP).

The results of the factorial analysis of variance performed on the individual scores for the pronouns showed a significant main effect A (age) ($F = 7.99$; with 1 and 58 df, the 1% significant value is $F = 7.08$) which represents the two age-groups. They also showed a highly significant main effect B (linguistic forms) ($F = 55.39$), and a significant main effect C (conditions) ($F = 9.71$).

But, because of the significant A x B interaction (age x linguistic forms) ($F = 6.41$, the 5% significant value is $F = 4.00$) and also a significant A x B x C interaction ($F = 9.99$) (age x linguistic forms x conditions; c.f. figures 6-1 and 6-2), the difference between the two age-groups is not independent of the levels of B (linguistic forms), and the difference between the linguistic forms (1st and 2nd person and 3rd person) is not independent of the levels of C (conditions: SP and FP). We can conclude that older children (4:4-5:0) produced more 1st and 2nd personal pronouns than younger children (3:7-4:3) under the SP (or structured play) conditions. But both age-groups produced more 1st and 2nd p.pronouns under the SP condition than under the FP condition (c.f. tables 6-5a and 6-5b). On the other hand, it appears that older children produced more 3rd personal pronouns in the FP condition ($\bar{X} = 5.76$) than in the SP condition ($\bar{X} = 1.53$). This can be explained by the fact that 3rd p. pronouns are used anaphorically in contrast to 1st and 2nd p.

pronouns which function deictically (i.e. referring to aspects of the non-linguistic context).

In the free-play situation children are mostly telling narratives (about events, toys or persons) in which there is always an opportunity to use a third person being introduced or participating in their narratives. By contrast, in the SP condition these children usually name/describe the contents of the picture at hand by pointing, and have less opportunity to use linguistic forms which refer back (3rd p. pronoun) to what has been already introduced in the linguistic context. That explains why the mean for the 3rd person pronoun is substantially higher in the FP condition than in the SP condition.

The results of the factorial analysis of variance concerning the indexical function showed a significant main effect B (linguistic forms) ($F = 20.91$; with 1 and 58 df, the 1% significant value is 7.08), and a significant main effect C (conditions: SP and FP) ($F = 18.64$), but no significant main effect A (age) ()$F = 0.02$) (c.f. table 6-6b). It appears that children within the two-age groups produce more demonstrative pronouns (this and that) in the SP condition than in the FP condition, which indicates that children, when pointing to the contents of the picture at hand, use mostly the deictic pronouns: this and that. But when engaged into telling a story or a narrative, they use other linguistic forms.

Table 6-7a: Common nouns

Three-way anova with repeated measures on two factors: cell means

	A (age) 1		A (age) 2		
	C (conditions) SP1	FP2	SP1	FP2	
B (linguistic forms) def. NP	$a_2b_1c_1$ $\bar{X} = 2.500$	$a_1b_1c_2$ $\bar{X} = 2.567$	$a_2b_1c_1$ $\bar{X} = 2.833$	$a_2b_1c_2$ $\bar{X} = 4.067$	$\bar{\bar{X}} = 2.99$
B (linguistic forms) indef. NP	$a_1b_2c_1$ $\bar{X} = 8.800$	$a_1b_2c_2$ $\bar{X} = 3.133$	$a_2b_2c_1$ $\bar{X} = 10.033$	$a_2b_2c_2$ $\bar{X} = 3.000$	$\bar{\bar{X}} = 6.24$
	$\bar{X} = 5.65$	$\bar{X} = 2.85$	$\bar{X} = 6.43$	$\bar{X} = 3.53$	

C.f. p. 291

The factorial analysis of variance concerning the common nouns (definite and indefinite NP) showed a highly significant B x C interaction (linguistic forms x conditions, SP and FP) ($F = 11.75$) (c.f. table 6-7a). This indicates that the difference between the linguistic forms (definite and indefinite NP) is not independent of the levels of C (conditions: SP and FP). Since there is no significant main effect A (age) and no significant A x C and A x B interactions, we can conclude that both age-groups produced more indefinite NP under the structured play (SP) condition than under the free-play (FP) condition, and more indefinite NP than definite NP under the structured play condition.

Table 6-6a: pronouns

Three-way anova with repeated measures on two factors: cell means

B (linguistic forms: 1st & 2nd person & 3rd person)

	1		2		
	1st & 2nd person		3rd person		
	C (conditions)				
	1 SP	2 FP	1 SP	2 FP	
(3:7-4:3)	$a_1b_1c_1$	$a_1b_1c_2$	$a_1b_2c_1$	$a_1b_2c_2$	
A (age)	$\bar{X} = 8.033$	$\bar{X} = 3.067$	$\bar{X} = 2.633$	$\bar{X} = 3.20$	$\bar{X} = 4.23$
	$a_2b_1c_1$	$a_2b_1c_2$	$a_2b_2c_1$	$a_2b_2c_2$	
(4:4-5:0)	$\bar{X} = 13.667$	$\bar{X} = 4.33$	$\bar{X} = 1.53$	$\bar{X} = 5.76$	$\bar{X} = 6.32$
	$\bar{X} = 10.85$	$\bar{X} = 3.7$	$\bar{X} = 2.09$	$\bar{X} = 4.48$	

See p.295.

Table 6-6b: Indexical function

Three-way anova with repeated measures on two factors: cell means

	A (age)				
	1		2		
	3:7-4:3		4:4-5:0		
	B (Linguistic forms)				
	(this,that)	(here, there)	(this,that)	(those, these)	
SP	$a_1b_1c_1$ $\bar{X} = 4.833$	$a_1b_2c_1$ $\bar{X} = 1.367$	$a_2b_1c_1$ $\bar{X} = 4.733$	$a_2b_2c_1$ $\bar{X} = 2.233$	$\bar{X} = 3.29$
C (conditions)	$a_1b_1c_2$	$a_1b_2c_2$	$a_2b_1c_2$	$a_2b_2c_2$	
FP	$\bar{X} = 2.133$	$\bar{X} = 0.567$	$\bar{X} = 1.200$	$\bar{X} = 0.500$	$\bar{X} = 1.1$
	$\bar{X} = 3.48$	$\bar{X} = 0.96$	$\bar{X} = 2.96$	$\bar{X} = 1.36$	

See p.299.

6.3. General discussion

The two high means involving the structured condition in the indefinite NP category, in the two age-groups (3:7 - 4:3 = X 8.800; 4:4 - 5 = X 10.033), correspond to what we can call a developmental function (the nominative function) as was suggested in the preliminary considerations. The deictic function of terms at a certain age (let's say at 4 years) is an example of a developmental function. Deictic terms are acquired earlier than sentential expressions belonging to the extended discourse, and continue to function developmentally (e.g. the pronouns functioning deictically, or are deictically referential) for some time, before the effective use of cohesive devices (all aspects of anaphora, for instance the use of pronouns becoming discursively referential).

In the age-group 3:7 - 4:3, the overwhelming presence of such a developmental function could somehow be justified if one refers to the developmental literature on the question (c.f. Warden, 1976; Maratsos, 1976; Emslie & Stevenson, 1981); as they approach 5 years, it is usually expected to be less well accentuated, children of this age using already much more definite N. phrases. The present experiment is not as much designed to show more or less use of either categories (indefinite and definite reference, the presence or absence of the nominative function in the indefinite NP category) as to show that there is a kind of continuity/consistency in the anaphoric/cohesive use of referring expressions in 4 and 5-year-olds. A definite expression used consistently

is continuous with an anaphoric use of a 3rd person (the other referring expression included in the design, together with the 1st and 2nd personal pronouns, and the demonstrative pronouns and adverbs). Both uses imply an understanding of the cohesive or text-forming function. In one of the hypotheses of the present study, it was stated that the cohesive uses of referring expressions, (and their interpretation and recognition without difficulty by children), are relatively late developments (c.f. also works by Karmiloff-Smith, 1979, 1977; Warden, 1976; Hickmann, 1980, 1985). We stated before, i.e. in the previous chapter, that a definite reference, to be successful, must refer to a definite individual, and the the description we offer of that 'definite individual' will be sufficiently specific, in the given context, to identify uniquely for the hearer/participant (in the context of conversation) the referent we have in mind. This specification of the uniqueness of the referent is cognitively more demanding. Continuous with this cohesive use, 3rd person pronouns create referents linguistically, in such a way that the presuppositions about their existence and specificity then become available, and in the subsequent discourse with more use of presupposing coreferential 'definite forms', to maintain reference to these entities and thus provide continuity in the content of speech. We can say, then, that 3rd person pronouns contribute to the 'text-forming' (Halliday & Hasan, 1976) function through cohesive intralinguistic relationships. "He" in, for instance, the sentence:

'I saw a strange man in the street, he was throwing rocks at people'.

refers to a specific non-linguistic entity, but this entity is identifiable only through its indexical relation to previous (coreferential) noun phrase ('a strange man'). By contrast, first and second person pronouns refer to aspects of non-linguistic context. They are typically, 'exophoric' - to use another of Halliday and Hasan's terms (1976) - which seems to be more connected with the context of situation (except when they happen in quoted speech, there they become anaphoric). We will see later, in the discussion of the results of the second experiment, that the exophoric reference has been shown to be one characteristic of young children's speech (Hawkins, 1969).

We have seen, in section 4 of chapter 4, that the indefinite article in Arabic is represented by the 'tanwîn' (or the doubling of the vowel 'u') which is suffixed to the word, in the absence of a separate recognisable form. In Algerian Colloquial Arabic, when a child says: "hada tfal" = this one (is) a child, this is equivalent to the classical Arabic:

h a d̲ a t i f l u ⁿ = this one (is) a child.

And "hada tfal" is different, on grammatical grounds, from "hada at-tfal" = this one (is) the child. The definite article '?al' which is assimilated to the sound it is annexed to (c.f. p.ɔ̃.t) is, in many cases, represented in the same way as in the Arabic language:

h a d̲ a a t - t i f l u = this one (is) the child.

The only difference is that there is no vowel 'u' suffixed to the word, in Algerian Colloquial Arabic.

But an indefinite expression and a definite expression are clearly marked in the language produced by native speakers of Algerian Colloquial Arabic. Here are few examples:

Algerian Colloquial Arabic	Modern Arabic
nouara = a flower	nouaratu^{n} = a flower
an-nouara = the flower	an-nouaratu = the flower
bahr = a sea	bahru^{n} = a sea
al-bahr = the sea	al-bahru^{n} = the sea
ouarda = a rose	ouardu^{n} = a rose
al-ouarda = the rose	al-ouardu = the rose

What is relevant to the discussion of the results of the 1st experiment is that in Algerian Colloquial Arabic, the indefinite NP category, (and in this experiment in the particular SP condition) is behind the presence of a developmental function (nominative function) in both age groups. It is striking that the predominant presence of such a function in the indefinite NP category reappears along with the use of the 1st and 2nd personal pronoun category in both age groups, in the structured-play condition mainly ($\vec{X}$ = 8.033 for the 3:7 - 4:3, and $\overline{X}$ = 13.667 for the 4:4 - 5:0 group of age, c.f. also figures 6-1, 6-2 and 6-3 for the interactions, this being explained by the combination of the task structure and the category

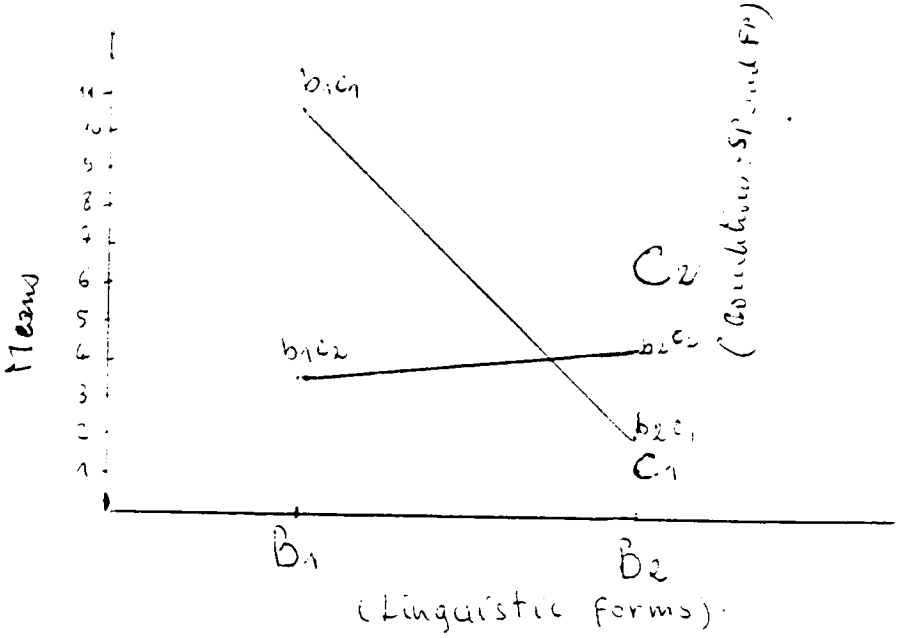
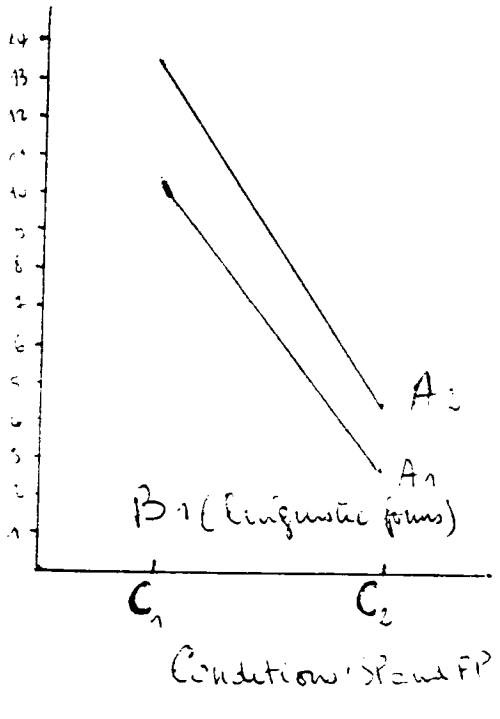


Figure 6-1

Means for levels of C (conditions) at each level of B (linguistic forms). (Cf. table 6-5).



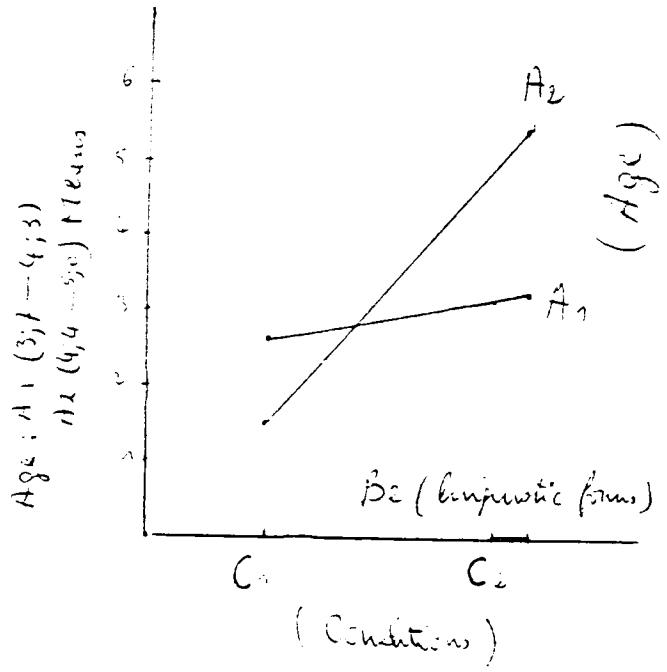


Figure 6-2 (a) and (b)

(a) Means for levels of A at each level of C for B_1
(b) Means for levels of A at each level of C for B_2
(cf. table 6-6a)

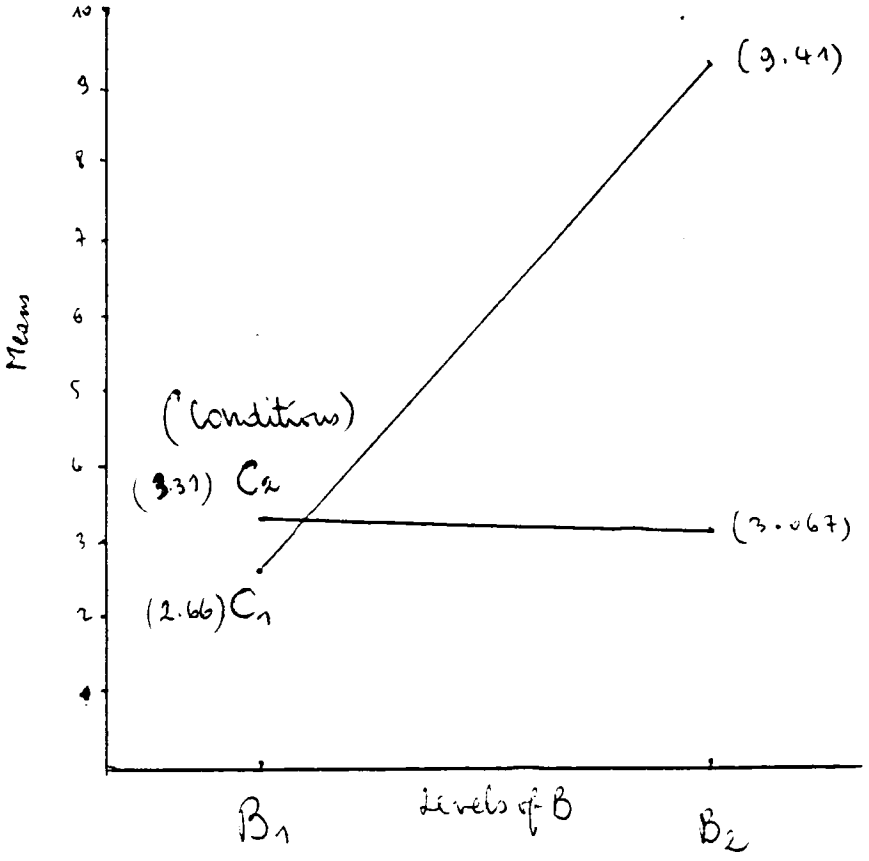


Figure 6-3. (From table 6-7b)

Means for levels of C (conditions) at each level of B (linguistic forms)

with whatever level). It appears that it is easier for the two groups to use personal pronouns which are essentially intralinguistic or cohesive (3rd person pronoun: 'he' 'she' 'it' and 'they'), when talking about or describing the contents of the picture in front of them. 'He' 'she' 'it' may be used deictically when they are not used anaphorically, or in other words, when the use of these pronouns is more context-specific, the referent being physically present. This is also an instance of what Halliday and Hasan (1976) call 'exophoric reference', wnere the pronouns refer to something in the environment of the speaker. In many cases, children in the sample, used these pronouns (he, she, it) as head: "he is angry....." or "it is going this way...." relying more on the listeners awareness of the situation. Adults have usually not much difficulty in recognizing and using an anophoric personal form, they can do so even with no clear reference available. The above results partially answer the question posed earlier of whether the earlier uses of referring expressions are easier than the later ones involving all aspects of anaphora.

Overall these results are due, at first sight, to the nature of the situation, or rather the child's understanding of the situation: although both participants were encouraged at each turn to engage in a dialogue, what they seem to understand is that all what they are asked to do is to name the object or the contents of the picture, looking mostly at the experimenter and often ignoring the requirements of the dialogue with the samd age partner. Naming, in these kinds of situations, mostly involves question-answers, whereas real dialogue requires more social

awareness of the audience (the partner in this case) and an actual knowledge of its expectations. This is exactly the same requirement, from the children, of an appropriate use of the two articles discussed above ('a' and 'the'): the speaker/participant is assumed to use a cognitively more demanding capacity (than the one used for naming) to assess his audience's actual knowledge and probable expectations (this leads us to our second question in the framework of the present hypotheses: is there enough proof of egocentric speech? (c.f. p.100-101).

We interpreted earlier the very high interaction in the common nouns category (definite and indefinite NP) as the combination of one particular condition (the SP condition) with whatever level of a factor (linguistic forms). This combination produces high effects in the indefinite NP category (level 2 of factor B, or linguistic forms). As discussed above, it seems that the presence/absence of the developmental function (nominative function) is behind these effects; a combination of one particular treatment (SP) or task structure, with one particular level (indefinite NP) coincides with its presence and so gives high results. It is easier for the children to only name the contents of the picture when the situation partly demands naming first - the idea of dialogue being not yet well assimilated.

On the other hand, if one looks again to the means (c.f. table 6-1) in the 4:4 - 5:0 age-range in the definite and indefinite NP categories, we can notice that there is a difference between the means, within the free-play situation, of the definite reference and indefinite reference ($\bar{X}$ = 4.06 for the definite NP, and $\bar{X}$ = 2.6 for the indefinite NP). One possibility

could be that children approaching 5 years when talking about something they already know, or in the case of a picture-narrative something assumed to be known by both partners and by the experimenter, use more definite reference when referring to objects, persons and events, or, in the case of a picture/narrative, when referring to the contents of the picture. But when it comes to introducing what is known to them, but not known to the listener, they somehow fail to use the appropriate indefinite article ('a') in an identifying expression. Realizing that, demands a more acute cognitive and social awareness, or the realization of the audience's knowledge and probable expectations. This is explained by the low mean in the indefinite NP category, within the FP condition, when it is not just a case of pure naming (narratives about pet-toys and animals, mostly). In the following example, a child (4:4) started a story in this way:

(examples are given in Arabic and the English equivalent)

(child) B: Linda matagdarš tahdar. Ana manišˇ kima hia. hadi ˇhtu ma tagdarš tahdar.

(child) B: Linda cannot speak. Me I'm not like her. And this one his sister cannot speak.

Experimenter (E): man hi Linda?

Experimenter E: Who is Linda?

B: baba šrali kamiu (-----?) u tomobil u hia dathum

B: My father bought me a truck (----?) and a car and she takes them.

E: man hu li dahem? uḫtuk?

E: Who takes them? Your sister?

B: ki tudḫul, tadi li juʒ tasraqhum

B: (continues his narrative without answering E's question) when she goes in, she takes toys, stole them.

E: uḫtuk kbira ula sġ̇hira? qadaš̌ fi uᶜmurha?

E: (guessing) is your sister big or small? How old is she?

B: ᶜmin

B: Two years.

etc.

In these examples, as in many others, the egocentric use of the definite reference at first mention of a referent, instead of the indefinite article in an identifying expression (designed to introduce a referent), is an indication that children of four - as far as this experiment is concerned - have not mastered the associative anaphoric use of definite reference and identifying expression, this use implying that the speaker and hearer

are sharing some knowledge of the referent, following the previous mention of that referent.

In the demonstrative categories, the only significant means are those corresponding to the use of the demonstrative pronouns (this, that), in the structured play situation. This again indicates that children, in both age-groups, when engaged in an otherwise naming function often use pure deixis (the ones usually designed as either 'proximal' demonstrative - e.g. 'this' - to introduce animate/human referents, or 'low' or 'non-proximal' deixis - e.g. 'that' - to introduce non-human inanimate referents) often followed by the accompanying gesture.

The second experiment of the present study was devised with two important problems in mind: one concerns the quality and contents of the pictures presented to the children, and one concerns the procedure.

In the first experiment of this study, the pictures were hand-drawn, with bright colours, but there was little or no action (one standard picture shown to the children, most elements look static, with only two persons facing each other and standing up). This was the structure-play (SP) condition. In the free-play (FP) condition, each child of the dyad chose whatever he wanted to talk about (pictures, stories, etc.). The overall results showed that there was more talk in the SP condition than in the FP condition. The apparent reason behind this was that there was more guidance from the experimenter (using probes to elicit more speech in the SP than in the FP condition). The nature of the task and its understanding by the children (referent physically present and prompting spontaneous

acts of naming in the children) were, essentially, behind the overwhelming presence of the nominative function.

In the second experiment, the children were shown printed pictures, with bright colours, but with more action than in the pictures shown in the first experiment (the materials were a series of six pictures making a coherent whole, i.e. same (referents) protagonists from the first to the last picture) and the concept of animacy was thus introduced, in the design, with however two basic differences:

1) In the three-dimensional category of pictures, non-human (though personified) animate objects (a tank engine and a bus) are racing against each other.

2) In the two-dimensional category of pictures, there were human animate beings (a day in the life of a girl).

The emphasis, in the procedure, was more on the proxemic factor (the distance between the peer in a dyadic interactive situation), with a continual emphasis on dialogue (encouraging the children to talk to each other, to take a turn at speaking, rather than talking to the experimenter.

These elements were introduced with the hypothesis that the children would be more sensitive to the proxemic factor, or situational opportunity, which could affect the children's performance level, and that the nature of the stimulus materials (pictures making up a unique story, a coherent whole) will perhaps yield more of a sentential type of discourse.

This second experiment attempts to bridge the gap between naturalistic studies (mostly longitudinal) and experimental studies (mostly cross-sectional) by including rationales of the two types of studies:

1) Follow-up study (same children at two different times)

2) Pictures and conditions (in doing this, some factors are taken into consideration:

   — nature of the task (cognitive demands)

   — quality of the picture (colour and print)

   — procedure (its inception)

All this will be dealt with, in some detail, in the second experiment of the present study.

Chapter 7

Referring expressions in Algerian pre-school children

Experiment II

7.1. Method

7.1.1. Introduction

The categories of discourse which are of interest, in this second experiment, are those which, strictly speaking, are used anaphorically. The personal pronouns (I, You) and the demonstrative adverbs (or locatives: here, there), which were under scrutiny in the first experiment, are dropped in the second experiment. These categories of discourse are hardly found because of the nature of the experiment, the purpose of which being the evaluation of the more intralinguistic uses of referring expressions. Unlike the first experiment which was designed to tackle both deictic and the intralinguistic uses of referring expressions by pre-school children, the second was designed to measure the extent to which pre-schoolers engaged in some specific tasks (tasks which might prompt

the use of some aspects of discourse), use referring expressions in their anaphoric sense, and to track down these uses to their significance.

In this second study, the pictures (three- and two-dimensional pictures) were chosen in such a way that the contents, or the protagonists of the story or situation or event, are the same from the first picture to the last (sixth picture, usually); one protagonist (a personified train, for instance) is introduced in some situation, and then it reappears in different situations. In discourse terms, a referent is introduced (indefinite noun or pronoun), then the same referent, together with other referents, reappears in different events or situations. The child is expected to use at first encounter with the protagonist (referent), an indefinite expression, then a definite one, when the same protagonist-referent reappears. In the present study the referring expressions of interest are more extended (1st, 2nd and 3rd p. pronouns, indefinite and definite NP, and demonstratives) than the ones already investigated for European and American samples (c.f. works of Warden, 1976; Maratsos, 1976; Emslie and Stevenson, 1981). On the other hand, the approach, which attempts to bridge the gap between naturalistic and experimental studies by including rationales of the two types of studies is, as was explained in the previous chapter, somewhat different.

In the second study the materials were chosen to create the maximum of contrast between the contents of the pictures in the first part of the study, with one picture in the structured play with emphasis on naming/describing, and this second part (follow-up) with six pictures

having an emphasis on activities, emotions, but also including naming and describing.

7.1.2. Subjects and Materials

A total of seventy two children took part in this second experiment of whom fifty had also participated in the first.

The age range goes from 4 1/2 years to 5 1/2 years, and the mean age is 4;11. As in the first experiment, the children participated during the morning playtime, between 10 and 11 o'clock. In this experiment, the investigator did not need to spend much time in warming-up sessions, since most children knew him already. The testings, as in the first experiment, were conducted in a corner of a quiet room in each of the three 'jardin d'enfants' which constituted the whole pre-school population of the city of Constantine. The testing room was provided with chairs and tables, with pictures on the walls, etc. (c.f. experiment I). The testing rooms in the three 'jardin d'enfants' were used at some other times by the teachers, and were, thus, familiar to the children. The subjects were tested in dyads, each child interacting with the same age partner. Each dyad spent, approximately, 15 minutes in the testing room with the experimenter. All the children have spent more than a year in the particular 'jardin d'enfants' where they were tested.

The six pictures selected from each of the two booklets chosen as stimulus-material (one three-dimensional and one two-dimensional) depict a series of activities in which the same protagonists are shown engaged in different actions from the first picture to the last. In the tri-dimensional pictures category, a personified train and a bus are depicted racing against each other; and in the two-dimensional category, a day in the life of a small girl from the moment her mother goes to the office, and takes her to a person to look after her (a childminder), to the time when she comes to collect her daughter. Thus, the same protagonists appearing in each of the six pictures in each category is a good context in which to test the child's ability to use indefinite and definite NP appropriately (introducing a referent by an indefinite NP, and, subsequently, using a definite NP when the same referent reappears), and subsequently, the coherence and consistency in the use of personal pronouns.

It may be assumed that normal pre-school urban Algerian children, who have been at least one year at a 'jardin d'enfants' (nursery school) would have no difficulty in recognizing drawings of persons, objects and animals in familiar environments, and engaging in some simple activities (playing with toys, reading and writing, eating, walking in a park, etc.). The pictures in the two- and three-dimensional categories were carefully chosen to correspond to what 4- and 5-year-olds would have already experienced in their nursery school activities, although these pictures were published in Great Britain. Therefore, the activities depicted in the pictures were assumed to be already familiar to urban Algerian children.

The basis for this judgement was from observations over the time of the first experiment, together with other visits to the three 'jardin d'enfants'.

The kinds of pictures children were used to in the 'jardin d'enfants' were of the same qualities and quantities as the photographs and drawings which would be seen by a European child of the same age and experience.

Beside the question of coherence and consistency in the use of reference, the emphasis in this experiment was not so much on the type of pictures -- which was the case the 1st experiment -- than on the quality of the pictures and the possible difference first, in the perception of a hand-drawn picture (first experiment) and printed picture (second experiment), and second, on the relative and hypothesized ease with which children might talk more about three dimensional pictures (objects pictured in relief so that children can feel their shapes) than about two-dimensional pictures.

7.1.3. Procedure

In this experiment, the children were seated beside each other and sharing the same pictuers in the two booklets. The emphasis here is on the proxemic factor, as was discussed in the procedure and findings of the first experiment. It is assumed that for more naturalness of the situation, the children must see each other completely, and proxemic

relations would be more important for a richer referential content of their messages. The verbal instructions were as follows:

a) For the three-dimensional pictures

Experimenter: "look at these nice pictures in the book. Can you (and names the child) tell to (and names the other child) what is in the picture, and then (the other child) will tell you about it? Okay?

The same instruction was repeated to the other member of the dyad.

b) For the two-dimensional pictures:

Experimenter: "look at these pictures, aren't they nice? Can you (and names the child) tell us about this picture?"

The same question was then repeated to the other child. The experimenter used also probe questions to elicit the maximum of speech from the pair of children.

e.g. Experimenter: "Uh uh; and do you like it? Can you say it again? Can you tell x about this?/etc"

7.2. Results and Interpretation

Responses from the second experiment were categorised, firstly, with eight pairs of variables, experimenter and dyads, covering the use of common nouns and pronouns with the three-dimensional and two-dimensional pictures. Sub-groupings for common nouns were the use of definite and indefinite articles in noun phrases and for pronouns, noun substitute personal pronouns and demonstrative pronouns. These results are shown in table 7-1.

A second analysis is of the scores of the dyads across the four response types under the two conditions of two-dimensional and three-dimensional pictures.

A third analysis is to explore any changes in a sample of the fifty children measured on both occasions on the proportion of error scores which they made.

7.2.1.

The amount of talk used by the experimenter seems to be dependent on the children's talk according to the situation or condition and the category of discourse. If children find some relative difficulty in describing a picture (for example, the three-dimensional picture, table 7-1) their total score is comparatively lower than the experimenter's

(indefinite NP category: variable 1 and 2) or approximately equal (in the third person singular and plural: variable 9 and 10). The reason why the experimenter has a higher or equal score is because he has to elicit, at each turn at speaking, children's speech by using not only probe questions but also whole descriptions of the contents of the series of pictures if children fail to identify and describe the contents. Children usually use the alternative strategy, which is to name the contents and only attempt short descriptions or characterisations which clearly do not belong to the sentential discourse type (i.e: agent introduced early in discourse).

Here are some examples of non-sentential discourse in children. (Eliciting stimulus: picture of lorry and train racing each other).

(child)	C_1	"lorry"
(experimenter)	E	"can you speak loudly?"
	C	"there is a lorry"
	E	"uh uh, and what else?"
	C	"it smiles (here child points to the train)"
	E	"yes, it smiles, you see? And it goes 'tuf tuf tuf', and smoke comes out from here. This is a train. So we have a train and a bus. What about the train?"

another child (eliciting stimuli: a train and a bus are racing each other)

C_2 "this one, her face"

E "yes, what about 'her' face?"

C_2 "she is looking"

E "yes, she is looking, but how is she? Happy or angry?"

C_2 "it laughs"

E "so, both of them are happy. Both are laughing, etc."

In one situation (two-dimensional pictures) and with whatever category of discourse (definite NP and indefinite NP, 3rd p. and demonstratives), the children score much higher than the experimenter, up to 3 times (c.f. table 7-1, variable 7 and 8, 11 and 12, and, 15 and 16). The reason should be clear as the purpose of the experiment is to let children talk first and foremost, engage in a dialogue between each other about the picture, and to reduce to the minimum the experimenter's interference or participation in the dialogue between the members of the dyad, as much as it is allowed by the type of task and situation.

Variables 2 and 6, in table 7-1, correspond to the experimenter's use of definite NP and indefinite NP in tri-D pictures, and variable 1 corresponds to the children's use of definite NP in tri-D pictures. (tables 7-1 and 7-2).

Table 7-1
Experiment II

	Common Nouns								Pronouns								
	definite NP				indefinite NP				Non-substitute personal pronouns (3rd per.)				Indexical function demonstrative pronouns (this, that)				
	3-D pics		2-D pics		3-D pics		2-D pics		3-D pics		2-D pics		3-D pics		2-D pics		Dyad
Variable	D_1	E_2	D_3	E_4	D_5	E_6	D_7	E_8	D_9	E_{10}	D_{11}	E_{12}	D_{13}	E_{14}	D_{15}	E_{16}	TOTAL
Amal Marina	21	47	17	8	20	13	22	7	14	29	10	4	24	28	44	9	172
Hakim Haouarim	20	29	31	6	17	8	14	8	36	19	61	10	31	16	45	15	265
Amira Nabila	34	57	22	7	33	9	47	11	11	17	25	12	13	13	25	5	210
Nessima Faycel	18	20	22	17	24	9	32	8	11	17	28	16	18	10	47	12	200
Sihem Lamine	30	29	24	16	16	6	21	3	24	14	24	13	6	8	24	5	169
Rabah Houda	40	28	27	5	19	7	27	7	13	16	21	9	10	9	20	7	177
Saber Zino	9	7	40	6	14	3	4	1	15	8	33	8	9	11	32	1	157
Zaki Affaf	21	24	31	7	20	13	21	3	9	21	33	7	47	25	40	3	222
Amine Karoum	35	29	52	13	6	7	23	8	28	31	68	15	41	15	40	5	293
Lylia Ferial	16	37	35	13	14	7	25	15	7	19	17	9	1	19	21	11	136
Messaouda Sofia	23	54	19	12	19	12	20	7	18	28	18	15	8	24	25	11	150
Ahlam Sid-Ali	38	37	33	14	10	8	21	3	23	20	28	11	29	7	34	11	216
Merouane Nabil	29	35	47	11	24	5	29	6	35	30	43	9	14	13	38	8	259
Nageoua Yasmina	13	33	13	14	16	10	12	3	9	22	21	16	18	23	22	3	124

Table 7-1 (continued)

	Common Nouns								Pronouns								
	definite NP				indefinite NP				Non-substitute personal pronouns (3rd per.)				Indexical function demonstrative pronouns (this, that)				
	3-D pics		2-D pics		3-D pics		2-D pics		3-D pics		2-D pics		3-D pics		2-D pics		Dyad
Variable	D_1	E_2	D_3	E_4	D_5	E_6	D_7	E_8	D_9	E_{10}	D_{11}	E_{12}	D_{13}	E_{14}	D_{15}	E_{16}	TOTAL
Rafia Widad	22	35	6	6	17	13	7	4	17	8	5	6	24	15	4	2	102
Ilham Sandra	28	43	23	12	17	15	20	4	11	13	30	13	16	17	37	3	172
Fouad Bilal	9	21	3	6	19	7	10	4	10	15	16	13	10	9	14	6	91
Widad Dalia	27	45	35	17	32	7	32	11	7	10	26	18	15	13	39	5	213
Nadir Nabil	17	21	36	11	11	6	23	8	38	20	43	16	20	12	26	3	214
Fadela Ousama	37	55	19	8	45	15	46	10	26	24	20	11	26	22	21	6	240
Zoheir Sif-Eddine	50	43	26	19	17	19	27	12	24	17	13	12	35	18	44	6	236
Adlane Faouzi	37	43	32	19	19	17	43	14	7	20	21	12	9	7	30	2	198
Ashraf Faïza	31	25	49	12	25	11	30	4	22	11	30	7	13	15	22	5	222
Hani Yanis	71	47	41	21	21	10	35	10	29	25	35	13	41	9	30	2	302
Fairouz Farida	17	38	12	22	17	6	13	8	6	19	15	13	12	17	8	11	100
TOTAL	703	882	695	302	492	243	594	179	510	471	684	288	500	375	732	157	

2-D pics = two dimensional pictures

3-D pics = three dimensional pictures

D = Dyad scores

E = Experimenter scores

Table 7-2

Intercorrelation matrix (for Holzinger's B-Coefficient method of factor analyis)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.	.	.4811	.3464	.3962	.1765	.3671	.5661	.3618	.3265	.2281	.0811	.0427	.4307	-.2619	.1705	-.1885
2.	.4811	1.000	.2095	.2409	.4866	.5159	.5668	.5313	.0807	.3593	-.3243	.1029	.0461	.326.	-.0349	.1077
3.	.3464	-.2095	1.000	.1518	-.1598	-.2599	.2783	.1321	.4555	.1899	.6935	-.0272	.2083	-.2436	.4581	-.1068
4.	.3962	.2409	.1518	1.000	-.1094	.1386	.2475	.3873	-.0863	.1218	-.0757	.5211	.0234	-.2013	.1049	.0353
5.	.1765	.4866	-.1598	-.1094	1.000	.251	.6433	.2743	-.1133	-.0538	-.2594	. 0	-.0872	.1596	-.0482	-.0218
6.	.3671	.5159	-.2599	.1386	.251	1.000	.3351	.272	.1397	.0776	.3802	.1477	.3202	.3919	.1425	.1867
7.	.5861	.5668	.2783	.2475	.6433	.3351	1.000	.6514	.05	.2531	.0157	.1586	.0387	.1234	.2058	.0453
8.	.3618	.5313	.1321	.3873	.2743	.272	.6514	1.000	.0638	.2349	-.066	.2223	-.0507	. 0	.1116	.199
9.	.3265	.0807	.4555	-.0863	-.1133	.1397	.05	.0638	1.000	.3437	.5991	. 0	.3839	-.1401	.2351	.0881
10.	.2281	.3593	.1899	.1218	-.0538	.0776	.2531	.2349	.3437	1.000	.3028	.0673	.3461	.3773	.2942	.2901
11.	.0811	-.3243	.6935	-.0757	-.2594	.3802	.0157	-.066	.5991	.3028	1.000	.2106	.3975	-.1897	.4904	.0677
12.	.0427	.1029	-.0272	.5211	. 0	.1477	.1586	.2223	. 0	.0673	.2106	1.000	-.0809	-.2523	.0787	. 0
13.	.4307	.0461	.2083	.0234	-.0872	.3202	.0387	-.0507	.3839	.3461	.3975	-.0809	1.000	.2295	.4366	-.1117
14.	-.2619	.3260	-.2436	-.2013	.1596	.3919	.1234	. 0	-.1407	.3773	-.1897	-.2523	.2295	1.000	.0983	.1468
15.	.1705	-.0349	.4581	.1049	-.0482	.1425	.2058	.1116	.2351	.2942	.4904	.0787	.4366	.0983	1.000	.1991
16.	-.1885	.1077	-.1068	.0353	-.0218	.1867	.0453	.199	.0881	.2901	.0677	. 0	-.1117	.1468	.1991	1.000
	3.1137	3.2766	2.3251	1.9024	1.1384	3.4063	4.1991	3.2591	2.8256	3.4324	2.3235	1.1915	2.5305	0.5638	2.9427	0.937

The question is: do they establish a common factor? And if there is such a factor, what kind of relationship does it establish?

If we look more closely at the experimenter's scores across categories and conditions included within the above variables, we will find that the experimenter's score is higher than the dyads in definite NP category in tri-D pictures (882 vs. 703 for the dyads), lower in the indefinite NP category in tri-D pictures (243 vs. 492 for the children), and much lower in the indefinite NP category in two-D pictures (179 vs. 594 for the children). This again corresponds, roughly speaking, to what we pointed out very generally, earlier on, to the degree of talkativeness of the experimenter in conjunction with the nature of the picture (tri-D or two-D pictures): more talk when the pictures are tri-dimensional, much less talk when they are two-dimensional. This, in other words, corresponds also to the degree of facility that the children find in talking (without much or less guidance) about pictures depicting typical activities of animate human beings, reducing considerably the experimenter's descriptions and interferences with children's utterances, leaving him with only few probes designed to elicit more speech from the successive dyads. (Here the interaction of the experimenter is an interaction rather than an interrogation, c.f. part of the procedure). Then, one possible interpretation of the grouping of the above variables is that, besides the fact that they all belong to the category of definite expressions, they establish the factor of consistency in the talk of the experimenter and the children in two different situations.

A second group (c.f. Appendix p304, g_2), variables 15, 11, 13 and 9 correspond to the children's use of pronouns (3rd p.) in whatever treatment and the use of demonstratives in whatever treatment. All of these discourse categories have one thing in common: they are pro-nominals, or, in other words, they enter into the category of definite pronouns, which includes: he, she, it, they, that, this, these, his, hers and theirs. Now, after inspection of the whole speech sample, it appears that children's use of a 3rd person singular (it, him, her) is often after several uses of a demonstrative ('this one' used as a definite expression), and less often after a definite NP (eg. the train, or the bus). Here are some examples of such a typical use:

-Tri-D pictures C_1 " this one is not a house, it is a train"

or

(eliciting stimulus: C_2 "this one, it laughs" etc.

a personified train).

This use of pronouns also corresponds to a presuppositional usage, the children started to use pronouns before the use of referents. The use of a definite pronoun presupposes the existence of a particular, identifiable referent that meets all the number and gender requirements of the pronouns being used. 'She', for instance, presupposes the existence of a particular, identifiable female, etc. We have already seen, in the theoretical part of the thesis, that the referent for a pronoun may appear either as a previously introduced noun in the discourse (anaphoric

function) or as a physically present member of an appropriate class (exophoric function), though there are some cases in which the pronoun use is potentially ambiguous (eg. "X took Y home, so I could see her/him).

If a definite NP is used, it is often used inconsistently, i.e.: not in the anaphoric use, but instead used at first mention of an element in the picture. A typical example of the inconsistencies in the use of the definite NP by most dyads:

(Tri-D pictures: stimulus: a lorry crossing a little bridge. Behind it a little mountain)

C_1 "the lorry is happy" (1st mention of the referent).

and a little further another child:

C_2 "and the mountain" (1st mention of the referent).

C_2 "that one the mountain (1st mention of the referent).

C_1 "and this one, a lorry" (though being already introduced by a def. NP).

And still a little further, the same child:

C_1 "yeah, the lorry!"

On the other hand, if the scores of the children (c.f. table 7-1) are high in the use of definite NP in tri-D pictures compared to the use of indefinite

NP in the same category of pictures, it is mainly due to a deictic use (object seen, use of the demonstrative expression which is also a definite expression when preceding the referent, which in other words, is directly related to an exophoric reference).

It was possible for most of the dyads to refer back, anaphorically, to an object or person named or introduced with a definite or indefinite expression, within the same sentence, or in the sentence coming immediately after the one introducing the referent. A few examples will serve as an illustration:

(tri-D pictures	C_3	"the train is laughing"
eliciting stimuli,	E	"why is it laughing?"
a train at a level	C_3	"she is laughing at this one"
crossing, and a		
bus being held at		
the gate)		
or		
	C_4	"this one is the train, it is laughing..."

This is consistent in almost all the children of the sample, even if the definite NP is almost very rarely used in an identifying function, i.e. used at a second mention of the same referent, and this corresponds to the nominative use of definite NP. As discussed in the 1st experiment, this is a cognitively less demanding task than the identifying or anaphoric use of a definite NP. The picture is thus : children of 4 1/2 to 5+ years, in our

sample, use often the definite NP deictically (nominative use), but manage to refer to it, within the same sentence, anaphorically. 'The' is used before 'train' often at first encounter with the picture of the engine, but is referred to within the same sentence, or immediately after, anaphorically by 'it' or 'she' or 'her'.

Continuing with the analysis of the dyad only groupings it can be seen that variable 3 (definite NP in two-D pictures) correlates highly with variable 11 (3rd person in two-D pictures) (r = .69, c.f. intercorrelation matrix, table 7-2 and G3a p3o). One possible interpretation is that the extension of variable 3 to variable 11 shows that there is an underlying factor, which is actually the anaphoric or the cohesive factor. The use of the definite NP is consistent with the use of 3rd person. In sentential discourse they both establish and identify a cohesive factor, though in this case, the anaphoric use of the 3rd person is facilitated by the physical presence of the person or the object (actually seen in the picture), and not created by intralinguistic means in discourse, and therefore this use of a definite reference is a kind of exophoric use. One type of NP coherence which is of interest to us, is the use introduced early in the discourse (usually as agent). This type of coherence mostly receives the narrator's focus, and is relatively recurrent (the agent participates regularly in the events which compose the story being narrated, these events forming successive story clauses). The six pictures, in each of the two categories of pictures, presented to the children are about a girl, and two personified engines, who engage in various actions. Because this type of NP is taken

from picture to picture, it makes the series of pictures a coherent whole, a unique story (but c.f. the introduction to Experiment II, p.196).

Two other variables, 15 and 9 can also be added to the group to give the highest value found for the B-coefficient (G3b, p305). An objective procedure to ascertain the grouping of variables is Holzinger's B-coefficient method of factor analysis (Harman, 1976). It is useful in such a case as this as sample size is a critical matter as the method is based on the assumption that the variables of a group identifying a factor should have a higher intercorrelations than with other variables in the set. Holzinger's B-coefficient is defined as 100 times the ratio of the average of the intercorrelation of a subject or group of variables to their average correlation with all remaining variables (Harman, p.24). As a tentative standard of belonging together the B-coefficient of a group of variables should be at least 130 (ibid, p.27).

If the use of definite NP is consistent with the use of the 3rd person (c.f. previous page) in sentential discourse, the anaphoric use of the 3rd person is facilitated by the physical presence of the object (we have seen that in the present study the children's use of a 3rd person singular - 'it', 'him', 'her' - is quite often after several uses of a demonstrative, i.e. 'this one' used as a definite expression). This explains the groupings together of the variables 3, 11, 15 and 9 which represent respectively the definite NP, the 3rd person in two-D pictures, and the demonstrative pronouns (this and that) and 3rd person in two- and tri-D pictures respectively.

Other groupings which can be formed do not show particular dyad relationships but are either mixed dyad/experimenter (e.g. G4 & G5) or experimenter only (e.g. G8).

7.2.2. Interpretation and discussion

A two-way repeated measures analysis of variance on dyad responses across the response types (factor A) and over the two picture conditions (factor B) showed significant results on both factors, together with a significant interaction (A x B) (Tables 7-3, 7-4, Fig. 7-1).

Let us first have a close look at the treatment means, within the body of the table 7-4, row by row and column by column. Because of the presence of a statistically significant interaction (F=6.98, with 3 and 147 df the 1% significant value is F = 3.91), the effects of one independent variable (factor B) on the production of discourse categories change when examining the results systematically for each level of the other independent variable (factor A).

Table 7-3

Two-way within Anova with repeated measures on both factors
Definite and Indefinite NP and 3rd person & demonstrative pronouns (tri- and two-dimensional pictures)

The means are as follows:
Treatment A (Types of Responses)
Level 1 Mean = 14.02 (NP Def)
Level 2 Mean = 10.93 (NP Ind)
Level 3 Mean = 11.38 (3rd person)
Level 4 Mean = 12.24 (demonstratives)

Treatment B (Pictures)
Level 1 Mean = 10.73 (3-0)
Level 2 Mean = 13.56 (2-0)

Analysis of Variance Table

The signs '*', '$' and '£' indicate the three pairs of mean squares to be compared.

Source	SS	DF		MS	F
A	558.61	3	*	186.2	3.87
B	803.72	1	$	803.72	15.89
A x B	421.53	3	£	140.51	6.85
SUBS	7318	49			
A x S	7079.77	147	*	48.16	
B x S	2478.91	49	$	50.59	
AxBxS	3016.34	147	£	20.52	
TOTAL	21676.88	399			

Table 7-4

Two-way anova with repeated measures on both factors.
Cell means.

A (response types)

	a^1 (def. NP)	a^2 (indef. NP)	a^3 (3rd p.)	a^4 (demonstratives)	
tri-D b_1 P (picture conditions)	Ex = 707	Ex = 492	Ex = 454	Ex = 481	
	14.14	9.84	9.1	9.62	$\bar{X}$ = 10.73
	$\bar{X}$ a_1b_1	$\bar{X}$ a_2b_1	$\bar{X}$ a_3b_1	$\bar{X}$ a_4b_1	
	Ex = 695	Ex = 609	Ex = 684	Ex = 732	
	13.9	12.02	13.68	14.64	$\bar{X}$ = 13.56
two-D b_2	$\bar{X}$ a_1b_2	$\bar{X}$ a_2b_2	$\bar{X}$ a_3b_2	$\bar{X}$ a_4b_2	
	$\bar{X}$ = 14.02	$\bar{X}$ = 10.99	$\bar{X}$ = 13.38	$\bar{X}$ = 12.24	

(very significant level 2 treat. B)

(very significant treatment, level 1)

It appears that the definite NP (a_1) category under both treatments (tri-D and two-D pictures) has cell means which are very near each other: 14.14 and 13.9, respectively; with the effect of 3-D much more prominent than 2-D. The picture is different when we examine the remaining discourse categories. The indefinite NP (a_2) under the two treatments has two substantially different means: 9.84 (tri-D) and 12.02 (two-D). The 3rd person pronoun and the demonstratives have much greater differences in their cells under the two treatments. The 3rd person pronoun (a_3) has a mean of 9.1 under tri-D treatment, and 13.68 under a two-D treatment. The demonstrative pronouns (this, that) have a mean of9.62 under tri-D and 14.64 under two-D. Thus, the general picture is presented that:

a) the four discourse categories under one specific treatment or condition (two-D pictures) have comparatively higher means, and

b) these means are not far from each other.

On the contrary, these same categories, under a tri-D condition, have much lower means than the ones under the other condition, with the exception of the definite NP which is as high in tri-D pictures (14.14, a_1b_1) as in the two-D pictures (13.9, a_1b_1). We will come back to this exception, when we will be interpreting the interaction later.

One possible immediate interpretation is that it is perhaps easier for the children to talk about pictures which represent animate human beings which participate in an action or a dialogue (these were actually

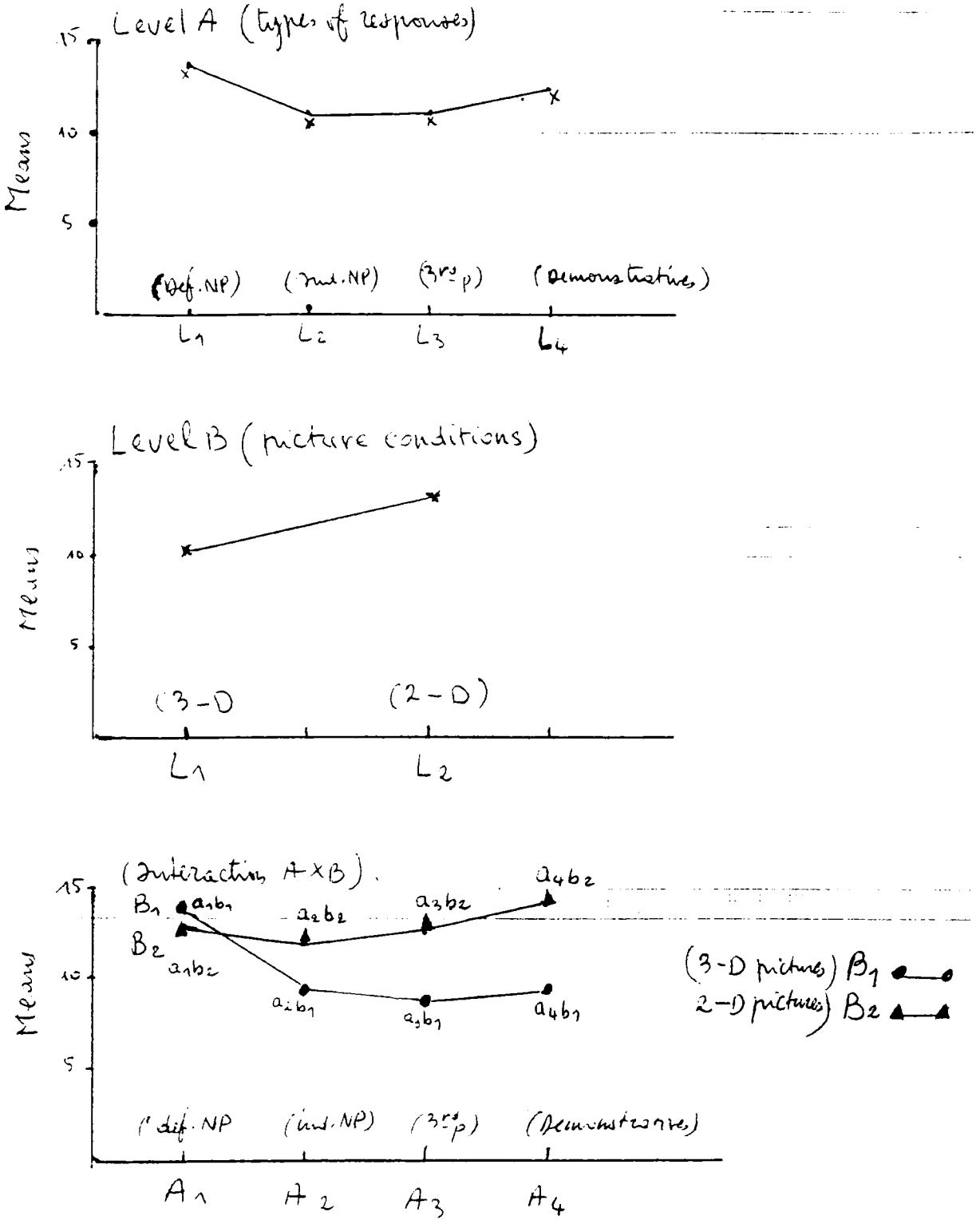


Figure 7-1 : Graphic representation of level means and interaction (from table 7-4

the contents of the series of pictures in the two-D category), than talking about non-human animate objects (although personified) which are the contents of the tri-D pictures. When the pictures are two-dimensional, and the elements in the pictures are animate human beings, there is a clear tendency, in most dyads, to imagine whole dialogues between the protagonists, or whole situations in which such protagonists find themselves involved, in the series of pictures presented to them.

Here are few typical examples of whole imagined dialogues:

1st picture, two-D

(c.f. appendix, p.322)

$Child_2$ "the mother of the girl has sweets, her sister euh...this one her aunt is going to give her sweets, because her aunt has brought sweets, and told her: 'take' and then when this one got out with the girl, she [the other woman about to give sweets to a little black girl] gave her sweets, she told her 'take all'... she told her 'I don't want"

A little further, 3rd picture, same child

C_1 "this is a school, the children have come to it, they draw and draw, and when she told him 'you draw' [interference of another child: 'No, no she is the

mistress] and she told them 'sit down' and then she told to this boy: 'come' to tell them: the one who wants to eat they give him this" [the girl was showing the scribbles that a little boy, in the picture, had done on his paper]

Experimenter "uh huh"

C_2 "no, no, she said, write well, so that I'll stick them on the wall"

In the two-dimensional pictures, the descriptions produced by the children are much longer than the ones used in the tri-dimensional pictures, but there are still inconsistencies in the use of the definite NP and though all the children use the 3rd person anaphorically after mention of a referent, this anaphoric use becomes inconsistent or ambiguous when there are many referents in the sentences they produce. Examples of such an egocentric use are numerous in the speech sample. To take but a few examples, one child talking about a two-D picture said:

picture no. 3, two-D

C_1 "this one is writing, until he finishes, she will give him..."

Another child said about a two-D picture:

picture no. 4, two-D

C_2 "He has boots, his shoes and euh her daughter is giving her hand and she says to her 'give me...', that one has her hand in her pocket, and she is walking".

Yet another child, also about a two-D picture:

picture no. 5, two-D

C_3 "she sleeps, this one, and that one is putting her to sleep, she is afraid that someone takes her"

Another example of apparent egocentric speech is the one produced by S_a, a girl of 4 1/2 years. What seems at first incoherent is apparently an extraneous story which she mixed in with the description of the picture (two-D) in hand:

picture no. 2, two-D

C_4 "Now, this one is telling her : 'me I let down my hair', and then she said 'me I'm going to (...) she is walking; now they do them like that, then that one is wearing it, she is wearing the blouse and the shoes, and then this one is turning to the other side, they have their hair cut..."

It appears, then, that in two-D pictures there is a tendency to describe and identify the persons and objects, but mainly animate persons. This is done, often, with an incoherent use of intralinguistic means (3rd person and possessives), the pronouns 'he', 'she', 'her' have no clear, unambiguous referents. On the other hand, most 3rd. person pronouns follow the use of an exophoric type of reference, i.e. when the referent is physically present - in this case, in the picture. We have seen in chapter 3, in conjunction with the discussion of the presentation of investigations of definite reference, deixis and pronoun, (Karmiloff-Smith, 1977; Tanz, 1980; Charney, 1980; Chipman and deDardel, 1974, and Brown 1973, and others) that children's earliest uses of definite reference in general may seem anaphoric (reference backward) to an adult observer, but may actually be exophoric (reference outward), referring to something in the extralinguistic environment rather than to something that has already been introduced linguistically.

In this experiment, the results of two-way Anova yielded a significant interaction ($F=6.85$, df 3, 147). In the first experiment, we interpreted the interaction (a combination of one particular treatment (SP condition) with one particular factor (ind. NP) as pointing out the presence of a developmental function (the nominative function). In the second experiment the def. NP category is confounding the effects of the two levels of treatment B (tri-D and two-D pictures). These treatments have almost equal effects on the definite NP, but very different effects on the other categories (indefinite NP, 3rd person pronouns and demonstratives). It seems that the apparently correct use of definite NP is

tied to situationally introduced referents and it is not, in fact, truly anaphoric. That might explain why preschool children often seem to be able to use correctly definite articles (and indefinite articles in two-D particularly) within a concrete situation, but overuse the definite article in referring to elements that are physically present. One might say that this use of definite articles to introduce a referent in a conversation may be exophoric in the sense that the children are trying to point to the referent itself - even though it is not physically present - and are, thus, ignoring its linguistic status.

7.3. Error Analysis

7.3.1. Introduction

a) From a linguistic point of view, the object of error analysis is to describe the nature of the learner's interlanguage ('interlanguage' has an intermediate status between the codes of the mother tongue) (L_1) and the target language (L_2)). Error analysis is a comparative process. In the linguistic description of errors, we proceed by comparing synonymous utterances in the learner's dialect and the target language. Since it is often a question of a message expressed in two languages the task is that of a linguist who tries to describe an undescribed and unrecorded language (P. Corder`, 1973).

The key to error analysis is the systematic nature of language and consequently of error. The study of errors is, then, the study of the systematic breeching of the code: a learner makes systematic mistakes in a particular area for a limited time. The learner, eventually, gets the things right, but the transition from wrong to right is not a sudden one. This process will take time and the learner may pass through intermediate stages, each of them having its own system. The most noticeable stage is when the learner sometimes puts a thing right and sometimes wrong (inconsistency).

b) A full description of the error in a learner's sentence involves explaining it in terms of the linguistic processes or rules which are being followed by the speaker. We infer these from the evidence of the learner's utterance and from others from the same learner, in which articles are or are not present (e.g. as in, for instance, speakers of Algerian Colloquial Arabic), whether correctly so or not. We need data about the omission of an article in order to build up some evidence for systems and rules which are abstractions from such linguistic data in the target language.

A description of errors can be made according to degrees of depth, generality and abstraction. One kind of description is to classify the differences between the learner's interlanguage's utterance and the reconstructed utterance in the target language into four categories: (c.f. P. Corder, 1973, ch.11).

— 'omission' of some required element

— 'addition' of some unnecessary or incorrect element

— 'selection' of an incorrect element

and — 'misordering' of elements.

All these items are described at different linguistic levels, the phonological/orthographical, the grammatical and the lexical.

Here are a few examples of interlanguage's utterances and the reconstructed utterances in the target languages.

English

1) L_1 original sentence 'He told me: there is a grocer shop'

L_2 reconstructed version 'He told me: there is the grocer shop'

French

2) L_1 original sentence 'je vas á l'ecole tojours'

L_2 reconstructed version 'je vais toujours á l'ecole'

Arabic

3) L_1 original sentence 'Ana ᶜndi nouara' (in English = Me I have flower)

L_2 reconstructed version 'ᶜndi nouaratuⁿ' (in English = I have a flower)

7.3.2. The analysis of children's errors in the present data

The situation of a learner of a language has been compared to that of an infant who is in the process of acquiring his mother tongue (P. Corder, 1973). Thus, the language learner's utterances are in all circumstances not those of an adult speaker, in the same way the young children's utterances are accepted as different but not 'erroneous'. Both of these kind of utterances (the learner's and the child's) are considered as though they belong to a different language.

Research which focusses on children whose second language is not the language of their larger social environment attempts to show that interference (between first and second language) tends to result from the 'imbalance in exposure and use" (c.f. B. McLaughlin, 1988, for a detailed review of second language acquisition). This seems to be the case of Algerian school children who learn Arabic language exclusively in school (Algerian Colloquial Arabic being used at home and outside home, c.f. ch 4, section 4). Pre-school children, in the present study have been superficially exposed for a period of a few months, and thus interference is much less perceptible than it could be in schooled children beyond the age of 6 years. This 'imbalance of exposure' would also account for interference, in various amounts, observed by educators and school psychologists (Rivers, 1964; Stern, 1970; Vey, 1946).

For Ervin-Tripp, (1974), situational specificity (whether the language is learned in isolation or in concrete situations) is an important factor in minimising interferences between languages; when children attempt to communicate at a more complex level they tend to fall back on their first language structures. Classroom communication might be at a more complex level than communication at home or on the playground, and that might explain why interference is more likely to be found in the classroom setting.

A number of studies on this issue of interference between languages, and whose conclusions are based on evidence from error analysis, have been criticized on many grounds. Schachter and Celce-Murcia (1977) pointed out the difficulty of knowing exactly what type of error a second language learner is making and why the learner makes it. Intralingual and interlingual factors (the developmental mistakes of the monolingual speaker and the mistakes which reflect the influence of the learner's first language on the second language, respectively) might confuse the type of error which is being investigated.

A contemporary researcher on second language acquisition (McLaughlin, 1988) pointed out the possibility of directing one's research to the strategies used by individuals in acquiring a second language, and put less stress on the arguments over the presence/absence of interference from the learner's first language. But this needs more information about the errors made by second language learners, the

extent to which these errors reflect the learning situation and finally the structured similarities between languages.

For the purpose of the present developmental study, the focus is not on hypothetical interference of children's first language (Algerian Colloquial Arabic on Arabic language learnt at school; Arabic language of which more than 50% of the vocabulary is found in Algerian Colloquial Arabic), but on the developmental errors which are reflected in the speech of the 4 and 5 years old.

A developmental error is an error in the language use of a first and second language learner which is the result of a normal pattern of development, and which is common among language learners. To take an example, pre-school children might learn the rule for regular past tense formation and then apply it to all verbs (for instance, verbs like *'comed' *'goed' and *'breaked' instead of 'come', 'went' and 'broke'). Later on such errors disappear as the learner's language ability increases. In the present research, the overuse of the definite article, for example, enters into these kind of overgeneralisations. These overgeneralisations are a natural or developmental stage in language learning.

On the other hand, the present study being an experimental investigation of pre-school children's use of referring expressions, the analysis of errors is done in terms of the error scores across the four selected categories of discourse (definite and indefinite NP, 3rd person and demonstratives) over the two experiments.

A sample of 16 children were taken randomly from the 50 in the study. Their 'error scores' on each of the two experiments were calculated in four discourse categories. These error scores were transformed from proportional measures (errors/total responses) to counteract any problem with variances, employing Arc Sine equivalents (Winer, 1971, pp.397-400), and then used in a two-way analysis of variance.

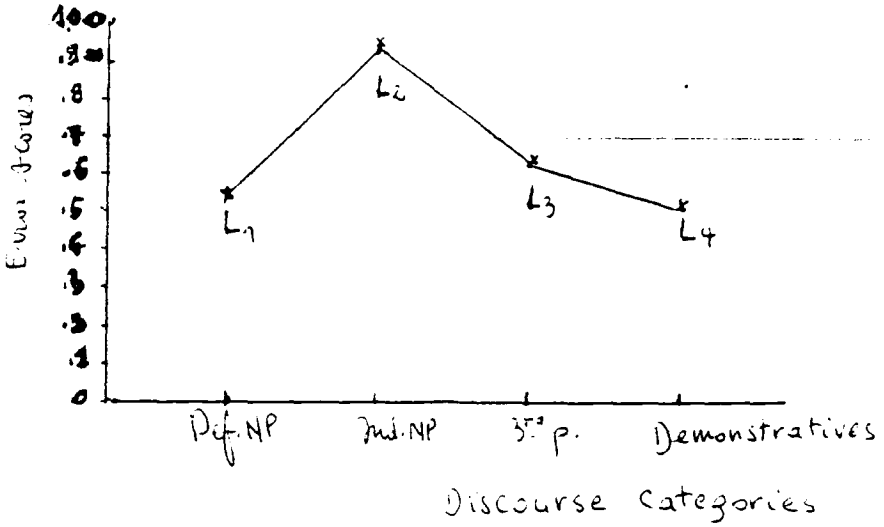
7.3.3. Results and interpretation

The results of the two-way anova with replications on equal groups within two factors (factor A = linguistic forms, factor B = conditions, SP & FP) showed a significant main effect A (linguistic forms) (F = 12.94, with 3 and 120 df, the 1% significant value is = 3.95) which represents the indefinite NP in the SP condition (c.f. figure 7-2). This means that far more errors are made in the indefinite NP category than in the remaining other categories (definite NP, 3rd person and demonstratives). We saw, in the discussion of the results of the 1st experiment, that the overwhelming presence of a developmental function (the nominative funtion) is behind the use of the indefinite article in the SP condition (c.f. Experiment I). The indefinite article having, in this case, a naming

Figure 7-2.

Experiment I : Significant main effect A
(A = discourse categories)

L = levels of factor A



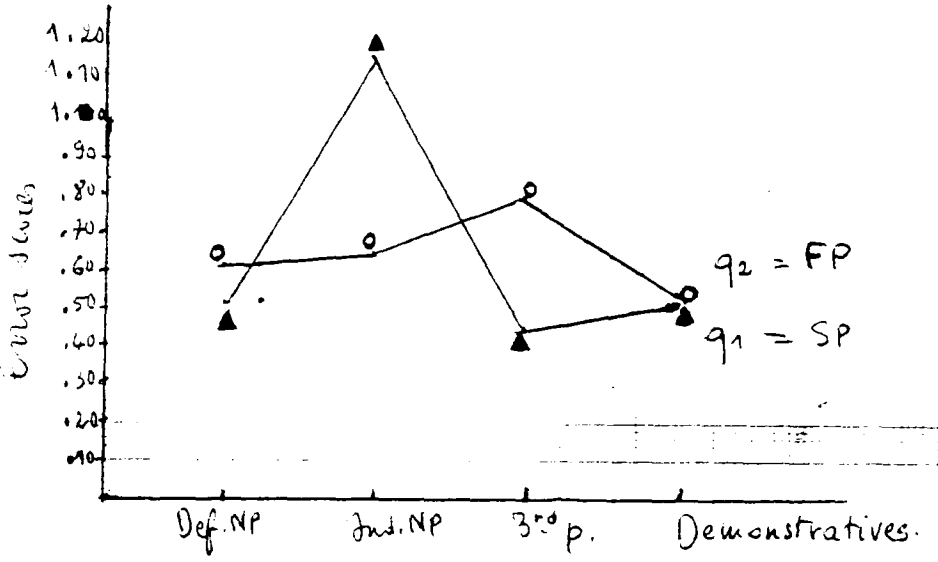


Figure 7-3.

Experiment I : Interaction A X B
(A = Categories of discourse
B = Conditions : SP and FP).

function rather than an identifying function which involves taking into account the listener knowledge to introduce a referent. A typical deictic use of children approaching 5 years, in Experiment I, was of the form:

"this one a-x--"

It is easier for the children to name the contents of the picture in front of them when the situation partly demands naming first — the idea of the dialogue (which requires a more social awareness of the audience and an actual knoweldge of its expectation) being not yet well assimilated. This explains why children make more errors when they use more of a definite reference (indefinite NP, in this case), because an appropriate use of the indefinite article (and the definite article) assumes the child to use a cognitively more demanding capacity than the one used for naming (where only a knowledge of class-membership is assumed) to assess his audience's actual knowledge and probable expectations.

The results also showed a significant interaction ($F = 15.40$, with 3 and 120 df, the 1% significant value is = 3.95) (c.f. figure 7-3). Because of this, the difference in errors between the linguistic forms (definite and indefinite NP, 3rd person and demonstratives) is not independent of the levels of B (conditions: SP and FP): it appears that more errors are made in the indefinite NP under the SP conditions. And more errors are made in the 3rd person under the FP condition. We can conclude that in the SP condition children are urged to name/describe the contents of the pictures (c.f. part on the procedure, Experiment I), and the one expected result is

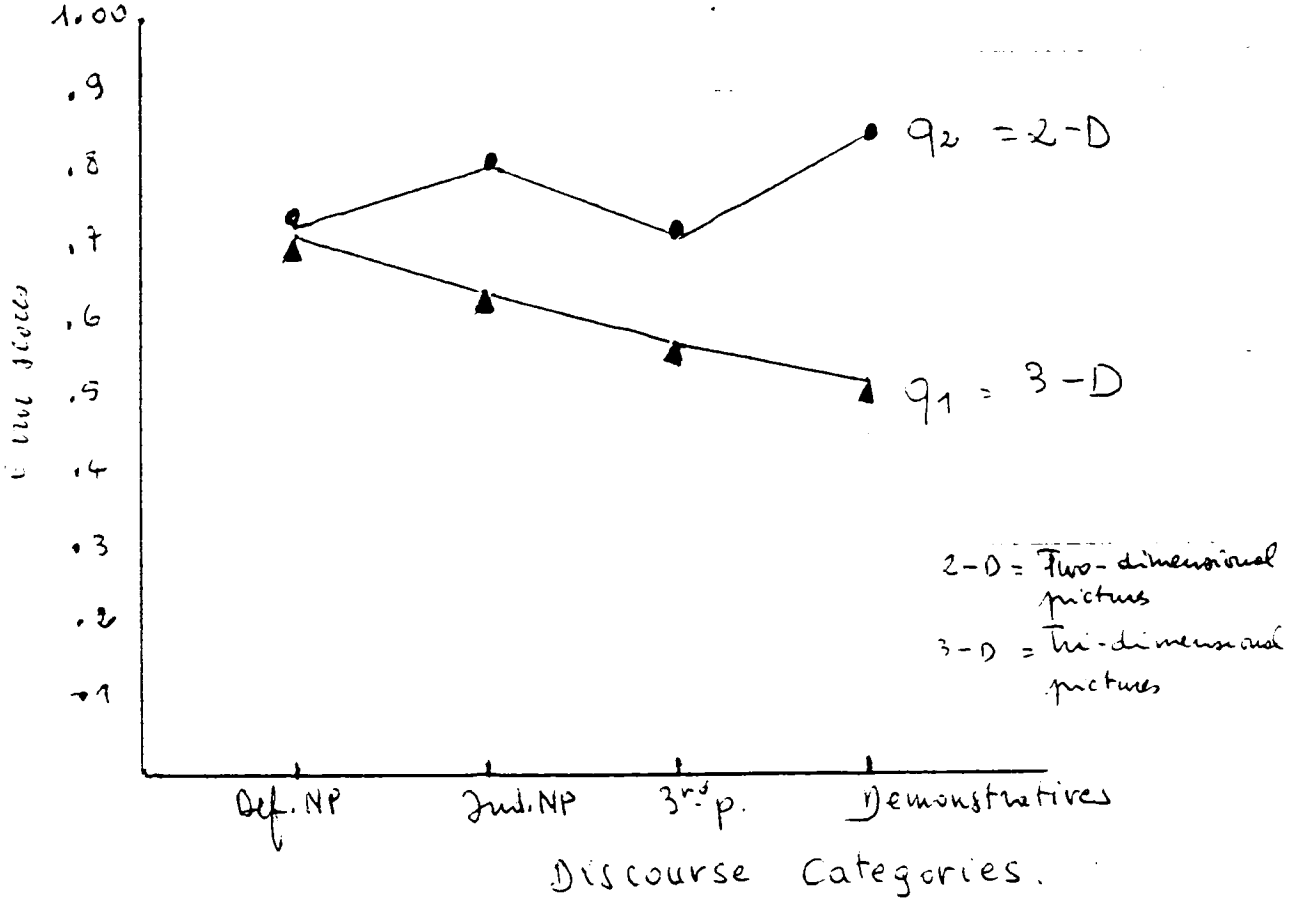


Figure 7-4.

Experiment II : Interaction A X B

A = discourse categories

B = Conditions : 2-D and 3-D.

that they use more of the definite reference (in this case, the indefinite NP), but this use is mostly deictic (pointing to and naming the object) and not truly anaphoric (introducing and referring back to what has been already introduced). This use being inconsistent, it explains the high proportion of errors in the indefinite NP category. In the free-play (FP) condition there is always an opportunity, for the children, to use a third person which is introduced or participating in children's narratives. But the use of 3rd person, in this sample, is essentially deictic (context-specific, the referent being physically present) and not intralinguistic or cohesive (creating referents linguistically and maintaining, by means of coreferential definite forms, reference to entities, events and objects introduced earlier in the discourse). 3rd person use in the rising fives is often incoherent (not often continuous with a definite expression, c.f. discussion of Experiment I), and this explains why the more the children have an opportunity to use a 3rd person, as in the FP condition, the higher the proportion of errors.

The results of the second experiment are consistent with those of the first experiment. 5 year old children, in this sample, overuse the indefinite article (when the use of the definite article is more appropriate, the referent being already introduced) and do the same with the definite article (a definite article being used instead of an indefinite article when they need to introduce a new referent). These errors are consistent with what Power and Dal Martello (1986) call the 'incoherent error' and the 'egocentric error'. The first type of error ('incoherent error') corresponds to the use of an indefinite article in a context in which a listener is already

familiar with the referent (and thus giving the listener the false impression that a new individual, or object, was being introduced into the story or narrative). In the second type of error ('egocentric error'), the speaker might use the definite article in a context in which the listener was not yet familiar with the referent.

We have seen in the discussion of the results of the second experiment that children produce longer descriptions in the two-dimensional pictures condition than in the tri-dimensional pictures condition, in spite of the inconsistencies in the use of the definite NP and ambiguous use of 3rd person in the presence of many referents (egocentric use). The interaction in the 2nd experiment ($F = 4.83$, with 3 and 120 df, the 1% value is $F = 3.95$) (c.f. figure 7-4) shows that there is a high proportion of errors in the indefinite NP and the demonstratives in the two-D pictures (the production of more linguistic forms depending on level 1 of factor B, which corresponds to two-D pictures). The more the children produce of these linguistic forms (indefinite NP and demonstrative in this case), the more they are prone to error in the use of such forms.

There is a relationship which is established between the indefinite NP and the demonstratives, shown in the graphic representation of the interaction in the error scores (c.f. figure 7-4). This could be explained by the fact that when naming/describing an object (in the picture) 5-year-old children, in this sample, use such typical sentences as:

"That's a _x_" or "this one a –x—"

with a demonstrative in an agentive position and the indefinite article in its nominative function.

7.3.4. Discussion

Experimental studies of children acquiring French (Bresson et al, 1970; Bresson, 1974) and other Romance languages (c.f. review by Clark, 1985) show that 4- and 5-year-olds also have some difficulty learning to use the definite and indefinite articles. Like children acquiring other languages (Warden, 1976, with English children; Mills, 1985, with German Children; and Algerian children in the present study), they tend to overuse the definite article.

The general consensus, from these studies, is that these errors seem to result from children's relative lack of skill in keeping track of what they and their addressee mutually know about any particular topic.

For example, in the Bresson et al study (1970) all the 4- and 5-year-olds, like in the present study, used the indefinite article appropriately in naming things, e.g. 'c'est un mouton' (It's a sheep) (which we found, in the present study, as corresponding to a 'developmental function', c.f. Experiment I). But when the indefinite article is needed in order to refer to one or more of a set of like objects, children used consistently the definite article instead.

In one experiment, in the Bressen et al study (1970), the investigator removed some sheep from a number of others, and asks "qui est parti?" (who went away?). Four-year-olds would reply * 'Les moutons sont partis, les moutons sont restés' (the sheep went away, other sheep stayed) instead of 'des moutons sont partis, des moutons sont restés' (a more sophisticated answer would have been : 'quelques moutons sont partis, d'autres sont restés') (some sheep went away, some sheep stayed).

Four-year-olds in Bresson et al's study (1970) used the indefinite article 'un' (a) and 'des' (some) 50% of the time in such contexts, and five-year-olds did worse, using the indefinite only 31% of the time. These findings are also compatible with Warden's results of experiments with English children (1976), which were discussed earlier, in chapter 3. In the context of these typical errors children produce in the course of acquiring their mother tongues, Warden's conclusion about the uses of the indefinite article is worth reconsidering.

In Warden's study, it is only after 9 that children showed full mastery of the indefinite article for nonspecific references, like those needed in answering the questions "qui est parti?", in Bresson et al (1970). The general conclusion from Warden's study (1976) and from the present one (c.f. Experiment I, p189 and p221, Experiment II) concerning definite referring expressions, is that the overuse of the definite article appears to be the result of children's failures to appreciate that their addressees do not necessarily know what they, as speakers, know.

In the same context of studies Karmiloff-Smith (1977; 1978; 1979) investigated French-speaking children's use of articles (c.f. section 2 of chapter 3 of the present study), from the point of view of their plurifunctionality: articles have mutliple meanings that vary with context, and it seems that because of that children take time to acquire them. Karmiloff-Smith attempted to show that, basically, children's initial usage of articles and other forms of determiners depended heavily on the identification of a single meaning or function for each term. If their initial uses of articles 'le' and 'un' ('the' and 'a') with 'meme' and 'autre' ('some' and 'other') did not reveal obvious errors, later on, however, when they began to switch from the interpretations of 'same kind' to 'same one', they frequently created new (often ungrammatical), forms to carry the additional meanings they were trying to express.

In the present study, four- to four-and-half-years-olds in the first experiment produced more indefinite NP than any other category of discourse included in the design (definite NP, 1st and 2nd person, 3rd person and demonstratives), in the structured play condition. We interpreted this as being mostly deictic and not truly anaphoric. This inconsistent use explains the high proportion of errors in this category.

In the second experiment, six months later, the same children (approaching five or already five years old) produced more definite NP, in one condition, i.e. two-dimensional pictures. This is due partly to the nature of the stimulus (brightly coloured pictures representing animate human beings paticipating in actions or in a dialogue), and partly due to

their age, though this is confounded by the conditions to which the children were submitted, as it was seen in the discussion of the experiments.

The consequence of this is that children used longer descriptions with a frequent use of definite reference (in this case, definite NP). We interpreted the apparently correct use of definite NP that it is tied to situationally introduced referents and that it is not truly anaphoric. That explains, partly, why pre-school children often seem to use correctly definite articles in a concrete situation, but overuse the definite article in referring to features that are physically present. This corresponds to a kind of 'egocentric error' where the children are actually using the definite article in a context where they need to use an indefinite article.

In the general discussion of the hypotheses and the findings of the present study, an attempt will be made to relate the present research with some recurring idea in the developmental literature. Namely, that the learning of the rules of language use to decide which forms to use in which context, together with the ability to take into account the listener when formulating a message are two major requirements for the development of language.

Chapter 8

Putting it all together: referring expressions in Algerian urban pre-school children

8.1. Discussion of the hypotheses: situational opportunity and animacy of topical referents

An attempt at a comparison between the results of the 1st experiment and those of the 2nd experiment, in terms of the amount of speech all through the four categories of discourse (def. NP; Ind. NP; 3rd person and demonstratives) produced by the children, will reveal interesting differences as to the scores (c.f. table 8-1). The two tests were administered at two different periods, separated by an interval of about 6 months. In the construction of the test-situation, it was hypothesized that children would produce more speech and longer utterances, if the situation created for the two members of the dyad was such that there was a close-range of the play-space between the subjects, i.e., the mutual distance were as short as possible. In other words, the proxemic factor - the distance between the peer in a dyadic interactive situation - is a condition which is going to influence the pattern of production and construction of utterances, a pattern which allows for an expected richer referential content. One study in this direction (Bokus and Shugar, 1984) suggested that children are highly sensitive to the proxemic factor in that it

determined their perception of the relations between play spaces allocated to self and to the dyadic partner. But more will be said about this later on.

In the first experiment, the mutual distance was less than 50 cm, in the structured play situation, and still less in the free-play situation. In the second experiment, the children were seated beside each other and were sharing the same pictures of a small booklet, and these pictures were of a better quality than the ones used in the first experiment. The quality of the picture was the second factor involved in the experimental task.

Thus, in the first experiment the pictures were *hand-drawn* with bright colours, but *less action* (in the standard picture shown to the dyads most elements look static, with only two persons facing each other and standing up. This was the structured play condition (S.P). In the free-play condition (F.P), each member of the dyad chooses freely pictures, stories, etc., to talk about). In the 2nd experiment, there were *printed pictures,* with bright colours, and *more action.* A series of six pictures making up a coherent whole - the same protagonists appeared from the 1st picture to the last, and engaged in different actions. The pictures in the 2nd experiment were of two kinds: tri-dimensional and two-dimensional pictures. These function as two different conditions, or treatments in the statistical design, instead of the S.P (structured play) and F.P (free-play) conditions of the 1st experiment. Since the children in the 1st experiment talked more in the SP condition, as it is shown by the results of the 1st experiment (c.f. table 6-1 and 6-2) than in the FP condition, mainly because of a sustained guidance and elicitation of speech by the

Table 8 - 1

Experiment 1: scores of children in both age ranges (3;8 - 4;4) and 4;4 - 5;0) subjects = 60

	Common Nouns		Pronouns	Demonstratives	
	Def. NP	Ind. NP	3rd person	demonstrative pronouns	(N = 60)
SP+	159 $\bar{X}$ = 2.6	554 $\bar{X}$ = 4.2	125 $\bar{X}$ = 2.08	283 $\bar{X}$ = 4.7	$\bar{X}$ = 18.5
FP+	199	174	269	101	$\bar{X}$ = 12.3
	$\bar{X}$ = 5.8 (N = 60)	$\bar{X}$ = 12.1 (N = 60)	$\bar{X}$ = 6.5 (N = 60)	$\bar{X}$ = 6.4 (N = 60)	

Experiment 2: scores of children between 4;4 and 5;4 years. subjects = 50

	Common Nouns		Pronouns	Demonstratives	
	Def. NP	Ind. NP	3rd person	demonstrative pronouns	(N = 50)
3-DP+	703 $\bar{X}$ = 14.06	492 $\bar{X}$ = 9.8	510 $\bar{X}$ = 10.02	500 $\bar{X}$ = 10	$\bar{X}$ = 44.1
2-DP+	695	594	684	732	$\bar{X}$ = 54.1
	$\bar{X}$ = 27.9 (N = 50)	$\bar{X}$ = 27.7 (N = 50)	$\bar{X}$ = 23.8 (N = 50)	$\bar{X}$ = 24.6 (N = 50)	

+SP = Structured Play
FP = Free Play
3-DP = Tri-Dimensional pictures
2-DP = Two-dimensional pictures

experimenter, it was decided to keep the SP condition as a framework within which the two treatments (two-D and tri-D pictures) are used. The focus in these two series of pictures is on animacy, which is another factor built in the hypotheses of the present study. But again a distinction is taken into consideration, which is animacy in participant non-human, mechanical objects though personified (thereby making their perception near that of human beings: a train and a bus in the tri-D pictures), and animacy in participant human beings.

Thus one of the hypotheses could have also been stated like this: given the situational opportunity and the nature of the task, it is possible to trigger the cohesive (or metapragmatic) use of speech in pre-school children.

Let us explain this in more detail. An intralinguistic use (linguistic sign to linguistic sign, or an indexical relationship strictly within the context of an utterance) and ultimately a metapragmatic use (speech referring to speech, or the use of speech in one situation to refer to speech uttered in another situation) could be made possible, i.e. could be shown to be realizable, by the nature of the situation and the task: a short distance between the same age partners, a guidance in the form of probes by the experimenter and focussing on animacy (animate/inanimate) and participation in speech events (participant/non-participant). In other words, the situation (short distance between members of the dyad) and the contents of the pictures-task (human beings engaged in action and dialogue) could ultimately trigger the cohesive (or metapragmatic) use of speech which is hypothesized as

being continuous with the early deictic uses of referring expressions (this, that, there, etc.,), as was stated in the introduction of the present study. The use of linguistic signs to indicate intralinguistic relationships - that contribute to the cohesive or "text-forming" function - within the linguistic context is hypothesized, in the developmental literature, as a further development of the early deictic use of referring expressions (or the ones used to refer to non-linguistic entities of the immediate environment). But to what extent do situational opportunity and all the other factors just named play a role in the overall cohesive properties of children's narrative discourse?

At an inspection of the results of the second experiment we pointed out, in the previous chapter, high means of the four discourse categories in one condition (two-D pictures). The interpretation was that children find it relatively easy to talk about pictures representing animate human beings participating in an action or a dialogue. And the tendency in the children is to imagine whole dialogues in these circumstances: i.e. human beings depicted as being engaged in action or dialogue. The fourth picture, within the two-D category, representing a woman with three small children taking their lunch (the woman was represented with her face turned towards a small boy, and as if she was talking to that boy) was apparently the one which drew most attention from the dyads. They were more talkative about it, and some engaged into a dialogue or imagined a dialogue between the mother and the small boy. On the other hand, children, in the 2nd experiment, produced longer descriptions in two-D than in tri-D pictures, in spite of some inconsistencies in the use of definite

NP, and ambiguous anaphoric use of 3rd person, in the presence of many referents; this was again an example of egocentric use.

In general, there is a tendency, in the children, to describe and identify persons and objects which are animate, but essentially animate persons in two-D category. This was done often with incoherent intralinguistic means (3rd p. and possessives), and the 3rd p. used mostly after an exophoric type of reference, a characteristic which has been pointed out in the general discussion of other studies of referring expressions in the previous chapters. The apparently correct use of the def. NP is tied to situationally introduced referent and not truly anaphoric. This explains, partly, why pre-school children seem often to use correctly definite articles (indef. articles in tri-D particularly) in a concrete situation, but overuse the def. article in referring to features that are physically present (c.f. Karmiloff-Smith, 1977; 1979).

The situational opportunity somewhat triggering a richer referential content, and the factor of animacy and participation in speech events as being a potential influence on children's production of speech (longer utterances), and cohesive uses, have also been recognized by such developmentalists as Bokus and Shugar (1984; 1986) and Hickman (1985).

The hypothesis, in the Bokus and Shugar study (1984) is that children of the same age and involved in a free-play situation start interaction by constructing utterances, according to two different patterns depending on the proxemic relations of their action fields: they produce

short utterances lacking in referential content when the mutual distance is greater, and longer utterances with richer referential content, when the mutual distance is lesser.

The play-space (close-range, far-range) was thus a critical factor, the child, apparently, is using "different kinds of utterances depending on whether his play space is adjacent or overlapping with that of the partner or whether it is farther removed..." (Bokus & Shugar, 1984, p. 332); the child's expectancies, about how the other partner will respond to given types of utterances, being taken as reliable, in spite of the fact that children start interaction sequences in conditions of unfamiliarity with each other and with the play setting (unaffected by habitual experiences linked to partner and place).

The conclusion from their findings is that in child-adult interaction, children learn from adults practical procedures and norms of socio-cultural life, whereas in child-child interaction "children build their own mutual relations socializing each other and themselves" (Bokus & Shugar, 1984, p. 333)

In a recent developmental study (1986), Bokus and Shugar recognized one factor pertaining to the situational condition which was affecting the performance level. This factor was understood in terms of perception of situational opportunity in the narrator, in one case allowing for fuller access to sources of material for linguistic manipulation, both external and internal, and in the other restricting the access. Evidence for

this interpretation was found in an analysis of reference situations serving as topic sources for constructing narratives.

The findings of this empirically based study of the consequences of differential conditions in which pre-school children present their knowledge in the form of picture-based narratives to an equally engaged adult listener, lead them to believe that what is at issue is the psychological function of a sense of freedom of choice. This function seems to enter strongly into the performance of a communicative task such as the one they studied, and in the given conditions can determine the quality and successfulness of the child's performance.

This seems to be in accordance with Vygotsky's developmental theory that adult-child interaction is the basis for development of higher mental functions in the individual. An understanding of the developing rate, scope and use of knowledge accretion about objects, events, situations and relationships is crucial for an understanding of the development of young children's language skill.

In some earlier studies (Bates, 1975; Cazden, 1970; and Shatz, 1974), the situation is indeed a controlling variable in other ways for determining the amount, the topic, and the forms of messages in discourse. In some others (Cooperman, 1970 (in Cazden, 1970); Freedle, Lewis and Winer, 1974) children have also been observed to talk more often and to use longer utterances when they initiated the topic of conversation. In this context, Bates (1975) and Shatz (1974) observed, in children from 2 to 4 years, differences in the initiation of topics in

situations that differ according to the activity, the participants and the extent to which the children can control the events that are happening.

In Hickmann (1985), the data indicates that both animacy (animate/inanimate) and participation in speech events (participants/non-participants) played a role in the overall cohesive properties of children's narrative discourse. In her study (c.f. chapter III, section 2, of the present study), children, in general, organized their narratives around highly presupposed and "topical" animate referents (4-year-olds used highly presupposed and deictic forms such as "it", "this", "here", "there", in such utterances where the indefinite article was used to indicate class membership of a referent denoted deictically, e.g. "it's a dog", "here's a dog"). But 4 to 7 year-olds have a tendency to presuppose all animate referents from the first mention on, instead of using intralinguistic means to first create them in discourse. In other words, pre-school children, according to Hickmann (1985), have difficulties 'introducing' linguistically '*all*' animate referents (participants or non-participants in a speech event) with effective forms that create a presupposition of the existence and specificity of such referents.

It was pointed out earlier that children, in the present study, tended to describe and identify persons and objects which are animate, but with often incoherent intralinguistic means (3rd p. s. and possessives), that their descriptions are longer in spite of some inconsistencies in the use of def. NP, that the anaphoric use of the 3rd p. was often ambiguous, when the child is faced with many referents. Pre-school children in the present study, and in Hickmann (1985), generally, when they objectify speech

events that occurred in another speech situation, tended not to distinguish between the reported message and the narrative message in the immediate speech situation, as in the following examples (from the present study, experiment II).

(Picture No. 3, tri-D pictures)

B = "they are waiting for the train, and that one is thinking about these ones so that "I take them', they say to him, and then he is doing his mouth like that"

and in Hickmann (1985)

Type I stories (4-year olds)

C = "the donkey is angry...because "I put my toys in the box...Now I bring that to school..."

E = "uh huh"

C = "I think you're trying to 'trick' me...I'm not...' "You are - you h - you...took it. I am very angry at you". No...You don't understand me!"

E = "uh huh"

C = "Well I...I'm your friend. Let's go and play." "OK." etc.

In these two examples, the two children pass indifferently from narrative speech to reported speech in the first and second persons ["and that one is thinking about these one so that "I take them..." (Exp. II, present study)

- "The donkey is angry...because "I put my toys in the box..." etc. (Hickmann, 1985)]

They afterwards simply carry on, reproducing the dialogue in the 1st and 2nd p, without any 3rd p. frames.

Thus, it appears that in the present study situational opportunity and animacy played an effective role in influencing the pattern of production and construction of utterances (richer referential content). However, in spite of their relative easiness to talk (to describe and identify) more about pictures representing animate referents (mostly animate human beings participating in an action or a dialogue), pre-school children, in the present study, have difficulties in using intralinguistic means (third person forms) and metapragmatic frames (reporting dialogic events that occurred in another situation).

To organize their own discourse, young children should rely strictly on linguistic means. This organizing capacity involves the use of intralinguistic means to 'create' referents linguistically and to maintain, in subsequent discourse, reference to them, and, on the other hand, the use of metapragmatic framing devices to objectify speech events and transform them into cohesive texts. This was consonant with the findings of Hickmann (1985) and Karmiloff-Smith (1977;1979).

If we can say something about the overall quality of the pictures, it appears that children, in the present study, found it relatively easy to talk more and use longer utterances when the stimulus presented to them is

in the form of brightly coloured printed pictures. When the pictures are hand-drawn even though brightly coloured, children in the first experiment of the present study, tend to produce short utterances, mostly of the nominative type (e.g. "I've got...(a noun), or: "that's...(a noun)), with few intralinguistic means.

b) Some hypotheses about the understanding of pictorial representations.

We have already discussed the factor of animacy as being one of the essential reasons behind a comparatively richer referential content in the second experiment than in the first experiment, but this is not the only reason. This might have to do with the children's ability to watch and understand pictures. Cazden (1972) has discussed the importance of children's understanding of pictorial representation and acceptance of pictorial conventions. The acceptance of pictorial conventions can influence the ways in which children respond to task stimuli. Thus, it would appear that children's interpretations of social conventions as represented in pictures can influence their responses to pictures when, for example, they interpret the shading conventions of graphics either as light shadows or as dirt or depiction of 'dirty' (Rosenthal, in Cazden, 1972, p. 266).

Some investigators (Deregowsky, 1976; 1968 a & b; Hagen, 1974) attempted to show that the inability to rightly interpret pictures by non-western (rural African) subjects [being shown the Hudson pictures (1967)

involving an African hunter (with spear about to be thrown), an elephant, an antelope, and a tree, all represented in line drawings; the aim of this study was to see how people interpret depth shown in pictures], does not imply that these subjects are not capable of viewing pictures as representations of three-dimensional space. Other workers (Jahoda and McGurk, 1974a; 1974b) studied children from diverse cultural and geographical areas (Chinese, African and European children from 4 to 10 years). They asked these children to make three-dimensional models of pictured situations. Children's accuracy in model-building increased with age and showed only significant between-culture differences. It appears that, even four-year-olds are capable of estimating - fairly reasonably - the real size and spatial relations of depicted objects, though the presence of more pictorial cues will result in a better size estimation, whereas a better estimation of spatial relations by pre-schoolers is possible on the basis of a limited number of pictorial cues. It could be said that 'cues' are simply the way in which depth is represented by the perceptual system.

In Constantine - the setting of the present study - as in Algiers or any other non-European or non-American urban area, children of pre-school and school age are provided with stimulation very much akin to what European children might experience in an urban environment. Being urban and frequenting the 'jardin d'enfants' for at least one year, the sample of children of the present study have, on the whole, no difficulty in detecting, recognizing and identifying most elements in the experimental pictures.

In Deregowsky (1968a) a distinction is made of the above skills needed for the perception, understanding and interpretation of visual representations. 'Detection' is the realization that one is not looking at meaningless blotches of paper, but that these, in fact, represent something meaningful. Pictorial 'recognition' means a person can match a picture of an object with the object, and with 'identification', the viewer goes further; he can name the object pictured by the artist and the photographer.

Deregowsky (1968b) showed to a small sample of schoolchildren and a few adults in Zambia, models and photographs of familiar animals (zebra, elephant) and unfamiliar animals (camel, polar bear). The subjects had no trouble in detecting pictures and photographs, but they experienced more difficulty in recognizing unfamiliar animals, especially in matching the photograph image with the solid object. As to the identification of pictorial items, Wober (1975) suggested that, instead of asking children questions which may make them socially uncomfortable, and consequently may result in answers which may not be entirely related to how they actually see the pictures shown by the experimenter, the best way is to devise ingenious experiments, directly related to the subjects' interests. For Wober (1975) the misinterpretation of pictures occurs especially with less educated observers, and with those pictures which involve in general unfamiliar pictorial conventions (such as the horizon line). On the other hand, pictorial cues, according to Van Geert (1983) are part of a system of coherent but impoverished pictorial cues of space which belong to contradictory system of cues, present in the

pictures, between three-dimensional space (to which pictorial cues refer) and two-dimensional space (binocular, kinesthetic and motion cues). And to know how children learn to cope with such a contradiction, a researcher "must not only take into account the child's growing mastery of the 'optical ecology', but also the pedagogical efforts of a culture in which 'looking at pictures' is a very important aspect of everyday life" (Van Geert, 1983, p. 91-92).

The pre-school children in the present study have spent at least one year in the 'jardin d'enfants' (nursery school), and were consequently used to 'looking at pictures', if they were not already used to viewing pictures at home. However, some difficulties in the recognition of pictorial conventions pertaining more to the mastery of the 'optical ecology' in children, were observed in some subjects.

A 5-year-old girl interpreted a contour of a line of trees supposed to be a wood and coloured in green, in the sixth picture of the two-dimensional category, as a 'mountain'. She continued her interpretation of the picture (after the experimenter had given her the right interpretation of the green contour as being tree shown in perspective) like this:

A = "mountain, always the paper..."[?] [was she trying to say that in the paper mountains are always drawn like that?]

F (another 5-year-old girl) = "but they are not like this, euh..."

E = "What's that they have not, F...?"

F = "this" [pointing to the ground, in the picture]

A = "the ground, the grass"

E = "the grass [the green colour of the grass was of a different hue than the green of the contour of trees]."

If the colour is the source of the misinterpretation of a line of trees, in another picture of the two-dimensional category, the misinterpretation was due, apparently, to a not yet familiar pictorial convention to 5-year-olds: the representation of a person 'behind' an object. In the picture, a woman was shown pushing a pram in which there was a small child. Represented, front view, the woman's feet were not seen in the picture. A 5-year-old boy, Y, said about this picture that the woman is "above him, and she is sitting". For Y, the woman was "above him" as if she was standing up on the back of the pram. A conventional interpretation of this representation would have been done according to the other 'cues concurring to the overall interpretation of the situation: two other girls were accompanying the woman and were depicted stretching on their feet, on a green ground. The interpretation is therefore that they are all walking in a park.

Such 'errors' in the recognition of a composite of cues representing movement or depth in the artist's view, are partly due to the attention the child gives to constructing a dramatic (effective) account of what the picture shows him.

In Hudson' (1967) and Mundy-Castle (1966)' studies of visual representation, subjects (primary school children in Africa) have named a

line which was intended to be the outline of a hill, as a snake, and a road drawn as receding into the distance, has been called 'poles', or a ladder, or an elephant trap. And in the present study, again the same types of 'errors' in interpretation were done by some 5-year-olds. Thus, L, a 5-year-old boy, said about a barrier - in the 3-D category of pictures - which separated the railway tracks from a road, the tracks cutting through that road, that it was a 'bridge'. L, as some other 5-year-olds in the sample, could have taken the road for a stream. The same child had difficulties in interpreting the conventions of showing perspective and distance in the pictures, and in talking about a lorry set against a green roadside, said that "the big lorry" was in "a garden".

In the picture, the perspective drawing sets the lorry, which is on a bridge at the left of the picture, against the green roadside with some bushes and small trees in view behind the lorry. With the same types of pictures, using depth perception, horizon line, as with Hudson's test (1967), some workers (Kilbride, Robins and Freeman, 1968) showed that perspective cue is significantly correlated with educational experience. In such tests, subjects are usually asked to interpret pictorial depth between separate objects. All the above named researchers noted that the correct identification of tri-dimensional objects, represented in pictures two-dimensionally, and the inference of the distances between objects (and the relative size of far and near objects) is a matter of specifically directed education. On the other hand, for some psychologists (Hagen, 1976; Van Geert, 1983), it is not until 12 years that children fully acquire the picture concept, though it is now commonly recognized that children, as

early as 3 years of age, manifest an ability to watch and understand pictures. But the recognition and identification of depicted objects in natural circumstances (such as watching picture books), for young children, is not like the recognition of otherwise very impoverished and abstracted pictures of objects of the three-dimensional space, as those represented in some experimental tasks. The first task (i.e. looking at picture books, and recognition and identification of objects in picture books) is comparatively easier than the second (e.g. estimation of distance and size of, say, geometrical forms), because of less ambiguity of the perceptual information in the first task.

The conclusion of a theoretical study of the development of picture perception (P. Van Geert, 1983), is that researchers in this particular field should take into consideration the *functionality of the picture*, which turns around the picture as a composite of actions expressing the purpose and meaning of picture making and use. If such a functional value has been hidden or is not known, then the results of experimental studies will not tell much about perception.

In the next section, there will be an attempt to summarize the findings of the present study, and in the conclusion an appreciation of the meaning of the present approach and findings, finally ending up by asking some questions on the future of developmental research on aspects of language use in young children.

8.2. Summary and conclusion

Overall, the results of the present study, together with examples from experimental data, indicate that the function of the definite article may initially be predominantly exophoric or deictic, in as much as this function signals a particular object or the actions of one salient object singled out from a group of others in the extralinguistic context. The results of the first experiment showed that personal pronouns ('I', 'You') are typically 'exophoric', since they refer to aspects of the non-linguistic context, and by contrast 3rd person pronouns ('he', 'she', 'it', 'they') are essentially intralinguistic or cohesive. Similarly, in the second experiment, the results concerning the definite NP do agree with Karmiloff-Smith's findings about the deictic function of the definite article (which sometimes is used correctly, when the object is alone, and at some other time it is used incorrectly in the instance of a non-specific reference). This, in fact, is quite different from an anaphoric or extralinguistic function: it grew out from the present data that the apparently correct use of the definite NP is tied to situationally introduced referent, and that it is not, in fact, truly anaphoric.

On the other hand, according to the results of some researchers (Tanz, 1977; Maratsos, 1976), children can differentiate definite from indefinite reference to some extent reasonably early, though it might take some time for that differentiation to become reliable for an adult listener. For some other researchers (Karmiloff-Smith, 1977; 1979; Warden, 1976; Hickmann, 1985; and the present study), cohesive uses and interpretation

of referring expressions are a relatively late development, and early definite reference (i.e. early use of the definite article) is exophoric rather than anaphoric. To illustrate this, in the interpretation of the results of the second experiment of the present study, a tendency was found in the 5-year-olds to describe and identify mainly animate human beings (depicted in the pictures), and this was done with an incoherent use of intralinguistic means (i.e., 3rd person pronouns and possessives). On the other hand 3rd person use was essentially exophoric (referent physically present, i.e. in the pictures they have in front of them). The general discussion of the second experiment emphasized the fact that children's earliest uses of definite reference in general may seem anaphoric, or reference backward, to an adult observer, while this use may actually be exophoric, i.e., reference outward, or essentially referring to something in the extralinguistic environment rather than to something that has been introduced linguistically. In this respect, the findings of the present study are supporting Karmiloff-Smith's (1979) and Warden's (1976) results concerning the 5-year-olds. The results of the present investigation also support partially Hawkins' (1969) results as to the use of exophoric reference for the 4- and 5-year-olds, but disagree with Hawkins' findings that the tendency to use pronouns instead of nouns as heads of a sentence is a characteristic of only the lower-class children, since in the present study this was found invariably at the age of 4 to 5 years in all social classes without distinction.

It was pointed out in the interpretation and in a subsequent discussion of the result of the first experiment that the articles 'a' in the

case of an identifying expression and 'the' in the definite reference, involve a task which is cognitively more demanding than the one implied in naming (nominative function). Naming, it was argued, involves only a grasp of the class membership - an individual class member. Cognitively speaking, the semantic distinction involved in identifying a definite reference requires from the child a specification of the uniqueness of the referent, i.e. the speaker/participant is referring to a particular example(s) of a class of things. Research in this area (Emslie and Stevenson, 1981; Warden, 1976) tends to show that the first use, i.e. naming, is cognitively simpler than the second use, which corresponds to the identification of a definite reference.

One important hypothesis in the present study was that the cohesive uses of referring expressions, and their interpretation and recognition without difficulty by children, are relatively late developments. The results showed that neither the 4-year-olds nor the 5-year-olds in this follow-up study, showed an appropriate use of the definite and indefinite articles. These results seem to be partly due to the children's understanding of the situation in which they find themselves involved (i.e. picture identification and description to the same age partner). Children of the age-range 4-5 years seem to be more sensitive, in such a situation, to the naming function, which mostly involves questions-answers, and these results are also partly due to the difficulty in engaging in real dialogue.

Children seem to ignore the requirements of the dialogue with the same age partner. Real dialogue requires more social awareness of the audience (the partner in this case), and an actual knowledge of its

expectations. This is, in fact, the same requirement, from the children, of an appropriate use of the two articles 'a' and 'the'. For that matter, the speaker-participant is assumed to use a cognitively more demanding capacity than the one for naming, to assess his audience's actual knowledge and probable expectations. And this reflexion is directly related to another question in the formulation of the problem as to the conventions of discourse: is there enough proof of egocentric speech in pre-school children? Studies by Brown (1973), Maratsos (1976), Warden (1976) found that children, when they come to introduce a referent known to themselves but unknown to the listener, use the definite article. It was argued, in these studies, that pre-school children, in general, fail to take into account the listener's knowledge. We stated, throughout the present study, that the first mention of a new referent in a discourse is conventionally accomplished by the use of the indefinite article. Subsequent mention of that referent can then be made by the use of the definite article, since the referent is known to both speaker and listener. This initial inappropriate use of the indefinite article was judged by most researchers in the area of definite reference, as leading to a failure in communication as the listener does not fully understand the intended referent.

For Warden (1976), the acquisition of the function of articles is a slow process, with the final function, i.e. the use of the indefinite article to introduce a new function, appearing around the age of nine years. In Warden's study, if the 5-year-olds can be non-egocentric in their use of referring expressions (e.g. when using demonstratives), they are still

grappling with the implications of non-egocentricity for the use of the articles. And this difficulty was attributed to the dual function of the indefinite (it either indicates an indefinite referent or a specific but previously unidentified referent. In the former function, a speaker need only consult his own knowledge of a referent, in the second, he must take account of his listener's knowledge). And it was suggested in Warden (1976) that pre-school children may be forced to rely on the definite article until they have mastered the identifying function of the indefinite article. The mastery of this function will depend on an awareness of children's audiences' point of view.

The view adopted in the present research, and which was expanded in the theoretical chapters, introduces 'communicative competence' from the perspective of language use. Such a perspective combines different levels of analysis. This includes:

1) the acts (communicative) performed with words,

2) the functions that speech acts and speech events serve to meet the need of indidivuals,

3) the understanding and use of information not explicit in the literal meaning of a meaning (conversational implicative) and presupposition

and, in a little more detail,

4) the necessity for using information from the listener and the context for deciding among alternative forms of messages (e.g. definite and indefinite reference).

An attempt was thus made to explore, from the above perspective, ways in which Algerian children talk about (or describe) objects and objects relations, events, and activities, through language. This is the first attempt to describe some aspects of discourse in Algerian pre-school children, which is made by an investigator who can be presumed to know the culturally appropriate ways of speaking to and interacting with Algerian children, since he is a member of the speech community to which the children belong.

In the experimental procedure of the present research, the situation and the tasks were manipulated in order to create the maximum of opportunity for the children to use certain forms which yield more of a sentential (anaphoric) type of discourse, when talking about the objects, events and relations that the tasks describe.

One important hypothesis in the present research is that, given the situational opportunity (children sitting beside each other) and the nature of the task (quality of the pictures, plus a series of pictures making a coherent whole, and involving human beings participating in action or dialogue), it is possible to trigger the cohesive use of speech in pre-school children.

Conditions were built up in the design of experiments (structured play/free play in the 1st experiment, and tri-dimensional pictures/two-dimensional pictures in the 2nd experiment), in order to create the maximum of contrast between the nature of stimuli (nature of the pictures and their contents) and the type of discourse categories used (definite vs indefinite NP; 1st and 2nd person vs 3rd person; and the demonstrative uses).

The immediate result was that children, in this sample, find it relatively easy to talk about pictures representing animate human beings mostly engaged in actions or in a dialogue.

The results of the first experiment showed a predominant presence of a developmental function (the nominative use of the definite reference, in this case: the indefinite NP) and a consistency in the appearance of such function across categories (the deictic uses) developmentally associated with this function. This developmental function is, in our view, a normal pattern of development, and perhaps the most consistent pattern of development which is reflected in the 4-year-olds in their attempt to recognize the basic functions of the articles. This may be a first step towards the recognition, later on, of the multiple functions or meanings of the articles (c.f. Karmiloff-Smith, 1979).

The results of the 2nd experiment showed that children use longer descriptions in two-D pictures than in tri-D pictures, but with some inconsistencies in the use of the definite NP, and an ambiguous anaphoric use of 3rd person in the presence of many referents.

The findings in the present study show that, in general, there is a tendency, in the pre-school children, to describe and identify persons and objects in more detail when presented with pictures showing essentially animate objects, e.g. persons engaged in actions in the two-D pictures. This was done often with incoherent intralinguistic means (3rd person and possessives), and the 3rd person was mostly after an exophoric type of reference (referring to aspects of the non-linguistic context).

Thus, it appears that 4- and 5-year-olds, in the present study, find some difficulties in using intralinguistic means (i.e. the use of the third person forms in order to create referents in discourse), and difficulties in reporting dialogic events that occurred in another situation — or, in other words, difficulties in using metapragmatic devices.

The present findings are consonant with a current hypothesis in the developmental literature, and which goes back to the work of Brown (1973). This hypothesis states that single forms or words used to talk about events and participants are learned first, while alternative forms (shifting reference) appear later in children's speech because their use, and the rules which underlie them, involve judgement about the situation, the social status of the listener and the needs of the listener.

The closely related hypothesis is that forms or words are intially unifunctional before they become plurifunctional (c.f. Karmiloff-Smith, 1979). And that, in a sense, would help us to understand why deictic use appears before the anaphoric one (c.f. Lyons, 1975, 1977).

We have attempted to show, in this section, how the present research and findings are related to previous works in this area of developmental research, and, at the same time, how it has extended it, in that it is unique in dealing with a particular language, and culture, which have not been studied before in the developing child.

To conclude the present research, we can again point out a criticism levelled at aspects of some other works (Maratsos, 1976; Hawkins, 1969), which is that the production of referring expressions, in Warden (1976) and in the above-named studies, is influenced by context both verbal and non-verbal. The physical presence of both referents and audience may have encouraged the use of definite references, particularly by young children.

The other remark which could be made is that these researchers tend to draw on adult-based conceptual frameworks, i.e. models drawn from the work of grammarians, linguists and/or psychologists, and subsequently children's performances are compared to the adult model. As one recent researcher in the area (Garton, 1983) remarked, to analyze "data from children in terms of the correct or incorrect use of the simple contrast ['the' and 'a'] could lead to the misrepresentation and an underestimation of the child's semantic and pragmatic knowledge" (Garton, 1983, pp. 523-524).

To resume the arguments presented above, the problem which has been tackled so far (is there enough proof of egocentric speech?) is decidedly a function of the approach one adopts, whether to regard the

indefinite and definite articles in terms of contrastive systems (e.g. Brown, 1973; Warden , 1976), or within a broader system of determination (e.g. Karmiloff-Smith, 1977; 1979; Garton, 1983). Thus, drawing on the previous works on the anaphoric use of definite and indefinite reference, and on the basis of the results of the present study, it is current to think that children's difficulties in using definite and indefinite reference can be explained by the complex linguistic analyses required for the appropriate uses - e.g. the anaphoric reference - of the articles and pronouns, rather than to think in terms of 'inability' or 'failure' to take into account the listener's viewpoint or knowledge. In other words, the question is exactly how young children know that the listener's knowledge differed from their own and whether one can say that they could or could not reliably use definite and indefinite articles to reflect their appreciation of the difference. This, perhaps, would require from the researcher in child language to regard the child as an active hypothesis-testing learner of language, which would provide him/her with the possibility of shedding some light on the ways in which children acquire their language by studying the systematicity and regularities the child is imposing on his/her use of articles. Such a possibility would perhaps help us to understand how we should be conducting research into other aspects of language development.

The present investigation of referring expressions was started by the formulation of some questions, within the framework of the hypotheses on which this research is based, and there was an attempt to find some possible answers to those questions, but in the face of the available

evidence about pre-school children's use of referring expressions, and, in general, about some characteristics of children's language use, this study is more likely to end up by posing some questions which are still in need of more probable answers.

First, is it appropriate to hypothesize (this was actually done by De Hart and Maratsos, talking about presuppositional usages, 1984) that the child simply registers a great amount of information about conversational situations, regardless of salience (i.e. saliency of the forms used and aspects of the situation)?

If a developmental relationship could be established between deictic and anaphoric person pronouns (as was discussed so far in the present study), what kind of specific test should one construct, and how could one account for that kind of relationship? On the other hand, if the available data on aspects of language use (presuppositional terms for instance) present scant evidence developmentally, is it because we are still in need of looking at the real roots of the acquisition process?

Many more questions, equally important, on aspects of language use in young children, and in relation to this research and to the development of communication in general, remain to be asked and appropriately formulated, and these will need, in turn, some effective answers.

What was found in the present study of referring expressions in pre-school children is one result, among the hundreds of findings turning around specific but very old questions, which, I hope, would add to the

numerous and rapidly growing building pieces of the edifice of child language.

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APPENDIX

Appendix 1

This appendix contains:

1) raw scores used for the different statistical tests carried out on the data. The calculations of the correlations and intercorrelations and the analysis of covariance being too numerous, only the series of Analysis of Variance, performed on the scores in the two experiments, are included.

2) The calculation of the B's-coefficient for the different groupings of variables.

3) The pictures used in the two experiments of the present study.

Appendix 2

Total speech sample collected for the purpose of the present research. This is contained in two IBM compatible disks.

DESIGN 7 - TWO WAY MIXED DESIGN - B1W.

Dataset: Linguistic Forms

DATA

S	B (REPEATED MEASURES) 1	2
1	4	11
2	22	18
3	6	14
4	8	16
5	3	15
6	2	12
7	7	15
8	7	17
9	6	20
10	0	14
11	4	13
12	15	12
13	4	8
14	4	10
15	4	12
16	3	13
17	2	8
18	3	10
19	1	16
20	3	12
21	2	12
22	4	14
23	2	9
24	5	12
25	4	14
26	9	7
27	25	15
28	20	13
29	18	13
30	11	16
S		
31	1	12
32	2	19
33	4	17
34	4	13
35	8	9
36	7	9
37	4	17
38	13	21
39	0	12
40	2	7
41	15	18
42	3	15
43	2	7
44	4	11
45	4	17
46	5	10

L, F2

47	2	7
48	2	6
49	18	12
50	5	14
51	8	16
52	8	18
53	10	14
54	5	0
55	3	1
56	7	5
57	2	2
58	3	10
59	2	12
60	2	13

ANALYSIS OF VARIANCE TABLE

SOURCE	SS	DF	MS	F
BETWEEN SUBJECTS	1939.42	39		
Main Effect A	55.00	1	55.00	1.91
Error for A	1876.35	58	32.35	
WITHIN SUBJECTS	2509.50	60		
Main Effect B	1261.01	1	1261.01	58.79
Interaction A X B	4.41	1	4.41	0.21
Error for B	1244.08	58	21.45	
Total	4448.93	119		

MEANS

A

Level a 1 Mean = 9.950
Level a 2 Mean = 8.500

B (REPEATED MEASURES)

Level b 1 Mean = 5.983
Level b 2 Mean = 12.467

CELL MEANS

a 1 b 1 = 6.90
a 2 b 1 = 5.07
a 1 b 2 = 13.00

L.F.3

a 2 b 2 = 11.93

Date: 04-06-1990
Time: 13:57:31

DESIGN 11A - THREE WAY ANOVA - MIXED: 1B 2W

Dataset: Common Nouns

DATA

	A		
	1		2
C			
	S		S
B			
1			
1			
	1	0	31	3
	2	2	32	1
	3	3	33	0
	4	2	34	1
	5	6	35	2
	6	7	36	2
	7	1	37	4
	8	5	38	3
	9	0	39	5
	10	1	40	0
	11	7	41	1
	12	4	42	3
	13	2	43	4
	14	1	44	2
	15	1	45	1
	16	1	46	2
	17	2	47	2
	18	2	48	3
	19	2	49	1
	20	2	50	1
	21	0	51	1
	22	8	52	2
	23	5	53	2
	24	0	54	1
	25	0	55	1
	26	2	56	0
	27	2	57	10
	28	1	58	3
	29	2	59	4
	30	1	60	5

2			
	1	1	31	3
	2	0	32	21
	3	1	33	4
	4	2	34	4
	5	0	35	3
	6	0	36	1
	7	1	37	0
	8	8	38	1
	9	0	39	1
	10	1	40	0
	11	8	41	3
	12	2	42	0
	13	1	43	0
	14	0	44	1

Common n.

15	3	45	3
16	4	46	1
17	0	47	0
18	0	48	2
19	16	49	0
20	3	50	1
21	6	51	1
22	0	52	2
23	5	53	0
24	5	54	4
25	3	55	3
26	5	56	9
27	0	57	15
28	2	58	12
29	0	59	14
30	1	60	6

1	11	31	9
2	12	32	7
3	14	33	10
4	11	34	6
5	9	35	10
6	8	36	11
7	10	7	15
8	17	38	17
9	9	39	20
10	6	40	14
11	14	41	11
12	11	42	10
13	7	43	6
14	12	44	8
15	15	45	10
16	7	46	9
17	9	47	7
18	7	48	8
19	6	49	14
20	7	50	10
21	10	51	8
22	0	52	10
23	0	53	8
24	3	54	3
25	2	55	9
26	5	56	4
27	5	57	9
28	13	58	8
29	10	59	14
30	14	60	6

1	1	31	2
2	7	32	11
3	3	33	4
4	2	34	8
5	0	35	2
6	5	36	7
7	1	37	0

Common n.

8	4	38	0
9	3	39	0
10	1	40	0
11	2	41	2
12	2	42	2
13	0	43	0
14	0	44	2
15	12	45	2
16	11	46	6
17	0	47	1
18	0	48	2
19	5	49	2
20	5	50	2
21	6	51	4
22	4	52	6
23	4	53	1
24	0	54	3
25	1	55	5
26	2	56	3
27	1	57	1
28	3	58	3
29	7	59	5
30	0	60	3

Common n. 4

MEANS

FACTOR A

Level	1	Mean =	4.250
Level	2	Mean =	4.983

FACTOR B (REPEATED MEASURES)

Level	1	Mean =	2.992
Level	2	Mean =	6.242

FACTOR C (REPEATED MEASURES)

Level	1	Mean =	6.042
Level	2	Mean =	3.192

MEANS FOR INTERACTIONS

TWO-WAY

AB:

a 1 b 1		Mean =	2.533
a 1 b 2		Mean =	5.967
a 2 b 1		Mean =	3.450
a 2 b 2		Mean =	[illegible]

AC:

a 1 c 1		Mean =	5.650
a 1 c 2		Mean =	2.850
a 2 c 1		Mean =	6.433
a 2 c 2		Mean =	3.533

BC:

b 1 c 1		Mean =	2.867
b 1 c 2		Mean =	[illegible]
b 2 c 1		Mean =	9.417
b 2 c 2		Mean =	3.067

THREE-WAY

ABC:

a 1 b 1 c 1		Mean =	2.500
a 1 b 1 c 2		Mean =	2.567
a 1 b 2 c 1		Mean =	8.800
a 1 b 2 c 2		Mean =	3.133
a 2 b 1 c 1		Mean =	2.833
a 2 b 1 c 2		Mean =	4.067
a 2 b 2 c 1		Mean =	10.033
a 2 b 2 c 2		Mean =	3.000

ANALYSIS OF VARIANCE TABLE

SOURCE	SS	DF	MS	
BETWEEN SUBJECTS	910.73	59		
Main Effect A	32.27	1	32.27	2.13
Error for A	878.47	58	15.15	

Common n. 5

WITHIN SUBJECTS	3880.00	180		
Main Effect B	633.75	1	633.75	55.09
Interaction A x B	2.02	1	2.02	0.18
Error for B	667.23	58	11.50	
Main Effect C	487.35	1	487.35	29.90
Interaction A x C	0.15	1	0.15	0.01
Error for C	945.50	58	16.30	
Interaction B x C	735.00	1	735.00	110.75
Interaction ABC	24.07	1	24.07	3.63
Error for BC	384.93	58	6.64	
Total	4790.73	239		

Date: 04-06-1990
Time: 14:23:16

DESIGN 11A - THREE WAY ANOVA - MIXED: 1B 2W

Dataset: Pronouns

DATA

	A			
	1		2	
	C			
	S		S	
B				
1				
	1			
	1	5	31	13
	2	5	32	16
	3	9	33	18
	4	7	34	17
	5	31	35	18
	6	15	36	18
	7	9	37	8
	8	10	38	5
	9	0	39	10
	10	0	40	11
	11	12	41	14
	12	21	42	13
	13	12	43	17
	14	10	44	16
	15	12	45	16
	16	3	46	10
	17	1	47	10
	18	1	48	4
	19	0	49	5
	20	11	50	23
	21	12	51	27
	22	2	52	12
	23	2	53	16
	24	0	54	0
	25	0	55	1
	26	18	56	27
	27	17	57	28
	28	4	58	18
	29	1	59	17
	30	8	60	2
	2			
	1	1	31	1
	2	0	32	2
	3	0	33	9
	4	0	34	7
	5	0	35	0
	6	0	36	6
	7	1	37	5
	8	7	38	3
	9	1	39	3
	10	3	40	5
	11	0	41	0
	12	0	42	0
	13	4	43	0
	14	3	44	2

15	7	45	0
16	0	46	0
17	3	47	0
18	1	48	0
19	8	49	0
20	4	50	1
21	0	51	1
22	0	52	2
23	3	53	6
24	2	54	6
25	4	55	15
26	15	56	6
27	3	57	6
28	10	58	7
29	4	59	5
30	5	60	29

2

1

1	0	31	0
2	0	32	0
3	0	33	1
4	1	34	2
5	11	35	1
6	5	36	1
7	5	37	0
8	3	38	0
9	0	39	1
10	0	40	0
11	1	41	0
12	0	42	0
13	1	43	0
14	2	44	1
15	7	45	3
16	2	46	0
17	0	47	0
18	6	48	8
19	1	49	4
20	2	50	1
21	2	51	2
22	0	52	0
23	6	53	2
24	6	54	2
25	5	55	1
26	0	56	2
27	1	57	4
28	5	58	0
29	0	59	1
30	7	60	9

2

1	2	31	1
2	4	32	1
3	0	33	8
4	0	34	11
5	0	35	0
6	0	36	2
7	2	37	5

8	10	38	5
9	5	39	2
10	1	40	12
11	0	41	0
12	0	42	4
13	2	43	0
14	2	44	6
15	7	45	7
16	0	46	0
17	1	47	1
18	5	48	0
19	1	49	0
20	3	50	4
21	0	51	1
22	0	52	15
23	7	53	10
24	2	54	15
25	14	55	13
26	12	56	15
27	3	57	15
28	2	58	5
29	5	59	3
30	6	60	9

MEANS

FACTOR A

Level 1 Mean = 4.233
Level 2 Mean = 6.325

FACTOR B (REPEATED MEASURES)

Level 1 Mean = 7.275
Level 2 Mean = 3.283

FACTOR C (REPEATED MEASURES)

Level 1 Mean = 6.467
Level 2 Mean = 4.092

MEANS FOR INTERACTIONS

TWO-WAY

AB:

a 1 b 1 Mean = 5.550
a 1 b 2 Mean = 2.917
a 2 b 1 Mean = 9.000
a 2 b 2 Mean = 3.650

AC:

a 1 c 1 Mean = 5.333
a 1 c 2 Mean = 3.133
a 2 c 1 Mean = 7.600
a 2 c 2 Mean = 5.050

BC:

b 1 c 1	Mean =	10.850
b 1 c 2	Mean =	3.700
b 2 c 1	Mean =	2.083
b 2 c 2	Mean =	4.483

THREE-WAY

ABC:

a 1 b 1 c 1	Mean =	5.033
a 1 b 1 c 2	Mean =	3.067
a 1 b 2 c 1	Mean =	2.633
a 1 b 2 c 2	Mean =	3.200
a 2 b 1 c 1	Mean =	13.667
a 2 b 1 c 2	Mean =	4.333
a 2 b 2 c 1	Mean =	1.533
a 2 b 2 c 2	Mean =	5.767

ANALYSIS OF VARIANCE TABLE

SOURCE	SS	DF	MS	F
BETWEEN SUBJECTS	2167.05	59		
Main Effect A	262.50	1	262.50	7.99
Error for A	1904.54	58	32.84	
WITHIN SUBJECTS	7445.25	180		
Main Effect B	956.00	1	956.00	55.39
Interaction A x B	110.70	1	110.70	6.41
Error for B	1001.04	58	17.26	
Main Effect C	338.44	1	338.44	9.71
Interaction A x C	1.84	1	1.84	0.05
Error for C	2021.48	58	34.85	
Interaction B x C	1368.04	1	1368.04	56.45
Interaction ABC	242.00	1	242.00	9.99
Error for BC	1405.71	58	24.24	
Total	9612.30	239		

Date: 04-06-1990
Time: 14:53:04

DESIGN 11A - THREE WAY ANOVA - MIXED: 1B 2W

Dataset: Indexical Functions

DATA

	A			
	1		2	
	C			
	S		S	
B				
1				
	1			
	1	0	31	3
	2	1	32	0
	3	2	33	2
	4	0	34	1
	5	16	35	4
	6	5	36	2
	7	4	37	1
	8	5	38	2
	9	0	39	5
	10	0	40	2
	11	1	41	0
	12	0	42	1
	13	1	43	7
	14	2	44	1
	15	3	45	4
	16	7	46	0
	17	4	47	2
	18	3	48	20
	19	11	49	35
	20	3	50	5
	21	1	51	9
	22	2	52	0
	23	7	53	1
	24	9	54	3
	25	5	55	4
	26	6	56	4
	27	2	57	4
	28	0	58	9
	29	10	59	9
	30	17	60	0
2				
	1	2	31	0
	2	8	32	0
	3	0	33	0
	4	0	34	0
	5	0	35	0
	6	0	36	2
	7	0	37	0
	8	2	38	0
	9	5	39	0
	10	3	40	1
	11	0	41	0
	12	0	42	1
	13	0	43	0
	14	0	44	1

15	1	45	4
16	7	46	0
17	0	47	4
18	2	48	0
19	0	49	0
20	2	50	0
21	0	51	3
22	0	52	0
23	0	53	0
24	2	54	4
25	0	55	3
26	12	56	5
27	0	57	0
28	17	58	1
29	0	59	2
30	1	60	5

2

1

1	0	31	0
2	1	32	0
3	0	33	15
4	1	34	5
5	0	35	5
6	0	36	1
7	5	37	0
8	0	38	0
9	0	39	1
10	0	40	1
11	0	41	0
12	1	42	1
13	0	43	2
14	0	44	1
15	2	45	2
16	0	46	3
17	0	47	3
18	6	48	1
19	5	49	1
20	1	50	5
21	1	51	3
22	0	52	0
23	0	53	0
24	2	54	0
25	1	55	0
26	0	56	6
27	3	57	4
28	5	58	3
29	3	59	1
30	4	60	0

2

1	6	31	0
2	0	32	0
3	0	33	2
4	0	34	0
5	0	35	0
6	0	36	0
7	0	37	0

8	0	38	0
9	0	39	0
10	0	40	4
11	0	41	0
12	2	42	0
13	0	43	0
14	0	44	0
15	0	45	0
16	0	46	0
17	0	47	1
18	0	48	0
19	0	49	0
20	3	50	0
21	0	51	0
22	0	52	0
23	0	53	0
24	0	54	2
25	0	55	1
26	0	56	1
27	2	57	2
28	1	58	0
29	1	59	0
30	2	60	2

MEANS

FACTOR A

Level 1 Mean = 2.225
Level 2 Mean = 2.167

FACTOR B (REPEATED MEASURES)

Level 1 Mean = 3.225
Level 2 Mean = 1.167

FACTOR C (REPEATED MEASURES)

Level 1 Mean = 3.292
Level 2 Mean = 1.100

MEANS FOR INTERACTIONS

TWO-WAY

AB:

a 1 b 1 Mean = 3.483
a 1 b 2 Mean = 0.967
a 2 b 1 Mean = 2.967
a 2 b 2 Mean = 1.367

AC:

a 1 c 1 Mean = 3.100
a 1 c 2 Mean = 1.350
a 2 c 1 Mean = 3.483
a 2 c 2 Mean = 0.850

BC:

b 1 c 1	Mean =	4.783
b 1 c 2	Mean =	1.667
b 2 c 1	Mean =	1.800
b 2 c 2	Mean =	0.533

THREE-WAY

ABC:

a 1 b 1 c 1	Mean =	4.833
a 1 b 1 c 2	Mean =	2.133
a 1 b 2 c 1	Mean =	1.367
a 1 b 2 c 2	Mean =	0.567
a 2 b 1 c 1	Mean =	4.733
a 2 b 1 c 2	Mean =	1.200
a 2 b 2 c 1	Mean =	2.233
a 2 b 2 c 2	Mean =	0.500

ANALYSIS OF VARIANCE TABLE

SOURCE	SS	DF	MS	F
BETWEEN SUBJECTS	737.55	59		
Main Effect A	0.20	1	0.2[illegible]	0.02
Error for A	737.34	58	12.7[illegible]	
WITHIN SUBJECTS	3000.25	180		
Main Effect B	254.20	1	254.20	20.91
Interaction A x B	12.60	1	12.60	1.04
Error for B	704.94	58	12.15	
Main Effect C	286.20	1	288.20	15.64
Interaction A x C	11.70	1	11.70	0.76
Error for C	996.84	58	15.46	
Interaction B x C	51.34	1	51.34	3.82
Interaction ABC	0.04	1	0.04	0.00
Error for BC	780.38	58	13.45	
Total	3737.80	239		

Date: 04-06-1990
Time: 14:37:44

Def. x Ind. Npp + 3rd p. x demonstratives (two-1) and two-1) pictures).

Def. x Ind Demonstratives (tri-one pictures)

TWO WAY ANOVA

REPEATED MEASURES ON BOTH FACTORS

DATA

	A			
	1	2	3	4
B				
1				
S				
1	12	5	11	12
2	9	15	3	12
3	8	10	12	17
4	22	7	28	14
5	14	14	5	8
6	20	19	6	5
7	7	13	7	6
8	11	11	4	12
9	8	5	7	3
10	22	11	17	3
11	3	9	2	0
12	37	10	11	12
13	3	7	6	6
14	6	7	9	3
15	7	13	4	22
16	14	7	5	25
17	22	3	13	23
18	13	3	15	18
19	11	9	5	0
20	5	5	2	1
21	16	15	14	8
22	7	4	4	0
23	22	4	11	16
24	16	6	12	13
25	11	16	17	6
26	18	8	18	8
27	3	11	4	7
28	10	5	5	11
29	16	7	13	15
30	6	10	4	9
31	16	9	4	5
32	12	8	7	11
33	3	12	3	0
34	6	7	7	10
35	16	19	5	5
36	11	13	2	10
37	7	5	17	6
38	10	6	31	14
39	13	26	10	21
40	24	19	16	5

45	27	12	19	9
46	4	13	3	4
47	36	9	11	20
48	39	12	18	21
49	4	8	2	2
50	13	9	4	10

2

S				
1	7	6	4	25
2	10	16	6	19
3	18	8	33	24
4	13	6	28	21
5	11	20	8	7
6	11	27	17	18
7	13	21	19	27
8	9	11	9	20
9	7	8	7	6
10	17	10	17	18
11	1	10	8	8
12	26	17	13	12
13	27	2	22	21
14	13	2	11	11
15	13	10	9	11
16	18	11	24	29
17	22	11	37	13
18	30	12	31	27
19	19	13	12	11
20	16	12	5	10
21	11	8	11	10
22	8	12	7	15
23	18	9	18	23
24	15	12	10	11
25	16	14	17	11
26	31	15	26	27
27	4	6	10	8
28	9	6	11	14
29	4	1	4	1
30	2	6	1	3
31	16	6	17	15
32	7	14	13	22
33	0	7	3	7
34	3	3	13	7
35	20	17	14	20
36	15	15	12	19
37	23	11	32	16
38	13	12	11	10
39	9	22	6	15
40	10	24	14	6
41	12	19	7	22
42	14	8	6	22
43	14	25	9	15
44	18	18	12	15
45	33	20	22	15
46	16	10	8	7
47	18	19	16	13
48	23	16	19	17
49	4	6	4	5
50	8	7	11	3

THE MEANS ARE AS FOLLOWS:

Two-Way ANOVA (continued).

The means are as follows:
Treatment A
Level 1 Mean = 14.02
Level 2 Mean = 10.93
Level 3 Mean = 11.38
Level 4 Mean = 12.24

Treatment B
Level 1 Mean = 10.73
Level 2 Mean = 13.56

F Table

The signs '*', '$' and '£' indicate the three pairs of mean squares to be compared.

Source	SS	DF		MS	F
A	558.61	3	*	186.2	3.87
B	803.72	1	$	803.72	15.89
A x B	421.53	3	£	140.51	6.85
SUBS	7318	49			
A x S	7079.77	147	*	48.16	
B x S	2478.91	49	$	50.59	
AxBxS	3016.34	147	£	20.52	
TOTAL	21676.88	399			

FACTOR ANALYSIS: Holzinger's B Coefficient

Calculations of B Coefficient.

Formula: $BC_j = 200\ (n\text{-}v)S/(v\text{-}1)T$

G_1
Variables

a) (7,8)

$B = 200\ (16 - 2)\ (0.6514) / (2 - 1)\ (6.1554)$
$= 296.31$
$= 296$

b) (7,8,2)

$B = 200\ (16 - 3)\ (1.7489) / (3 - 1)\ (7.227)$
$= 314.15$
$= 314$

c) (7,8,2,1)

$B = 200\ (16 - 4)\ (3.1785) / (4 - 1)\ (7.4915)$
$= 339.42$
$= 339$

d) (7,8,2,1,6)

$B = 200\ (16 - 5)\ (4.6686) / (5 - 1)\ (7.9166)$
$= 324.34$
$= 324$

G_2
Variables

a) (15,11)

$B = 200\ (16 - 2)\ (0.4904) / (2 - 1)\ (4.2854)$
$= 320.41$
$= 320$

b) (15, 11, 13)

$B = 200\ (16 - 3)\ (1.3245) / (3 - 1)\ (5.1477)$
$= 334.48$
$= 334$

c) (15,11,13,9) B = 200 (16 - 4) (2.5426) / (4 - 1) (5.5371)
= 367.35
= 367

G3
Variables

a) (3,11) B = 200 (16 - 2) (0.6935) / (2 - 1) (4.3705)
= 444.23
= 444

b) (3,11,15) B = 200 (16 - 3) (1.642) / (3 - 1) (4.3073)
= 495.57
= 496

c) (3,11,15,9) B = 200 (16 - 4) (2.9317) / (4 - 1) (4.5535)
= 515.06
= 515

G_4
Variables

a) (7,5) B = 200 (16 - 2) (0.6433) / (2 - 1) (4.0509)
= 444.65
= 445

b) (7,5,2) B = 200 (16 - 3) (1.6967) / (3 - 1) (5.2207)
= 422.49
= 422

c) (7,5,2,8) B = 200 (16 - 4) (3.1537) / (4 - 1) (5.5658)
= 453.29
= 453

G_5
Variables

a) (1,7) B = 200 (16 - 2) (0.5861) / (2 - 1) (6.1406)
= 267.25
= 267

b) (1,7,2) B = 200 (16 - 3) (1.634) / (3 - 1) (7.3214)
= 290.13
= 290

c) (1,7,2,6) B = 200 (16 - 4) (2.8521) / (4 - 1) (8.2915)
= 275.18
= 275

G6
Variables

a) (6,2) B = 200 (16 - 2) (0.5159) / (2 - 1) (5.6511)
= 255.61
= 256

b) (6,2,1) B = 200 (16 - 3) (1.3641) / (3 - 1) (7.0684)
= 250.88
= 251

c) (6,2,1,8) B = 200 (16 - 4) (2.5292) / (4 - 1) (7.9963)
= 253.03
= 253

G_7
Variables

a) (1,2) $B = 200\ (16 - 2)\ (0.4811) / (2 - 1)\ (5.4281)$
$= 248.16$
$= 248$

b) (1,2,8) $B = 200\ (16 - 3)\ (1.3742) / (3 - 1)\ (6.901)$
$= 258.86$
$= 259$

c) (1,2,8,4) $B = 200\ (16 - 4)\ (2.3986) / (4 - 1)\ (7.546)$
$= 284.08$
$= 284$

d) (1,2,8,4,6) $B = 200\ (16 - 5)\ (3.6922) / (5 - 1)\ (7.5737)$
$= 268.12$
$= 268$

G_8
Variables

a) (10,14) $B = 200\ (16 - 2)\ (0.3773) / (2 - 1)\ (3.2476)$
$= 325.90$
$= 326$

b) (10,14,16) $B = 200\ (16 - 3)\ (0.8142) / (3 - 1)\ (3.3048)$
$= 320.27$
$= 320$

Experiment I: Anova Two-way (2B)

Error Scores (Scores: arc sine transformations for proportion)

	def. NP		2nd NP		3rd p.		demonstratives	
SP	S_1	.6094	S_1	1.37	S_1	.26	S_1	.42
	S_2	.54	S_2	1.09	S_2	.29	S_2	.29
	S_3	.6094	S_3	1.37	S_3	.26	S_3	.42
	S_4	.33	S_4	1.34	S_4	.57	S_4	.67
	S_5	.64	S_5	1.09	S_5	.49	S_5	.64
	S_6	.44	S_6	.95	S_6	.38	S_6	.44
	S_7	.54	S_7	1.30	S_7	.38	S_7	.85
	S_8	.45	S_8	1.32	S_8	.58	S_8	.57
	S_9	.57	S_9	1.93	S_9	.97	S_9	.32
	S_{10}	.64	S_{10}	1.95	S_{10}	.49	S_{10}	.82
	S_{11}	.59	S_{11}	1.51	S_{11}	.41	S_{11}	.85
	S_{12}	.77	S_{12}	.71	S_{12}	.33	S_{12}	.45
	S_{13}	.59	S_{13}	1.14	S_{13}	.70	S_{13}	.79
	S_{14}	.28	S_{14}	.88	S_{14}	.28	S_{14}	.28
	S_{15}	.57	S_{15}	1.57	S_{15}	.57	S_{15}	.57
	S_{16}	.29	S_{16}	2.02	S_{16}	.49	S_{16}	.49
FP	S_1	.42	S_1	.87	S_1	.87	S_1	.42
	S_2	.54	S_2	.54	S_2	1.59	S_2	.29
	S_3	.42	S_3	.87	S_3	.87	S_3	.42
	S_4	.24	S_4	.45	S_4	.90	S_4	.67
	S_5	.37	S_5	1.02	S_5	.64	S_5	.49
	S_6	.53	S_6	.70	S_6	.53	S_6	1.36
	S_7	.97	S_7	1.97	S_7	.54	S_7	.25
	S_8	.70	S_8	.70	S_8	.92	S_8	.58
	S_9	.45	S_9	.45	S_9	.97	S_9	.73
	S_{10}	1.64	S_{10}	.57	S_{10}	.95	S_{10}	.41
	S_{11}	.59	S_{11}	.59	S_{11}	.26	S_{11}	.26
	S_{12}	1.02	S_{12}	.57	S_{12}	1.04	S_{12}	.53
	S_{13}	.73	S_{13}	.49	S_{13}	.70	S_{13}	.26
	S_{14}	1.22	S_{14}	.28	S_{14}	1.22	S_{14}	1.22
	S_{15}	.57	S_{15}	.57	S_{15}	.57	S_{15}	.26
	S_{16}	.49	S_{16}	.49	S_{16}	.29	S_{16}	.29

Experiment II: Anova Two-way (2B)

Error Scores (Scores: arc sine transformations for proportion)

	def. NP		2nd NP		3rd p.		demonstratives	
Tri-D	S_1	.45	S_1	.67	S_1	.49	S_1	.45
	S_2	.92	S_2	.90	S_2	.49	S_2	.45
	S_3	.45	S_3	.67	S_3	.49	S_3	.45
	S_4	.44	S_4	.87	S_4	.49	S_4	.64
	S_5	.60	S_5	.60	S_5	.73	S_5	.45
	S_6	.87	S_6	.76	S_6	.79	S_6	.45
	S_7	.82	S_7	.60	S_7	.40	S_7	.57
	S_8	.70	S_8	.53	S_8	.53	S_8	.08
	S_9	.57	S_9	.70	S_9	.40	S_9	.73
	S_{10}	.82	S_{10}	.57	S_{10}	.37	S_{10}	.26
	S_{11}	.85	S_{11}	.49	S_{11}	.70	S_{11}	.73
	S_{12}	.85	S_{12}	.60	S_{12}	.76	S_{12}	.31
	S_{13}	.70	S_{13}	.57	S_{13}	.53	S_{13}	.60
	S_{14}	.64	S_{14}	.70	S_{14}	.70	S_{14}	.85
	S_{15}	.76	S_{15}	.40	S_{15}	.73	S_{15}	.76
	S_{16}	1.04	S_{16}	.53	S_{16}	.57	S_{16}	.53
Two-D	S_1	.67	S_1	.87	S_1	.85	S_1	1.02
	S_2	.67	S_2	1.09	S_2	.85	S_2	.87
	S_3	.67	S_3	.87	S_3	.85	S_3	1.02
	S_4	.76	S_4	1.04	S_4	.64	S_4	.60
	S_5	.73	S_5	.79	S_5	.73	S_5	.70
	S_6	.76	S_6	.73	S_6	.79	S_6	.64
	S_7	.76	S_7	1.04	S_7	.60	S_7	.79
	S_8	.76	S_8	.95	S_8	.70	S_8	1.07
	S_9	.64	S_9	.70	S_9	.64	S_9	1.00
	S_{10}	1.11	S_{10}	.95	S_{10}	.57	S_{10}	.87
	S_{11}	.79	S_{11}	.70	S_{11}	.64	S_{11}	.67
	S_{12}	.76	S_{12}	.67	S_{12}	.76	S_{12}	.79
	S_{13}	.53	S_{13}	.79	S_{13}	.76	S_{13}	1.00
	S_{14}	.45	S_{14}	.45	S_{14}	1.00	S_{14}	.70
	S_{15}	.57	S_{15}	.53	S_{15}	.40	S_{15}	1.15
	S_{16}	.90	S_{16}	.70	S_{16}	.60	S_{16}	.60

tri-D = tri-dimensional pictures

two-D = two-dimensional pictures

Experiment I.

Two-Way ANOVA with replication, eq groups.

Dataset: error analysis

B	A			
1				
	.45	.67	.49	.45
	.92	.9	.49	.45
	.45	.67	.49	.45
	.44	.87	.49	.64
	.6	.6	.73	.45
	.87	.76	.79	.45
	.32	.6	.4	.57
	.7	.53	.53	.38
	.7	.7	.4	.73
	.57	.57	.37	.26
	.82	.49	.7	.73
	.85	.6	.76	.31
	.7	.57	.53	.6
	.64	.7	.7	.85
	.76	.49	.73	.76
	1.04	.53	.57	.53
2				
	.67	.87	.85	1.02
	.67	1.09	.85	.87
	.67	.87	.85	1.02
	.76	1.04	.64	.6
	.73	.73	.73	.7
	.76	.73	.79	.64
	.76	1.04	.6	.79
	.76	.95	.7	1.07
	.64	.7	.64	1
	1.11	.95	.57	.87
	.79	.7	.64	.67
	.76	.67	.76	.79
	.53	.79	.76	1
	.45	.45	1	.7
	.57	.53	.4	1.15
	.9	.7	.6	.6

The Means of LEVELS for A and B are as follows:

Variable A:

Level 1 : Mean = .71
Level 2 : Mean = .72
Level 3 : Mean = .64
Level 4 : Mean = .68

Variable B:

Level 1 : Mean = .61
Level 2 : Mean = .77

The Means of Cells, pAqB, are:

Cell: p 1 q 1 : Mean = .71
Cell: p 1 q 2 : Mean = .72
Cell: p 2 q 1 : Mean = .64
Cell: p 2 q 2 : Mean = .8
Cell: p 3 q 1 : Mean = .57
Cell: p 3 q 2 : Mean = .71
Cell: p 4 q 1 : Mean = .52
Cell: p 4 q 2 : Mean = .84

ANALYSIS OF VARIANCE TABLE

SOURCE	SS	DF	MS	F
Main Effect A	0.13	3	0.04	1.58
Main Effect B	0.81	1	0.81	30.07
Interaction A X B	0.39	3	0.13	4.83
Error (Within Cells)	3.25	120	0.03	
Total	4.59	127		

Date: 10-02-1990
Time: 11:43:02

Experiment II

Two-Way anova with replication, equal group.

Dataset: error analysis

B	A			
1				
	.45	.67	.49	.45
	.32	.9	.49	.45
	.45	.67	.49	.45
	.44	.87	.49	.64
	.6	.6	.73	.45
	.87	.76	.79	.45
	.82	.6	.4	.57
	.7	.53	.53	.08
	.7	.7	.4	.73
	.57	.57	.37	.26
	.32	.49	.7	.73
	.85	.6	.76	.31
	.7	.57	.53	.6
	.64	.7	.7	.85
	.76	.49	.73	.76
	1.04	.53	.57	.53
2				
	.67	.87	.85	1.02
	.67	1.09	.85	.87
	.67	.87	.85	1.02
	.76	1.04	.64	.6
	.73	.79	.73	.7
	.76	.73	.79	.64
	.76	1.04	.6	.79
	.76	.95	.7	1.07
	.64	.7	.64	1
	1.11	.95	.57	.87
	.79	.7	.64	.67
	.76	.67	.76	.79
	.53	.79	.76	1
	.45	.45	1	.7
	.57	.53	.4	1.15
	.9	.7	.6	.6

The Means of LEVELS for A and B are as follows:

Variable A:

Level 1 : Mean = .71
Level 2 : Mean = .72
Level 3 : Mean = .64
Level 4 : Mean = .68

Variable B:

Level 1 : Mean = .61
Level 2 : Mean = .77

The Means of Cells, pAqB, are:

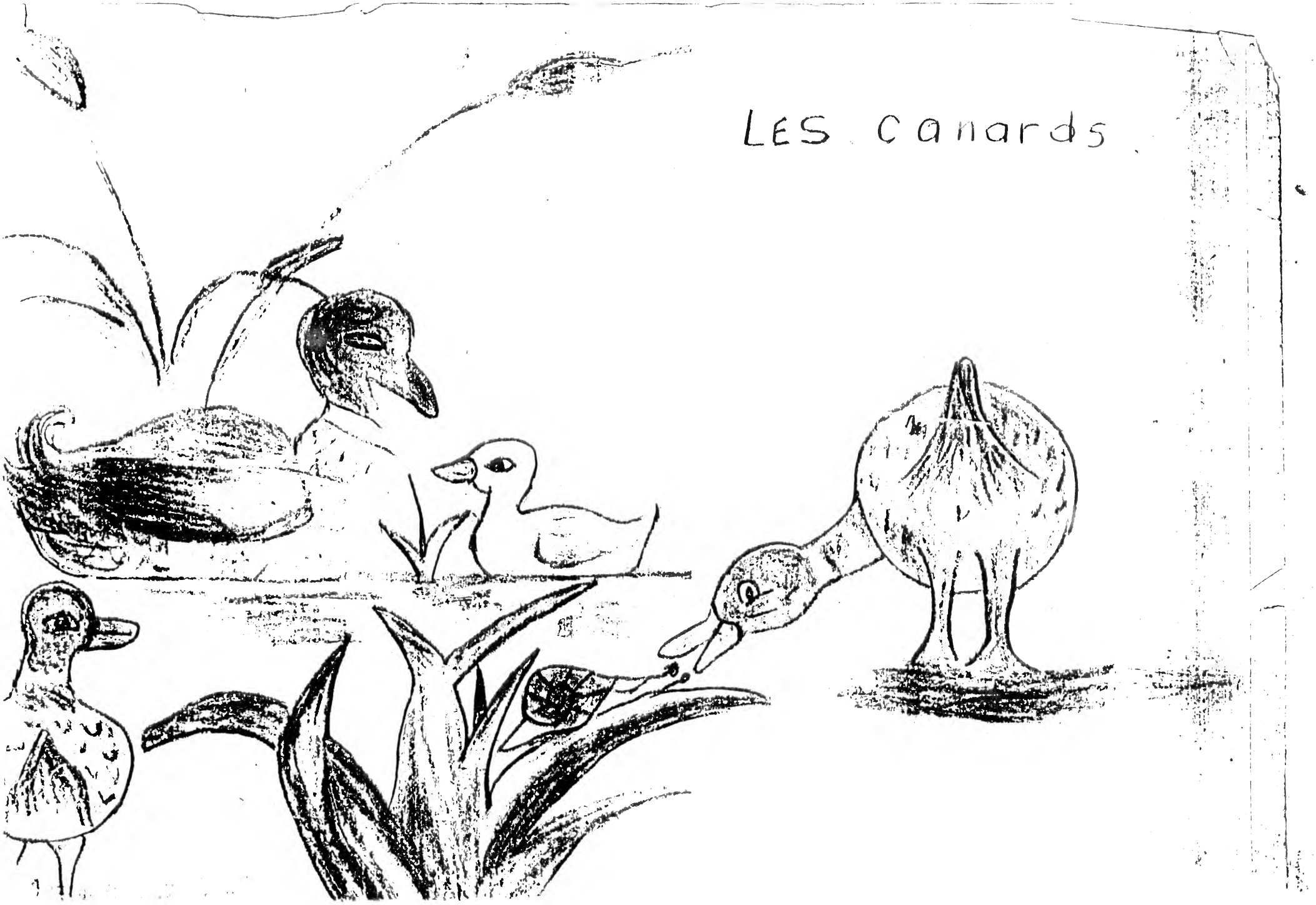
Cell: p 1 q 1 : Mean = .71
Cell: p 1 q 2 : Mean = .72
Cell: p 2 q 1 : Mean = .64
Cell: p 2 q 2 : Mean = .8
Cell: p 3 q 1 : Mean = .57
Cell: p 3 q 2 : Mean = .71
Cell: p 4 q 1 : Mean = .52
Cell: p 4 q 2 : Mean = .84

ANALYSIS OF VARIANCE TABLE

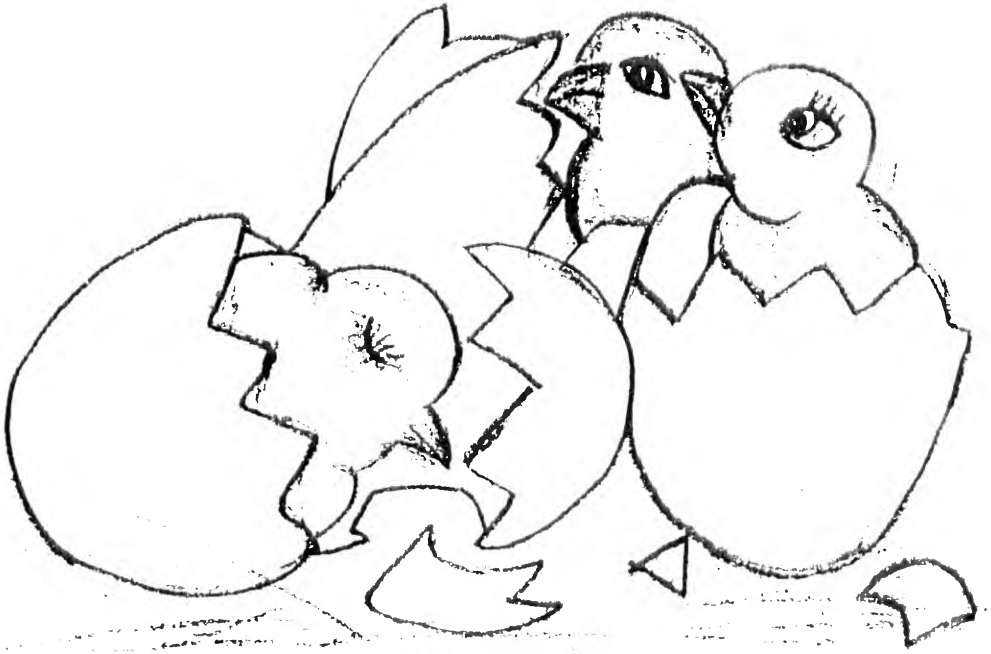
SOURCE	SS	DF	MS	F
Main Effect A	0.13	3	0.04	1.58
Main Effect B	0.81	1	0.81	30.07
Interaction A X B	0.39	3	0.13	4.83
Error (Within Cells)	3.25	120	0.03	
Total	4.59	127		

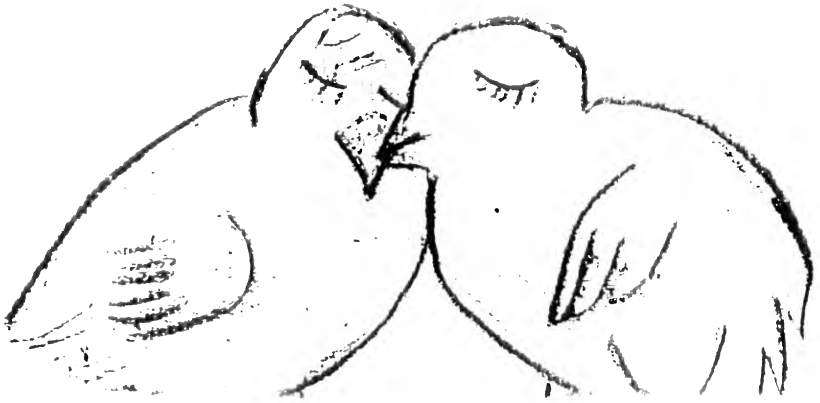
Date: 10-02-1990
Time: 11:43:02

Les canards

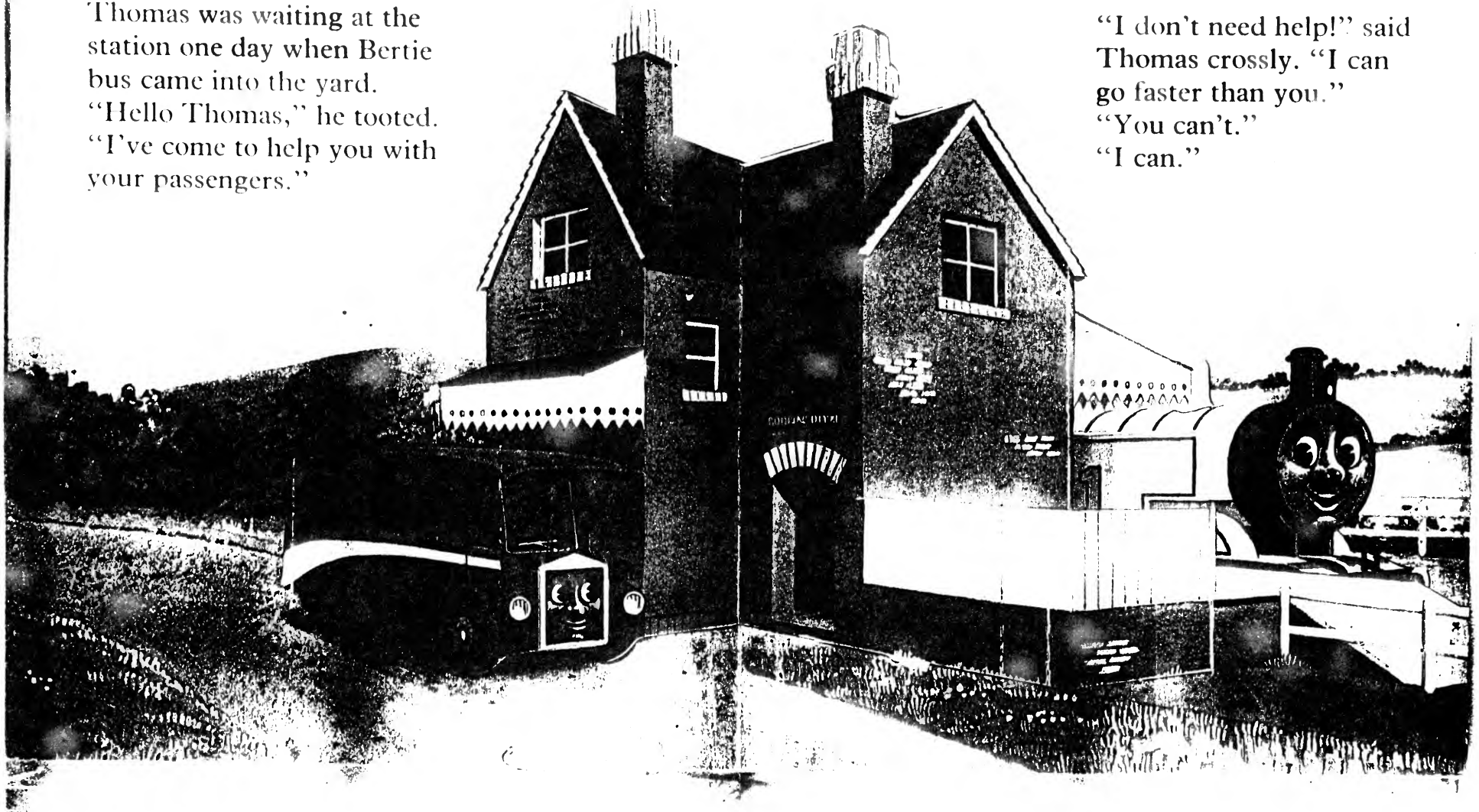


Poussins





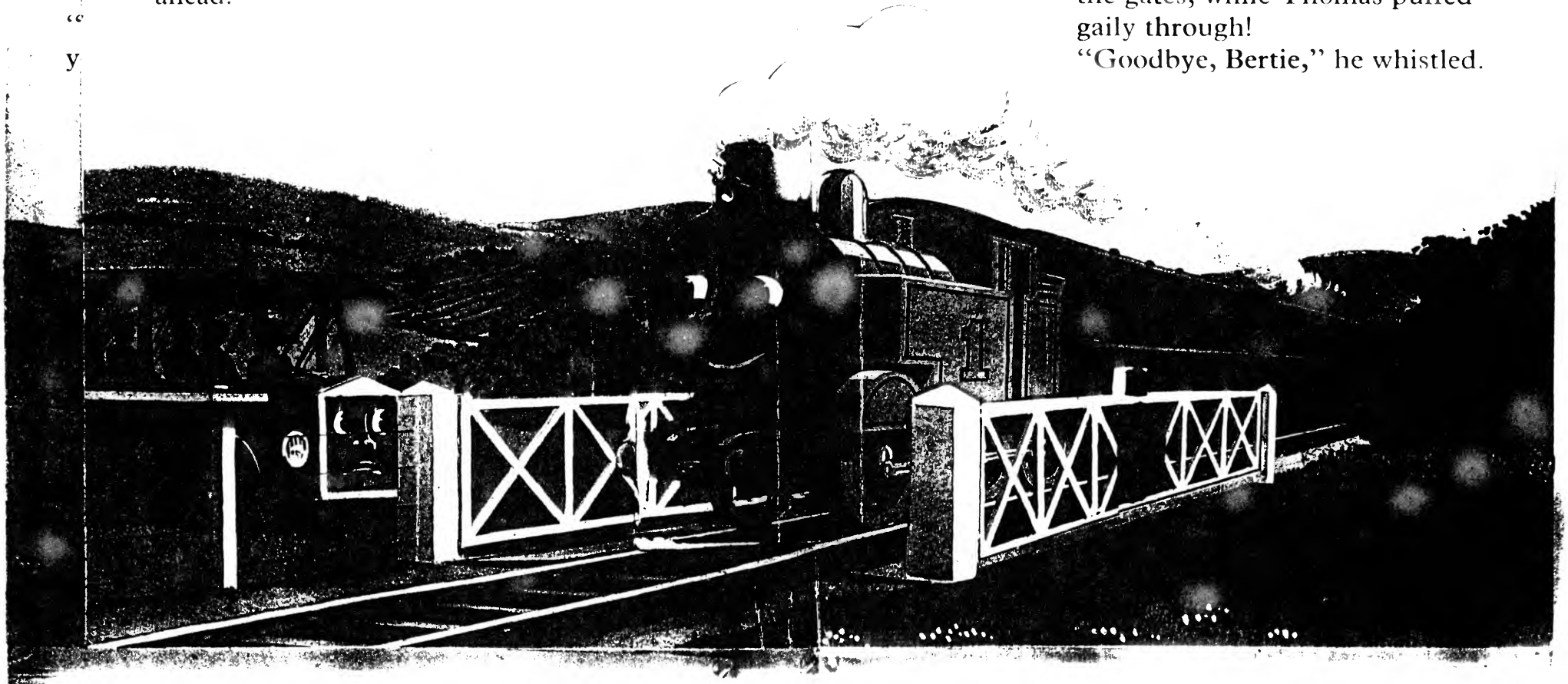
Thomas was waiting at the station one day when Bertie bus came into the yard. "Hello Thomas," he tooted. "I've come to help you with your passengers."



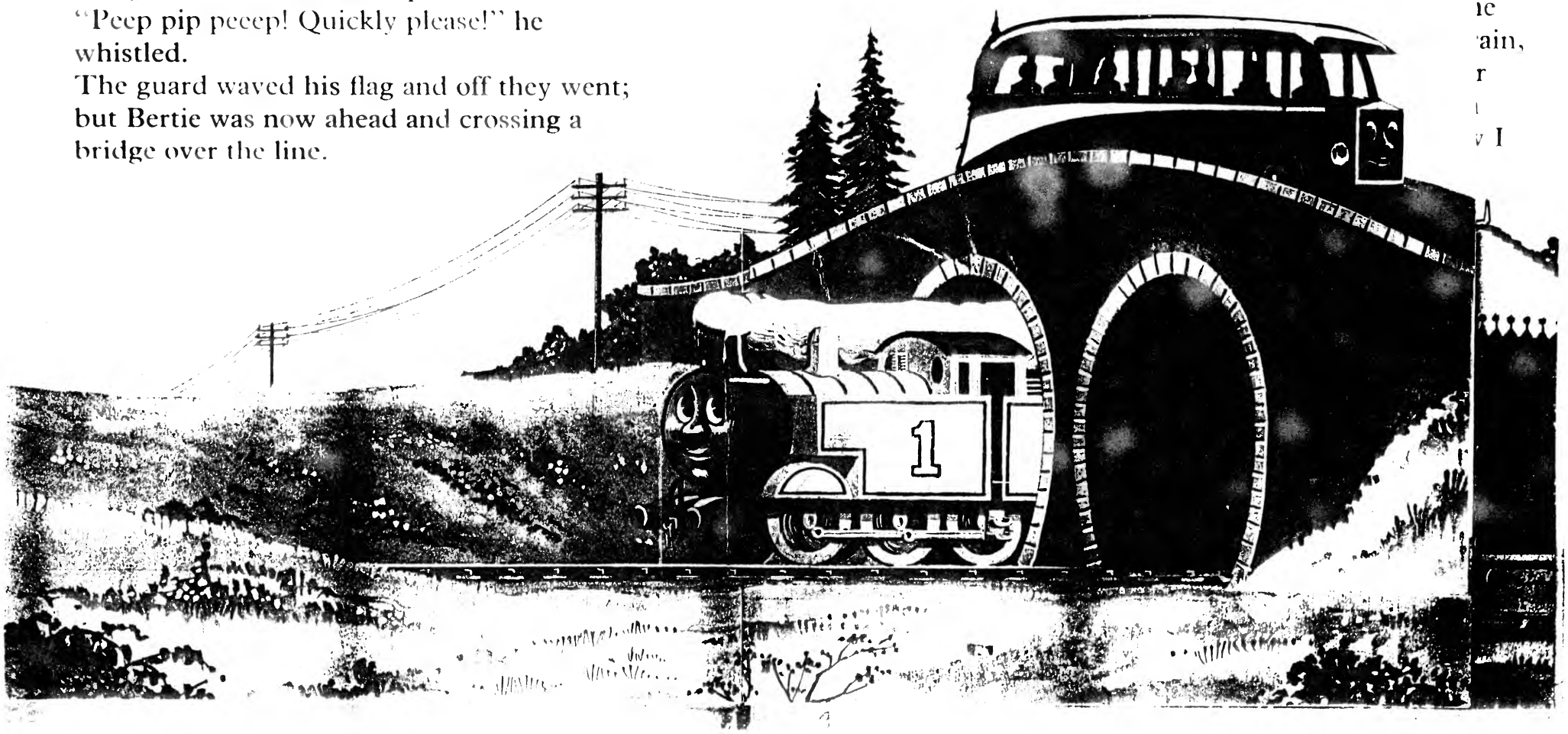
"I don't need help!" said Thomas crossly. "I can go faster than you."
"You can't."
"I can."

"I'll race you," said Bertie.
Their drivers agreed and they started.
Thomas didn't hurry at first and Bertie shot ahead.

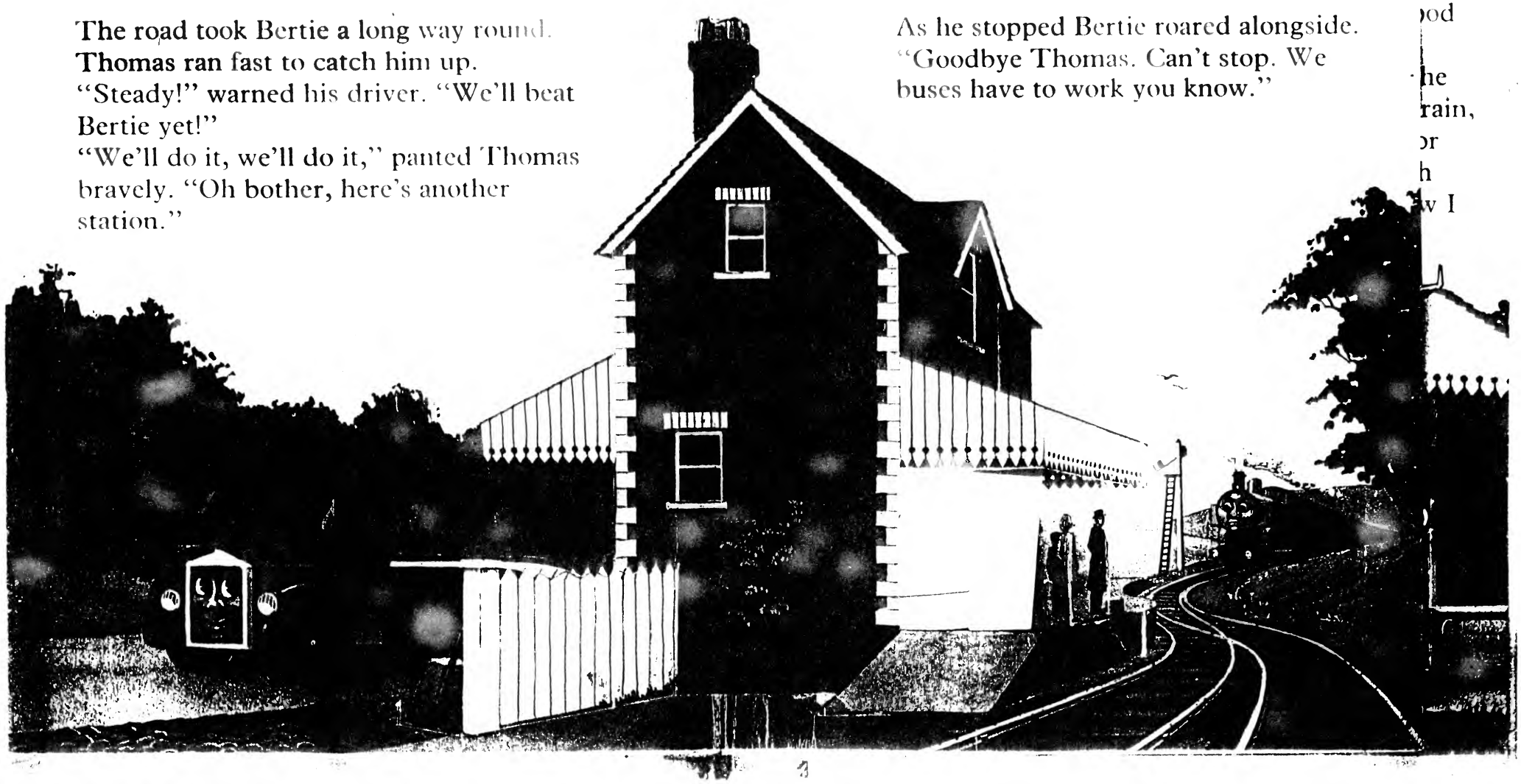
Thomas didn't mind that; he remembered the Level Crossing. Sure enough, Bertie was held at the gates, while Thomas puffed gaily through!
"Goodbye, Bertie," he whistled.



The road now left the railway to go through a village. Thomas had to stop at the station.
"Peep pip peeep! Quickly please!" he whistled.
The guard waved his flag and off they went; but Bertie was now ahead and crossing a bridge over the line.



The road took Bertie a long way round.
Thomas ran fast to catch him up.
"Steady!" warned his driver. "We'll beat Bertie yet!"
"We'll do it, we'll do it," panted Thomas bravely. "Oh bother, here's another station."



As he stopped Bertie roared alongside.
"Goodbye Thomas. Can't stop. We buses have to work you know."

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The station after that was by the river. Thomas got there quickly, but the signal was "up." Then James rattled through with a goods train, and the line was clear.

"Hurrah! We're off!" puffed Thomas happily as he rumbled over the bridge. Bertie was held up by a red at the traffic lights.

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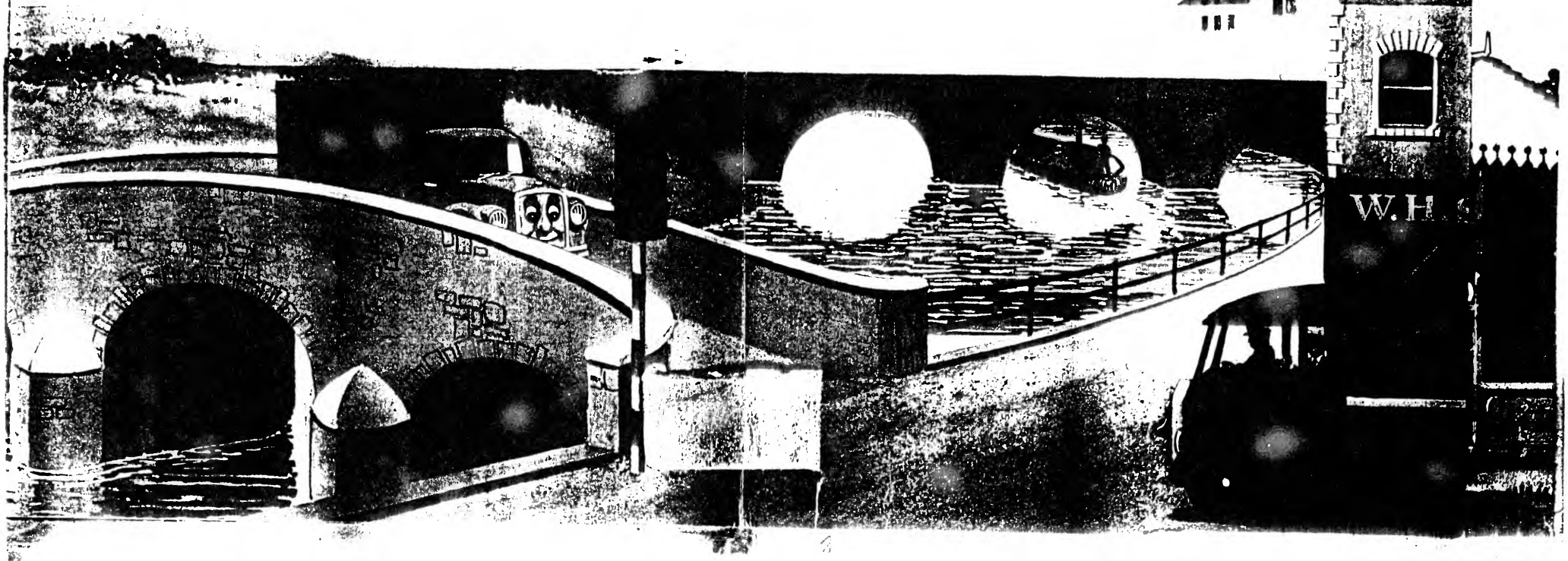
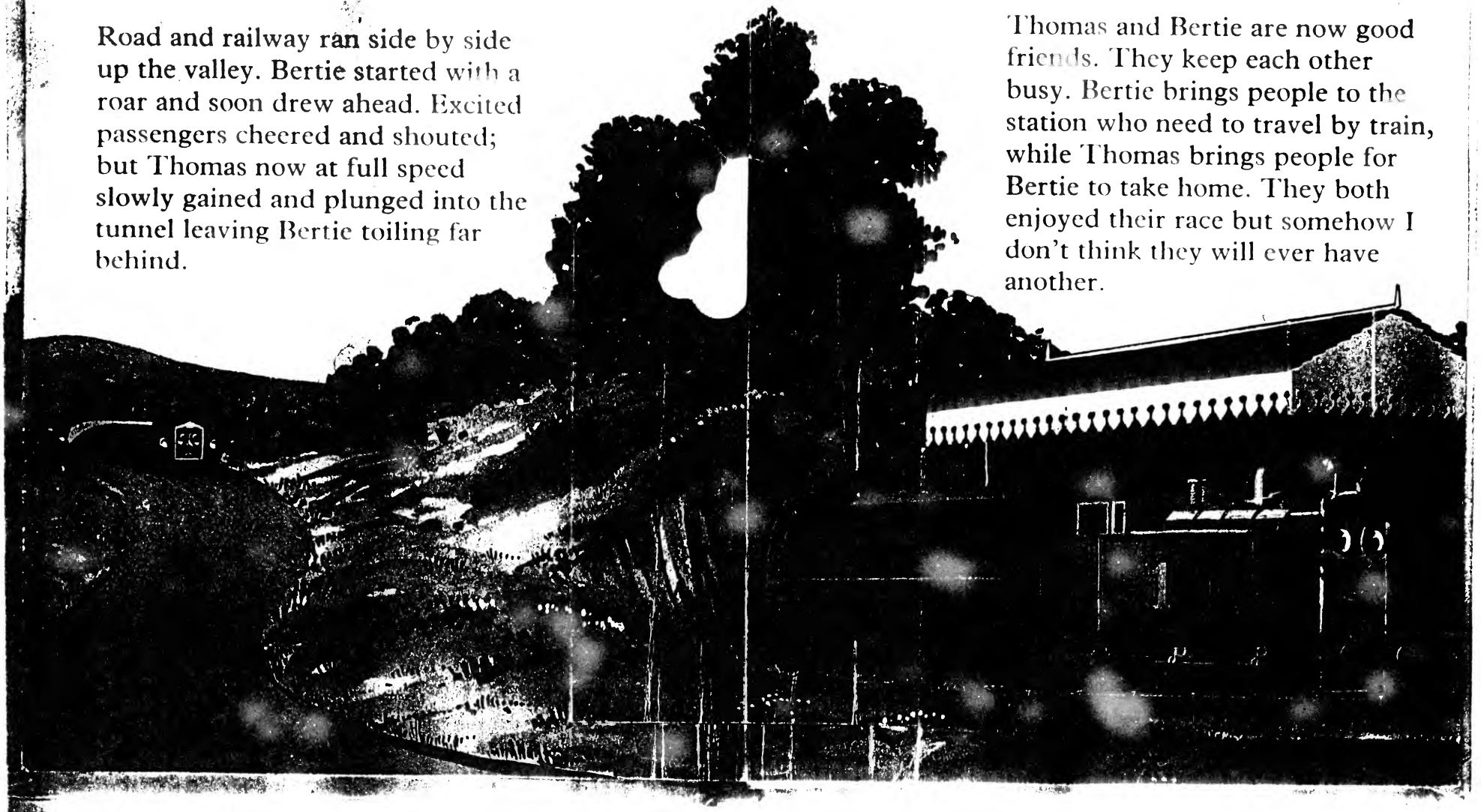


Road and railway ran side by side up the valley. Bertie started with a roar and soon drew ahead. Excited passengers cheered and shouted; but Thomas now at full speed slowly gained and plunged into the tunnel leaving Bertie toiling far behind.



Thomas and Bertie are now good friends. They keep each other busy. Bertie brings people to the station who need to travel by train, while Thomas brings people for Bertie to take home. They both enjoyed their race but somehow I don't think they will ever have another.

My Mum goes to work.
She works in a big offic
Once I went to the offic

There were lots of peop
One lady gave me a sw

Jenny looks after Carl
and Mandy too.
Jenny has her very own
He calls her Mum.
He is a big boy and
he goes to school.

Some mornings, Mandy
and I go to playgroup.
Jenny takes us.
Mandy is going to big
next term.

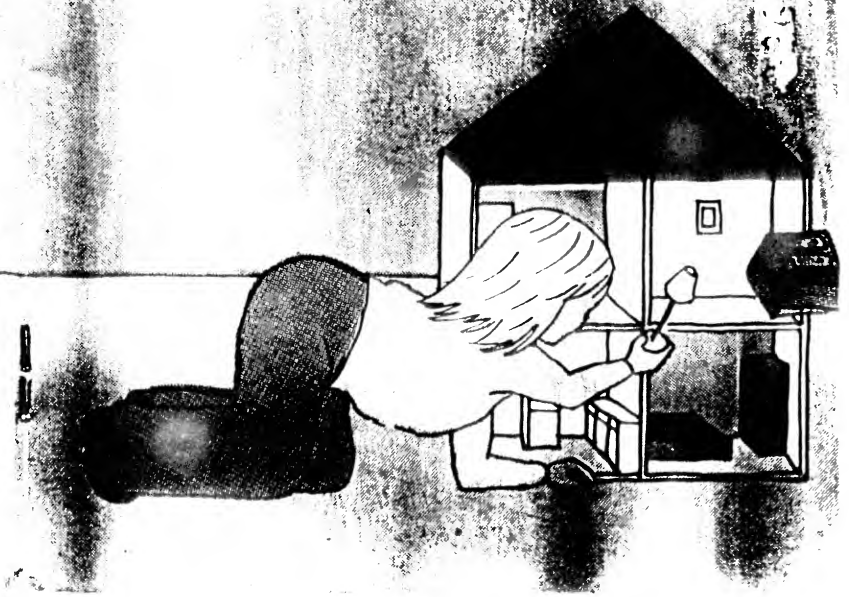
In the middle of the mor
when we are at Jenny's
we all sit at the table
and have a drink and a
Jenny cleans the kitche

Then we draw some pic
Mandy draws a picture
Carl's picture is all red.

I wash my hands.
It is my turn to help
lay the table for lunch.
We are having shepherd
and orange jelly afterwo

After lunch Carl has a rest.
Jenny puts on his nappy
and he goes to sleep.

Katie comes to play
in the afternoons.
Katie cried at first
when her Mum left her.



We go out most days.
Sometimes we go shopp
or play in the park.
There are swings and
a slide in the park.

Then we collect Ben
from school.

After tea Jenny puts on
and we dance or sing.
Sometimes Jenny reads
Sometimes we watch te