ACQUISITION OF NOUN-NOUN COMPOUNDS: A STUDY OF KANNADA-SPEAKING CHILDREN

A thesis submitted to the University of Hyderabad in partial fulfillment of the requirements for the award of the degree of

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In

Applied Linguistics

By

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CERTIFICATE

This is to certify that the thesis entitled *Acquisition of Noun-Noun Compounds*: *A Study of Kannada-Speaking Children* submitted by Swathi P.G. (08HAPH01) in partial fulfillment of the requirements for the award of the degree of Doctor of Philosophy in Applied Linguistics is a bonafide work carried out by her under my supervision and guidance. This thesis has not been previously published in part or in full to this or any other university or institution for the award of any degree or diploma.

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DECLARATION

I , Swathi P.G., hereby declare that this thesis entitled “Acquisition of Noun-Noun Compounds: A Study of Kannada-Speaking Children” submitted by me under the guidance and supervision of Dr Somsukla Banerjee is a bonafide research work. I also declare that it has not been submitted previously in part or in full to this University or any other University or Institution for the award of any degree or diploma.

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CONTENTS

List of Tables

Transliteration Key

Kannada	English
:	a:, i:, o:, u:
bha	B
cha	C
Cha	C
Da	D
Ga	G
Ja	J
Kha	K
La	L
Na	N
Pha	P
Sha	S
tha	T
Ta	T

CHAPTER-1

Introduction

> "Writing about the acquisition of language is somewhat like the problem of reconstructing a dinosaur while the bones are still being excavated. It can happen that after you have connected what you earnestly believe are the hind legs, you find that they are the jaw bones" (McNeill 1970:7)

McNeill (1970) aptly indicates how complex the study and documentation of language acquisition is and this quote sets the floor for the present research work on language acquisition. Language acquisition research is important for our understanding of human in general and of the intellectual development of the child in particular. Two accounts of language acquisition cover the intricacies of acquisition, where one account stresses the way children develop their own grammar or phonological rule system and views the child as an active contributor who adopts strategies, forms, hypotheses and searches for evidence to confirm or deny them. An extreme version of this approach suggests that language is not learned by the child, it is created. The other approach points to the structural environment of the child, the simplified language he hears from his parents, and their responses to his attempts at speech, and emphasizes their role in his learning of language (Villiers and Villiers 1978).

This research work deals with semantic issues regarding language acquisition with particular reference to the acquisition of compound words. The empirical data required for this study are obtained from Kannada. There is a dearth of research in this area where Indian languages are concerned and the present work is an effort undertaken along those lines which have not been attempted before. The thesis focuses on three

research questions in total, discusses the relevant literature concerned with these issues and sums up the findings at the end of the chapter.

This chapter consists of five sections wherein the very first section gives a generic account on language acquisition and the second section gives the theoretical background to this particular study. The objectives and the relevance of this study are discussed in the third section. The fourth section gives a note on the methodology deployed to carry out this research and the fifth and the final section gives the organization of the thesis.

1.1. Why Study Acquisition?

One motivation to study language acquisition is an interest in the learning process itself. Even assuming that children innately possess a substantial base of linguistic knowledge, there exists considerable variation across languages. For instance, a child acquiring English has to figure out what "dog" means, what the past tense of "go" is, and how to order nouns and adjectives (Bloom 1994). These are the acquisitions that any adequate theory must account for, and explaining how all normal children come to possess such knowledge on the basis of limited input poses puzzles of extraordinary intellectual depth.

There are other reasons for studying language acquisition. Scholars from Aristotle to Wittgenstein have used the process of a child acquiring his/her first language as a way to explore broader questions about the nature of grammar, thought, and meaning. Philosophers turn to the logical problem of lexical acquisition when debating the nature of word meaning, linguists use the study of language acquisition to explore the nature of universal grammar, and psychologists have analyzed everything from infant babbling to

over regularization of the past-tense morpheme when contrasting theories of learning and mental representation.

1.2. Theoretical Background

Language acquisition is an interesting field of study in linguistics particularly because one does not have a direct access to the human brain in order to study how language is acquired. Given such a situation, it is highly essential to attempt a research project on language acquisition and hence this study finds itself relevant because substantial research has not been done on the acquisition of compounds. Compound words are structures at the crossroads between words and sentences reflecting both the properties of linguistic representation in the mind and grammatical processing. As such, they offer us a unique opportunity to understand the interplay between storage and computation in the mind (Libben 2006). Compounding is one of the word-formation strategies languages employ to form words out of the existing words in order to enrich and update their lexicon. It is an abbreviatory mechanism, which languages prefer over corresponding phrasal or clausal constructions. They are unambiguous mainly because of the fixed word-order and unique in the sense that they acquire specialized meaning and hence form the immediate choice of the native speakers of any language.

Though compound words form an interesting and a major chunk of the lexicons of world's languages, there are no significant and substantial works on compound words in Indian languages despite the fact that compounding is a regular means of word formation in Indian Languages. This study is an attempt to investigate certain semantic

issues pertaining to the acquisition of compound words where the data required for the empirical study are obtained from Kannada.

1.3. Objective and Relevance of the Study

If we consider the semantic properties of compounds, it is worth noticing that a surprising number of compounds across languages that have been studied have non-transparent meaning relations between their constituents and their whole words. In English, for example, most of the members of the *berry* family of compounds have this property. The contribution of the meanings of *blue* and *berry* in *blueberry* seem clear, but for other members such as boysenberry, cranberry, elderberry, gooseberry, loganberry, raspberry and strawberry, it is exceedingly unlikely that the meaning of the first constituent as an independent morpheme contributes to the meaning of the whole word (Libben 1994).

The first psycholinguistically revealing fact concerning the semantic opacity of these forms is that it is so rarely noticed by native speakers. Thus, the system will extract constituents from compounds but does not depend on doing so. This appears to be consistent with a 'maximization of opportunity' framework that posits a mental architecture in which all representations that can be activated will be activated. Under such architecture, the system remains relatively clash-proof by being able to extract all that it can- namely, the whole meaning for each word as well as the fact that they are all berries. This in itself may be quite revealing of cognitive processing in general, but the exact mechanisms that are involved for stimuli such as these have not yet been investigated.

Compositionality of compounds is what facilitates the acquisition of the meanings of compounds. Semantic compositionality is the structural feature by which the meanings of compounds can be predicted merely by having a glance at the target compound word. There is nothing straightforward in a compound word which indicates the meaning of the compound as a whole which one could assume merely by looking at the constituents of compounds where the compounds are not semantically compositional. The semantic compositionality of compounds is something which holds itself high because of the dearth of research and also because of the intricacies of the concept. The first research question is relevant in this regard which investigates if semantic compositionality of compounds has a role to play in children's acquisition of the meanings of compounds. It is important to note that there is not a relationship between the constituents of all compounds, but various relationships between the constituents are possible within a compound word. The second research question which this work is concerned with is nothing but the role of different relationships between the constituents in the acquisition of the meanings of compounds. The third question that this study encounters is a semantic extension of the second one, namely how the metaphoricity of compounds influences children's acquisition of compound words.

Kannada is a south Dravidian language with the word order SOV. It is right-headed when it comes to compounding. Compounding being a very productive word formation process in Kannada, a good number of words of the language are compounds. It is an interesting area as to study the features of compounds and also to know how they are acquired in various languages. In spite of the fact that compounding is a productive word formation process in most of the Indian languages, there is hardly any work in Kannada

which deals with how compounds are represented and processed. This study is aimed at filling that void and investigates primarily three research questions concerned with the acquisition of compounds which are the following:

I. Do children acquiring Kannada comprehend the constituents of Noun-Noun compounds?

II. Are the children able to comprehend the relationships that exist between the constituents of Noun-Noun compounds?

III. Are children able to understand the metaphoricity of Noun-Noun compounds?

This is an empirical study where the data were collected from Kannada, but the larger applicability is that Indian languages with right-headed compounding would all fall into the category as Kannada. They would also behave like Kannada does when it comes to the characteristics of compounds. The dearth of enough research on the compounds in Indian languages was the point at which this research started off. Nothing much has been said and done about the issues in compounding in any of the south Dravidian languages. Therefore, this study attempts to fill that void which is conspicuous in the current body of knowledge and research. Hence the findings of this study are expected to be paralleled in other Indian languages as well.

1.4. Methodology

This is an empirical study in which the data were collected from Kannada speaking children in the age group of 7-9 years. Since the subjects were very young and because of their inability to use sophisticated gadgets like a computer screen or an eye tracker, the questionnaires typed out on white paper sheets were handed over to the

subjects and the data were elicited. In the case of the first research question the subjects were asked to read the compounds which were typed out on white papers. They were also asked to comprehend them and segregate them into two words in whichever way they could. The subjects needed to select the right meaning of the compound noun from the given four possible meanings in the case of the second research question. The task was to comprehend the relationship between the constituents of compounds and to comprehend the meaning of the compound as a whole. The same method of multiple choice task was repeated in the case of the third research problem where the informants were required to comprehend the metaphoric meaning of the given compounds.

In the first research problem the database was segregated into three categories based on the semantic compositionality of the compounds. Those three categories of compounds were semantically transparent compounds, partially transparent compounds and semantically opaque compounds. The three sets of questionnaires were given to the informants one after the other and the data were collected. In the case of the second research question there were six different categories of compound nouns which means to say that there were six different sets of questionnaires as well. All these were again typed out on white papers and the subjects were asked to read and comprehend them and respond as directed. In the third research problem there was only one set of compounds and hence the same was given to the participants and the data were elicited.

1.5. Organization of the Thesis

The thesis consists of six chapters in total where the first chapter is the introduction to the work. Introduction itself has five sections, the first of which is a

generic introduction to language acquisition. The second section gives the introduction to this particular work, the third section mentions the relevance of the present study and its distinctness in compound morphology. The fourth section deals with the methodology employed to elicit data from the informants. The fifth section gives the organization of the entire thesis. The second chapter deals with the review of literature and theoretical foundations which has five sections in total where the first one gives an introduction to the general issues in compounds. The second section exhaustively deals with the theoretical foundations of compounds. Some important psycholinguistic studies on compounds are described in the third section. The fourth section gives an overview of compounds in Kannada. The fifth and final section of the chapter deals with the issues in representation and processing of compounds.

The third chapter deals with the first research problem explored in the present work which is the constituent knowledge acquired by Kannada speaking children of the age group 7-9 years. This chapter elaborately discusses the usefulness of the particular issue in the first section which is titled introduction. The second section describes the method employed here to gather data from the informants. A description of the subjects is given in the third section of this chapter. The fourth section is dedicated to the collection of the compound nouns and formulation of the questionnaire and the experimental design. An elaborate discussion of the materials used for the data collection and all minute details about it form the fifth section of the chapter. The sixth section gives an account of the actual collection of data and the seventh and final section of the chapter sums up the results obtained and the discussion follows. The fourth chapter of the thesis gives a detailed description of the second research problem of the present research work

which is namely the study of how the different relationships that operate between the constituents of compounds affect children's acquisition of compounds specifically in Kannada. The very first section of the chapter is the introduction. The second section gives a detailed account of the method deployed to collect data required for the study. An elaborate description of the subjects is given in the third section. The fourth section of the chapter gives an account of how the compound nouns to be studied are collected and how the questionnaire is being formulated. The database designed for the particular experimental study is discussed in the fifth section. The process of data collection is described in the sixth section and the seventh and final section sums up the results obtained by the empirical study and the discussion.

The fifth chapter deals with the third research problem of the present study namely how children acquire the metaphoricity of compounds. This chapter has seven sections in total wherein the first section gives an introduction to the particular research issue. The method in which the empirical study is carried out is discussed in the second section. The third section gives a detailed account of the informants who formed the crux of the work. The details like how the collection of compound nouns to be studied is done and thereby the formulation of the questionnaire constituted the fourth section of the chapter. The fifth section gives a detailed description of the materials used for the study which is nothing but the database. It also mentions about the finer segregation of the database into further categories. The process by which the data are collected is discussed in the sixth section. The seventh and final section of the chapter analyses the results obtained by the empirical study and it winds the chapter up with a discussion. The sixth

chapter concludes the thesis. As the name itself indicates, it sums up the findings of the study and also opens a window on the scope of further research in this particular topic.

CHAPTER-2

Theoretical Foundations on Compounds and Review of Literature

This chapter deals with the literature and the theoretical foundations on compounding which is a largely productive word formation process in many of the world's languages and presents a descriptive account of the research done in the field. It broadly discusses the issues in compound morphology in general and then narrows down to the specific issues pertaining to the acquisition of compounds. It also highlights the gaps existing in this particular area wherein the present work finds itself relevant. In addition, it also briefly discusses the issues in morphological representation and processing in general and compound processing in particular.

This chapter is divided into four sections wherein the first section 2.1 gives an introduction to the general issues on compounds. An account of the theoretical foundations on compounds is given in the section 2.2. Section 2.3 talks about some of the major psycholinguistic studies done on compounds focusing on cognition, acquisition, representation and processing of compounds. An overview of Kannada compounds is given in the section 2.4 of this chapter.

2.1. General Issues on Compounds

Compounding is one of the most productive processes of word formation in many of the world's languages. Compound words are also extremely widespread and represent perhaps the easiest way to form a new cognitive representation from two or more existing ones. Assuming that the purpose of novel word formation is to communicate,

compounding offers the easiest and most effective way to create and transfer new meanings. By building new lexical items upon the meanings of existing items, novel compounds can, in principle, be understood upon first presentation (Libben 2006).

If we speculate about the prehistory of the first multi-morphemic words that a language would possess, we might also imagine that, for humans as well, the first word formation process in language might have been compounding. Although it is unclear whether compounding would have preceded morphological processes such as reduplication, it seems very likely to have preceded derivational affixation. The fundamental capacity of compounding seems to have two sides. On one hand, compound words need to be easily segmented into their constituent morphemes in much the same way as sentences need to be segmented into the constituent words. If this were not the case, new compound forms that children and adults encounter would not be interpretable. On the other hand, the compound sequence as a whole must be stored in memory so that it becomes a new lexical item that can be retrieved as a single entity for production and whose idiosyncratic meaning can be stored in the mind (Libben 2006).

Seen in this light, compound words are structures at the cross roads between words and sentences reflecting both the properties of linguistic representation in the mind and grammatical processing. So how are compounds parsed into their constituents, and what can this tell us about the mind? As is discussed in Jarema (2006), this issue was addressed for English by Libben (1994) and Libben et al. (1999) who presented evidence that the lexical processing system searches for morphemes in a beginning-to-end fashion. What is relevant here is that this beginning-to-end parse does not simply construct a

single compound representation for a series of morphemes, but rather appears to find all available morphemes.

One important line of theorizing pursued by cognitively minded investigators gave a major role in language acquisition to children's growing conceptual knowledge. This approach held that a critical foundation for language learning is laid during the pre linguistic period, as the infant builds up an understanding of such basic notions as objects, actions, causality, and spatial relations. As children begin to want to communicate, they search for the linguistic forms (content words, grammatical morphemes, word order or intonation patterns, etc.) that will allow them to encode their ideas, initial lexical, morphological, and syntactic development, according to this view, is a process of learning to map linguistic forms to pre-established concepts, and these concepts, in turn, at first serve to guide the children's generalization of the forms to new contexts.

Since compounding is a universally fundamental word formation process, the basic issues related to compounding also need to be discussed. If compounds are seen as the result of a simple merging of two elements, then the study of different relations that operate between the constituents of compounds is one pointer for some investigation and research. Regardless of whether a modifier-noun combination is novel or common, people have relatively little difficulty comprehending it. One way in which people may interpret combined concepts is by drawing on the past experiences with similar combinations (Gagne 2001). Hence a recent exposure to a certain combination of a modifier-noun influences the subsequent combinations of both the same modifier with different heads and the same head with different modifiers. Yet another line of research

in the acquisition of compounds is how and when the children acquire the modifier-head relations and also how they subdivide and organize categories in compounds (Clark et al. 1985). When children know that compound nouns refer to two objects, one ideally interacting with the other is another issue which has been explored by Nicoladis (2003).

This section gave an outline of the general issues regarding compounding, the problems in the acquisition of it and also the research done till date in this area. The following section gives an account of the theoretical foundations on compounds starting with the etymology of the term compounding.

2.2. Theoretical Foundations on Compounds

The term 'compounding' or 'composition' goes back to the Latin *vocabulorum genusquod appellant compositicium* 'the word class which is called composite' (Varro) and *Figura nominum composita* 'composed structure of nouns' of the ancient Roman grammarians Priscianus, Donatus etc. where Latin *com-positum* is a literal translation of Greek *sýn-theton*. This focus on noun-noun compounds corresponds to a general preference for this type of compound in most languages. Compounding is part of grammar, governed by non-conscious rules. Thus, we do not consider extra grammatical combinations of so-called expressive morphology, such as echo-word formation, as in English hip-hop or contaminations (blends) as in smog (from smoke and fog) or German *jein* (from *ja* 'yes' and *nein* 'no') (Dressler 2000).

Compounding represents the fundamental word-formation process across the world's languages and, as such, it affords a unique opportunity to understand fundamental aspects of mental architecture. It has also been claimed that compound

processing allows us to better understand some of the dominant issues in the psycholinguistic study of the mental lexicon- issues such as semantic transparency, morphological structure, morphological parsing and the interplay between storage and computation (Libben 2006). The contribution of these perspectives is two-fold: on the one hand, they aid us in piecing together how the mind handles the on-line demands of everyday language processing. On the other hand, they reveal to us just how complex that processing may be. Recent advances in the investigation of compound processing, in particular, and of lexical processing, in general, have done much more than help us to evaluate the merits of one hypothesis over another. They have made it possible to reveal mental phenomena that until recently have been completely shielded from scientific scrutiny.

Compounds are important objects of morphological investigations, because compounds are present in all languages of the world as far as described in grammars. Thus compounding is the wide-spread morphological technique. This may be formulated in two transitive implications: if a language has inflection, it also has derivation and compounding, and if a language has derivation, it also has compounding, but not vice versa.

Compounding is lexeme formation, but it is not morphological, at least in the sense of the term; it does not necessarily involve bound morphological realization. Instead, compounding is a type of lexeme formation that operates primarily at the level of syntactic categories, without reference to the morphological content of the construction

(Aronoff 1994). Thus the prototypical English compound is one in which a noun is adjoined to a noun to form a noun:

[[ ] N [ ] N]N

There is no mention of the form of either noun. The same is true for other compound constructions. Compounding is thus lexeme-internal syntax, as pointed out by Anderson (1992). Lexeme formation including compounding deals with the internal syntax of lexemes. Derivation and inflection are both restricted to morphology in the narrow sense of morphological realization, but they differ from one another on the basis of what they realize: lexeme-internal versus lexeme-external syntactic elements. Lexical concepts are semantically concrete, while grammatical concepts are archetypically abstract and relational (Sapir 1921).

Stekauer and Lieber (2005) distinguish between two types of compounds: synthetic compounds (also called verbal, deverbal or verbal nexus compounds) are ones in which the second stem is derived from a verb, and root compounds (also called primary compounds) are ones in which the second stem is not de-verbal. Synthetic compounds are illustrated in (1); root compounds in (2):

(1) Truck- driver, gift-giving, wind-blown, revenue enhancement, waste disposal;

(2) Dog bowl, file cabinet, red hot, sky blue, black board, babysit.

(3) Synthetic compounding is highly productive in English, as is the root compounding of nouns. Noun- adjective (sky blue), adjective-noun (black board), and adjective-adjective (red hot) root compounds are also relatively productive. Root compounds of other categories are harder to form and relatively unproductive (for

example, verb-verb compounds such as stir- fry or noun-verb compounds such as babysit.)

(4) A 'compound word' is usually understood to be the result of the (fixed) combination of two free forms, or words that have an otherwise independent existence, as in frostbite, tape-measure, grass-green. These items, though clearly composed of two elements, have the identifying characteristics of single words: their constituents may not be separated by other forms, and their order is fixed. In a 'derived word', at least one element, the affix, is a bound form with no independent existence and, characteristically the more general meaning that one would expect a 'grammatical' element to have. Thus, compounding may be distinguished from derivation both formally, in terms of the presence or absence of a bound form, and semantically, according to whether both elements are 'lexical' or not.

This section talked about the theoretical foundations on compounds beginning with the etymology of the term 'compounding' and how compounds are created in languages. The following section deals with the major psycholinguistic studies done on compounding with special reference to cognition, acquisition, representation and processing of compounds.

2.3. Psycholinguistic Studies on Compounds

Compounding involves structural complexity both at the semantic and the morphological levels. Indeed, compounds can feature different degrees of semantic transparency and vary in componentiality (Libben 1998 & 2006). Issues of semantic transparency of compounds, morphological processing and representation of compounds

and the acquisition of lexical meanings of compounds are some of the major issues which are of concern when it comes to the research on compounds.

According to Libben (2006), the word *strawberry* is only partially transparent, but componential (or endocentric), since only the meaning of *berry* is linked to the meaning of the compound as a whole, yet it designates a type of berry, while the word *bighorn* is fully transparent, but not componential (or exocentric), since the meanings of its constituents are transparently related to the meaning of the compound, yet a *bighorn* is not a type of horn.

To date, only a handful of studies have addressed the issue of compound representation and access from a cross-linguistic perspective. In contrast, a much larger number of investigations have approached the problem of compound processing through the study of a single language. Importantly, a growing body of studies is being conducted in languages other than English, thus making it possible to compare findings across a variety of typologically distinct linguistic systems.

Elena Nicoladis (2003) while studying compound nouns in the case of pre-school children explored when children know that compound nouns refer to two objects, one ideally interacting with the other (eg. “fish shoes” are shoes with fish on them, not next to them). Thirty five English-speaking children of the age 3 and 4 years participated in the study. They were given both a production and comprehension task with novel compound nouns. The results showed that the three-year olds and the four-year olds were equally likely to produce compounds to name two interacting objects. However, the three-year olds were less likely than the four-year olds to understand that a compound referred

necessarily to two objects. These results demonstrate that children's knowledge of the meaning of compound nouns is still developing in the preschool years. Nicoladis discussed the following three possible interpretations of the mismatch in comprehension and production:-

1. There are modality differences in processing by children

2. The meaning tapped by production and comprehension is not identical, and

3. The tasks differed in complexity.

Vasanta and Sailaja (1999) while studying the word relatedness of compounds in Telugu dealt with the lexical development which is typically viewed as elaboration, differentiation, and interpretation of semantic codes- codes that signify the meanings embodied in the words. The database for the present study was drawn from the earlier work of the same authors, and it consisted of 1800 words reported to be related in meaning to the target compound nouns by 36 children (12 third grade children, 12 sixth grade children and 12 ninth grade children) and 600 words produced by 12 adults. A thorough analysis of the individual word associations generated by the subjects revealed that children tended to generate: (1). compounds with the same word as the target word but with a new modifier word; (2). novel compounds that have phonetic/ phonological association with the target words, most of which are actually non-words in the language; and (3). new single-stem nouns and new compounds that are considerably fewer in number than those produced by adult subjects. Some of the theoretical and pedagogical implications of the differences in performance of children vs. adult subjects in the encoding of word meanings in an experimental context are discussed in this study.

Eve V. Clark et al. (1985) studied the category structure of compounds in young children and put together the results of the empirical study carried out on 96 children (and 8 adults) for comprehension of the modifier-head relation in compounds such as apple-knife (a kind of knife connected with apples), or were asked to label objects nameable with compounds. Children understood the modifier-head relation in compounds appropriately by age 2;6. They also, like adults, produced more compounds for like objects that contrasted on a single dimension than for objects that were unrelated, and for contrasting objects that differed in intrinsic properties than for unrelated objects in momentary juxtaposition. These results suggest that children sub divide and organize categories taxonomically from as young as 2;6.

Christina L. Gagne (2001) investigated the relation and lexical priming of noun-noun compounds and indicated that recent exposure to a similar combination (eg. oil moisturizer or surgery treatment) influences the processing of subsequent combination (eg. oil treatment) by increasing the availability of the lexical entries for the modifier and head noun, and by altering the availability of the relation used to link the two nouns. The amount of lexical and relational priming obtained depends on whether the modifier or head noun is in common between the prime and target. The head noun prime yields more lexical priming than does the modifier prime and this finding suggests that the head noun is more strongly activated than the modifier. In contrast, relation priming is obtained only from the modifier prime and this finding is consistent with the CARIN (Competition Among the Relations In Nominals) theory (Gagne 2001, Gagne and Shobin 2002).

The CARIN theory was developed based on the notion that specific aspects of world knowledge directly influence conceptual combination (Gagne 2000/2001, Gagne and Shobin 1997). This theory uses a relation-based approach. A key assumption of the CARIN theory is that conceptual combination involves the selection of a relation that links the constituents. This theory is based on the claim that one aspect of world knowledge that is particularly relevant to conceptual combination is relational information about how objects, people, and so on interact. This information is used to select a relation that links two constituent concepts during the formation of a new combined concept. For example, *chocolate bee* is formed using the relation noun MADE OF modifier to link chocolate and bee. However, honeybee is formed by using the relation noun MAKES modifier. This theory is consistent with emerging evidence that relational information plays a vital role in the organization of the conceptual system as well as with early linguistic theories of nominal compounding (Gleitman and Gleitman, 1970, Kay and Zimmer 1976, Levi 1978).

Margaret Harris et al. (1988) did an empirical study on the linguistic input and early word meaning and reported how they videotaped four mother-child dyads in a longitudinal study of the relationship between linguistic input to children and early lexical development. Diary records were also kept by mothers and together with the video recordings were used to identify the contexts in which the children produced their first words. These were compared with the contexts in which the mothers used these same words. It was found that there was a strong relationship between the children's initial use of words and the most frequently occurring use of these words by the mothers. It was also

found that although the majority of the children's first words were context-bound, a significant number were referential.

The results of this study point to the need to reformulate certain current theoretical notions concerning early lexical development, in particular the notion that children's first words are never referential, and the notion that the naming insight is only acquired midway through the single-word period. These findings also suggest that the child's early words are very closely related to the maternal speech which the child hears during frequently repeated routines. The relative frequency of one maternal use over other uses of the same word appears to be an important factor in determining the context in which a child will first use a particular word. However, it is important to note that the child uses the pattern of maternal input in a variety of different ways and imposes his/her structure upon it. The pattern of early lexical development which emerges is thus the product of a subtle interaction between linguistic input and the child's cognitive processing.

Gottfried (1997) investigated children's ability to produce metaphoric compounds and the study was aimed to test whether children as young as three years old can produce innovative metaphoric compounds when the situation demands differentiation among exemplars, the two studies presented here employed an elicited production task that explored children's sensitivity to contrasting labels. The main goals were to add an empirical test to the literature on the age of emergence of metaphoric compounds and to provide a new method for investigating metaphoric skills in preschoolers.

In experiment 1, participants saw pictures of objects that resembled other objects (eg. a bug shaped like a stick). Each picture was labeled with an incorrect compound (eg. a leaf

bug), and subjects were encouraged to produce a more accurate label (eg. stick-bug). The study addressed four main questions:-

1 .Do we see developmental changes in children's abilities to produce metaphoric compounds? Children between the ages of three and five years participated, spanning the range during which important developmental changes occur.

2. Does metaphoric ground affect children's abilities to produce metaphoric compounds? Shape-based and color-based metaphoric relations both were included. Children's tendency to external labels on the basis of shape rather than color similarity leads to the hypothesis that metaphoric compounds for objects that resemble other objects because they have the same shape will be easier to produce than metaphoric compounds for objects that resemble others because they have the same canonical color or pattern.

3. Do children recognize when a metaphoric compound is appropriate and when it is not? To rule out the possibility that children simply attend to the labels provided rather than the appearance of the objects, one group of children were asked to label pictures of objects that shared no striking resemblance with any other objects. If children engage in simple word association (eg. automatically replacing 'leaf' with a semantically related term like 'stick'), in this condition they should produce compounds similar to those created by children who see the target metaphoric items. If, however, children attend to metaphoric resemblances, children asked to label these pictures should produce fewer metaphoric compounds than children asked to label the target pictures with obvious metaphoric similarities.

4. Finally, the study provided a strong test of whether children distinguish between the metaphoric and literal labels for the object. In one condition (that is, the reversal condition), subjects heard compounds with the head and modifier nouns reversed (eg. bug-leaf). This was an explicitly stringent test because in this condition the modeled compound was wrong in two ways: it was incorrectly ordered, and it contained an anomalous modifier noun. Children could respond to the incorrect label simply by replacing the anomalous term (eg. leaf), thus creating an inverted metaphoric compound, bug-stick- a modification requiring additional cognitive processing beyond simply replacing one term- then we have evidence that they distinguish between the metaphoric and literal components of the compound labels and prefer only the literal label in the head noun position.

Participants included 36 younger children (range 2;8-4;3) and 39 older children enrolled in preschools and day-care centres. 34 undergraduate students also participated as volunteers or in partial fulfillment of an introductory course requirement. The design of the study was 3 (age 3;5, adult) × 3 (conditions: compound, reversal, non-metaphoric) × 4(item type: shape, color, representational, simple) × 2(order: representational first, representational last). Age, condition, and order were between-subjects variables, and item type was a within-subject variable.

Results indicated that neither children nor adults consistently produced metaphoric compounds to label the shape and color items. Only three metaphoric compounds were produced: one five-year old produced ‘leaf-frog’ and ‘mitten-leaf’, and one three-year old produced ‘bird-fish’. Furthermore, children and adults tended to produce the exact basic-level label (fish for the bird-fish), a synonym or sub category

level (eg. salmon for the bird-fish, leaves for the hand-plant), or a phrase including the basic-level label (eg. girl wearing a mask for the butterfly-mask). For the three-year olds, 76% of the shape items and 62% of the color items were labeled in this way; for the five-year olds, the percentages were 73 and 75.

Previous studies of children's comprehension of compound nouns show that three-year olds can identify the appropriate referent for a compound when shown picture arrays that include salient distracters. The four studies presented in Gottfried's work (1997a) investigate comprehension of one kind of compound, metaphoric compounds (that is, noun-noun compounds in which one noun expresses similarity to another object, as in *catfish*).

Forty-four three-year olds, forty-five five-year olds and twenty-two adults were shown a series of picture arrays and were asked to identify referents of various types of metaphoric compounds. The arrays included target pictures that had metaphoric resemblances based on shape (eg. bug shaped like a stick) or on color/pattern (eg. shells with black and white stripes, like a zebra). Results showed that three and five-year olds can comprehend shape-based metaphoric compounds such as stick-bug, even when faced with salient distracters (eg. a stick, a bug next to a stick.) The younger children had some difficulty with color-based compounds, such as *zebra-shells*. Overall, five-year olds outperformed three-year olds but performed significantly less well than adults. However, even at age three, children did not show a general expectation to interpret the compounds literally.

Krott, Gagne and Nicoladis (2009) explored different frequency effects on children's interpretations of novel noun-noun compounds (eg. *egg bag* as 'bag FOR eggs'). They investigated whether four-to-five year olds and adults use their knowledge of related compounds and their modifier-head relations (eg. *sandwich bag* (FOR) or *egg white* (PART-OF)) when explaining the meaning of novel compounds and/or whether they are affected by overall frequency of modifier-head relations in their vocabulary. Children's interpretations were affected by their experience with relations in compounds with the same head, but not by overall relation frequency. Adults' interpretations were affected by their experience with relations in compounds with the same modifier, suggesting that children and adults use similar but different knowledge to interpret compounds. Only children's interpretations revealed an overuse of visually perceived relations.

Krott, Gagne and Nicoladis (2010) investigated children's bias when interpreting novel noun-noun compounds (eg. *kig donka)* that refer to combinations of novel objects *kig* and *donka*. More specifically, it investigated children's understanding of modifier-head relations of the compounds and their preference for HAS and LOCATED relations (eg. a donka that HAS a kig or a donka that is LOCATED near a kig) rather than a FOR relation (eg. a donka that is used FOR kigs). In a forced- choice paradigm, two and three-year olds preferred interpretations with HAS/LOCATED relations, while five-year olds and adults showed no preference for either interpretation. The authors also discussed the possible explanations for this preference and its relation to another word learning bias that is based on perceptual features of the referent objects, that is, the shape bias. They

further argued that children initially focus on a perceptual stability rather than a pure conceptual stability when interpreting the meaning of nouns.

2.3.1. Semantic Transparency Effects

A major question in the study of compounding is whether the individual constituents of compounded forms are activated during lexical access. This issue was addressed by Sandra (1990) and Zwisterlood (1994) for Dutch and by Libben and collaborators for English (Libben 1998; Libben et al. 2003). Taking advantage of the fact that compounds show varying degrees of opacity, Sandra (1990) predicted that if compounds are parsed into their individual constituents, a semantic priming effect would be obtained in a lexical decision task in which compounds such as birthday (transparent) or Sunday (opaque) would be primed by a semantic associate (death and moon, respectively). Results obtained showed that only semantically transparent compounds exhibited priming effects. This led Sandra to conclude that only semantically transparent compounds are decomposed into their constituents during word recognition. By contrast, Zwisterlood (1994), who also investigated Dutch compounds- using a constituent priming paradigm- found priming effects for both transparent and opaque compounds.

The meaning of a compound (eg. *snowball*) is derived not just from the meaning of the constituents (eg. *snow* and *ball*) but also from the relation between them (eg. MADE OF). Gagne and Spalding (2010) hypothesized that during the interpretation of a compound various relational structures compete for selection. Consequently, the fewer competitors the required relation has, the less time it takes the system to settle on that relation. This proposal is an extension of the Competition- Among- Relations- In-

Nominals (CARIN) theory that was originally applied to novel, modifier-noun phrases (Gagne& Shoben 1997, Gagne and Spalding 2006). Gagne and Spalding evaluated the feasibility of this proposal for semantically- transparent English compounds.

2.3.2. Representation and Processing of Compounds

Over the last two decades, the psycholinguistic study of compound representation and processing has seen great advances. From just a handful of studies in the 1970s, we now have a substantial body of research both within and across languages, but the same is not true in the case of Kannada where hardly anything has been done on compounding till date.

Libben (1998) proposes a model that accounts for constituent activation across all types of compounds by postulating three levels of compound representation and processing: the stimulus level, the lexical level and the conceptual level. He argues that at the lexical level, constituents are isolated through left to right parsing. At the lexical level, compounds such as the fully transparent form *blueberry* and the partially opaque form *strawberry* have identical representations[blue][berry] and [straw][berry]), however, they differ at the conceptual level of representation, because only the word form *blue,* but not *straw*, is linked to its corresponding conceptual representation. In this view, the meaning of *straw* is inhibited because of the absence of a link between the two levels of representation. This accounts for the interpretability of compounds, mediated by an interplay of facilitatory and inhibitory links between the lexical and conceptual levels of interpretation and processing, as well as for constituent activation in opaque compounds (Libben 1998).

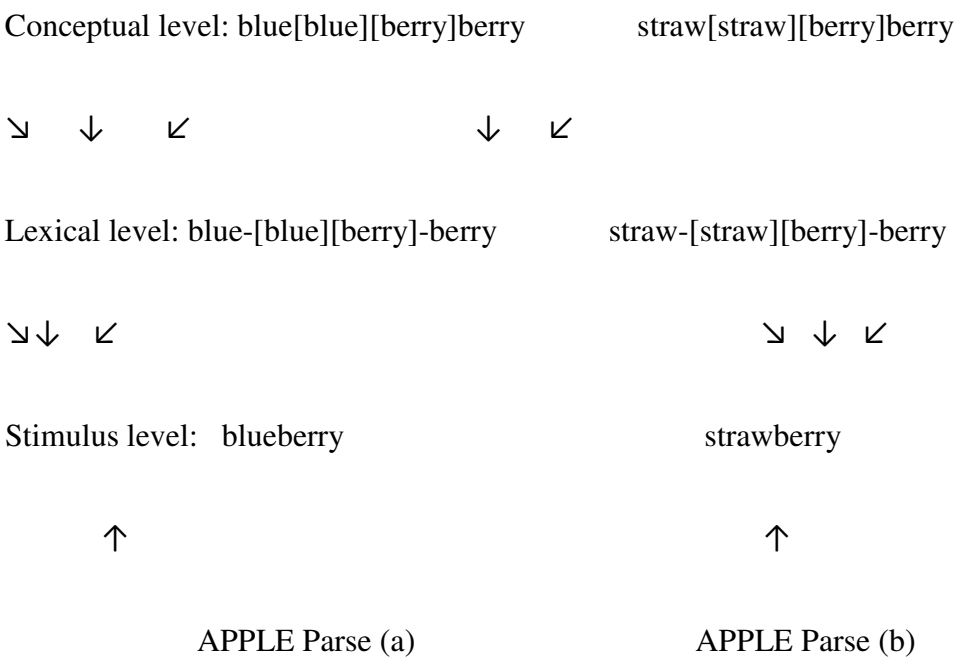

Fig 2.1. The processing of transparent (a) and partially opaque (b) compounds

Libben (2006) presents an overview of the key psycholinguistic issues in the study of compound representation and processing. Against the background of these issues, he presents a case for the view that morphological processing, in general, and compound processing, in particular, is characterized by the principle of 'maximization of opportunity'. In this view, the lexical processing system seeks neither computational efficiency nor storage efficiency. Indeed, he claims that the language processing system is not guided by considerations of efficiency at all. He further argues that morphological processing is better captured as a system that seeks to maximize the opportunities for activation at all levels. Thus, he proposes that the activation of a compound word such as 'strawberry' involves the activation of all constituents as well as the whole word. Where such massive activation creates conflict between the meanings of the compound

constituents and that of the whole word, a set of post-activation 'cleanup' procedures resolves this conflict by deactivating spurious representations.

Jackendoff (2002) argues that the synchronic character of compounds reveals their early role in the history of human language development. Compounds may be seen as the result of a simple merging of two elements, with the exact relations between constituents being highly variable. He claims that they may be regarded as 'protolinguistic "fossils"', a structural type that has survived from the earliest forms of human language (Bickerton 1990) and which are characterized by syntactically less constrained relations between elements. This claim is consistent with the role of compounding in the languages of the world. As noted by Dressler in Libben (2006) languages may have compounding without affixation, but the reverse does not seem evident. Thus, when we study compounds we examine the fundamental characteristics of morphology in language and the fundamentals of the human creative capacity for morphological processing and representation. This fundamental capacity has two sides. On the one hand, compound words need to be easily segmentable into their constituent morphemes in much the same way as sentences need to be segmentable into their constituent words. If this were not the case, new compound forms that children and adults encounter would not be interpretable, instead they are. On the other hand, the compound sequence as a whole must be stored in memory so that it becomes a new lexical item that can be retrieved as a single entity for production and whose idiosyncratic meaning can be stored in mind. Seen in this light, compound words are structures at the crossroads between words and sentences reflecting both the properties of linguistic representation in the mind and grammatical processing.

The compound structures like *blackboard*, *houseboat* and *boathouse* have relatively straightforward relationships between their constituent and whole-word representations. In this way, they seem much like words such as *going*, for which decomposition of the string into its constituent morphemes poses no problem at all. However, even for the relatively uncomplicated compounds mentioned above, some reflection leads us to the conclusion that the meaning of the compound word cannot simply be derived from the meanings of its parts. *Going* is really no more than the combination of the meanings of *go*+ *ing*, there is nothing in the meaning of the morphemes *black*+ *board* that would lead to the conclusion that their combination would be something upon which one writes. Likewise, once one knows that a *houseboat* is a boat that one can sleep and cook in, the contributions of its morphemes to that meaning seem clear. However, a priori, *houseboat* could just as easily be a boat that you cannot sleep in, but is rather shaped like a house. It is also not obvious why other types of boats, such as arks and cruise ships, are not called *houseboats*. These considerations strengthen the case for the implausibility of a lexical processing system that would represent compound words solely in terms of their constituents. They also suggest that lexicalized compound words are never semantically transparent in the sense that their whole-word meanings are fully predictable from the meanings of their constituents. In the best cases, only the reverse is true: that the semantic functions of the constituents can be predicted from the meaning of the whole word.

A surprising number of compounds across languages that have been studied have non-transparent meaning relations between their constituents and their whole words. In English, for example, most of the members of the *berry* family of compounds have this

property. The contribution of the meanings of *blue* and *berry* in *blueberry* seem clear, but for other members such as *boysenberry*, *cranberry*, *elderberry*, *gooseberry*, *loganberry*, *raspberry*, and *strawberry*, it is exceedingly unlikely that the meaning of the first constituent as an independent morpheme contributes to the meaning of the whole word. The first psycho-linguistically revealing fact concerning the semantic opacity of these forms is that it is so rarely noticed by native speakers. Thus, the system will extract constituents from compounds but does not depend on doing so. This appears to be consistent with a 'maximization of opportunity' framework that posits a mental architecture in which all representations that can be activated will be activated. Under such an architecture, the system remains relatively crash-proof by being able to extract all that it can- namely, the whole meaning for each word as well as the fact that they are all berries. This in itself can be quite revealing of cognitive processing in general, but the exact mechanisms that are involved for stimuli such as these have not yet been investigated (Libben and Jarema 2006)

It would appear that an account of how the lexical processing system deals with semantic opacity would have to make reference to a fundamental distinction within the class of *berry* compounds described above. For some compounds (eg. *boysenberry, cranberry, loganberry*) the initial constituent simply does not contribute to the meaning of the compound because it is treated as though it were a proper noun. In this case, one would want to know the exact mechanisms that underlie the system's ability to posit two morphemes in a compound, where only one is a known word. Understanding how this is done would very likely have application to a number of domains in cognitive science as

well as to our understanding of lexical acquisition, which for many languages critically depends on the ability to extract new roots from both compound and affixed forms.

2.3.3. Is Morphological Structure Represented in the Mind?

One of the key opportunities provided by the study of compounds is the opportunity to study the representation of linguistic structure in the mind. When we speak of the syntactic structure of sentences, we are speaking of a potentially fleeting structure that must be computed on-line during comprehension and production. The linguistic structure of a compound, in contrast, must be represented in the mind in a relatively stable form. But, what is the nature of this representation? Here we need to gain an understanding both of how much morphological detail is associated with the representation of compound words in the mind and how that knowledge is instantiated in the functional architecture of the mental lexicon (Libben 2006).

One could think of the morphological structure of *houseboat* as a specification that the word is made up of two morphemes, the first of which is *house* and the second of which is *boat*. This structural determination would capture the important fact that *boathouse* and *houseboat* do not mean the same things. The problem with the representation of compounds such as *houseboat* and *boathouse* as simply an ordered set of morphemes, however, is that such a representation would fall short of accounting for the fact that a speaker of English immediately knows that *boathouse* is a type of *house* and that *houseboat* is a type of *boat*. We need to know how such a concept could be represented in the mind. One possibility is that the concept of head is not represented in the word at all. It might be derived from what the speaker knows about the properties of

the English language in general, because, in English, all compounds have their heads as the last (rightmost) constituent.

This section was divided into three sub sections where the first sub section, 2.3.1, talked about the semantic transparency effects, the second sub section, 2.3.2, described the empirical studies done on representation and processing of compounds and the third sub section 2.3.3 dealt with the question whether morphological structure is represented in the mind. The following section 2.4 will give a detailed account of compounds in Kannada, their classification and characteristic features etc.

2.4. Kannada Compounds: An Overview

Like many other languages of the world**,** compounding is a very productive word formation process in Kannada as well. Compounds, words made up of what were once words, are of four basic types in Kannada as proclaimed by Giridhar (2000). They are listed below: (1) Those with nouns as syntactic heads; (2) Those with verbs as syntactic heads; (3) Those with adjectives as syntactic heads, and (4) Those with adverbs as syntactic heads.

Sridhar (1990) has a reasonably good taxonomy of compounds, he is of the opinion that adjectives and adverbs cannot head compounds unlike Giridhar. Noun-noun compounds are classified by Sridhar in the following way:

(a). Hyponymous compounds: A large class of noun-noun compounds in Kannada consists of a concrete noun as the first element and a descriptive noun indicating the semantic category (a hyponym) as second element. A few representative examples are given below:-

be:sige ka:la ‘summer season’

kittaLe haNNu ‘orange fruit’

si:be ka:yi ‘guava unripe fruit’

kudure ga:Di ‘horse carriage’

baTTe angaDi ‘cloth shop’

(b). Dwandwa compounds: This class of additive compounds (also called co-compounds) involves two nouns which belong to the same semantic class. Together, they signify a super ordinate semantic class. This is a highly productive process.

kaNNu mu:gu ‘eye nose’ (facial features)

bassu ka:ru ‘bus car’(vehicles);

(c) Regular compounds: These compounds are referred to simply as “compounds” or “sub compounds”. They also involve nouns, but not necessarily of the same semantic class; furthermore, the relationship between the elements is not one of “equality” (as in the case of dwandwas, where it is not possible to identify a semantic “head”), but one of subordination (eg. manegelasa (= mane-kelasa) ‘housework’). The two compound types are distinguished from each other by a number of additional formal properties:

1. Dwandwas do not permit optional ellipsis of the enunciative vowel, but regular compounds do.

kaNNu mu:gu ‘eye nose’, ie, facial features.

kaNsanne ‘eye gesture’, ie, meaningful wink’

2. The initial consonant of the second member is often voiced in regular compounds, never in dwandwas:

hosagannaDa (‘modern Kannada’)

kasakaDDi (‘dirt’, ‘stick’ ie, ‘garbage’)

3. There is a pause juncture between elements of dwandwa compounds, but not in regular compounds.

4. Word-final –a: in Sanskrit loans is retained in regular compounds, nativized into –e in dwandwas:

katha:spardhe (story competition)

vs.

kathe ka:dambari (‘story novel’, ie, ‘fiction’)

5. The order of elements is fixed in regular compounds, sometimes permeable in dwandwas: kurci ka:lu (‘chair leg’), ie, sit in a designated position resembling a chair but without support for the hips (an archaic punishment for errant students in schools); vs. kurci me:ju (‘chair desk’. ie, furniture), also me:ju kurci,

d. Complex compounds: Complex compounds, in which all the components of a compound are themselves compounds, are possible, as in ga:jina baLe angaDi (glass-gen bangle shop) ‘glass bangle shop’ which is formed on the genitive compound, ga:jina baLe ‘glass bangle’. Non genitive compounds also can be elements of complex compounds: kallu sakkare ka:rkha:ne ‘rock candy factory’ (kallu sakkare ‘stone sugar’, ie, rock candy; are taleno:vu ‘half headache’; nere mane suddi ‘next-house news’ and even kruSi varama:na terige vina:yiti masu:de ‘farm income tax exemption bill’.

e. Genitive compounds: There is a fairly substantial number of nominal compounds that take the genitive marker (-a) on the first element. These genitive compounds, are nevertheless compounds, eg. de:vara mane ‘god-gen house’, ie, room set aside for prayer and worship in the house, a ‘house-shrine’; ettinaga:Di (bullock-gen cart) ‘bullock cart’; pustakada angaDi (book-gen shop) ‘book store’. f. Reduplicative compounds: Reduplicative compounds, involving repetition of nouns, are used to intensify meanings, as well as to convey an “exhaustive meaning”, eg. bi:di-bi:di (street-street) ie, every street; attu attu (cry-pp-cry-pp) ie, crying intensely.

g. Partially Reduplicative compounds: These are formed by replacing the first syllable with gi.

hallu-gillu ‘teeth and the like’

si:re-gi:re ‘saree and the like’

me:ju-gi:ju ‘desk and the like’

freNDu-giNDu ‘friends and the like’

sne:hitaru-gi:hitaru ‘friends and the like’

sambaLa-gimbaLa ‘salary and other income’

The vowel length in the reduplicated syllable corresponds to that of the source syllable and that the number and nature of the consonants in the initial syllable is irrelevant. Even vowel-initial words undergo the rule. a:Ta-gi:Ta ‘games and the like’. This process applies to words of all major lexical categories, eg. o:Di-gi:Di:ye! (run-pp redup cont) ‘Don’t you run or something!’ biddu-giddu-biTTa:nu (fall-pp redup. aux-cont) ‘lest he fall or something’.

A related class of compounds consists of nominal first elements followed by a phonologically related empty morph, with the resultant meaning of "noun and the like", as in ciLLe-piLLe 'younglings and the like'. These compounds differ from the above-discussed reduplicative ones in that the former are formed by a regular phonological rule, while the segments that occur in the latter vary from item to item.

h. Intensifier compounds: Somewhere between the two types of partially reduplicative compounds discussed above is the class of compounds which Sridhar (1990) refers to as intensifier compounds. These are formed by preceding a noun with a copy of the first two syllables in a slightly modified fashion:

tudi 'end' tutta tudi 'the very end'

modalu 'beginning' moTTa modalu 'the very beginning'

kaDe 'last' kaTTa kaDe 'the very last'

However, this is not a productive process in Kannada.

i. Stem compounds:

A very frequently used class of nominal compounds involves a noun ending in –a: as the first element and another noun, which functions as the head, as second element. The first element is invariably a loanword, usually from Sanskrit, which in all other contexts occurs in an assimilated form, ie, with a word-final –e.

patrika: goSTi 'press conference'

sambha:SaNa: ru:pa 'dialogue form'

niru:paNa Sayli ‘narration style’ (Praja:va:Ni 1985 January 27)

In Kannada and other Dravidian languages, all inflection is suffixal and the few prefixes that can be isolated are derivational and relatively new (Aronoff and Sridhar 1988). The present work focuses only on noun-noun compounds without any inflections added. The compounds in Kannada are all right-headed and the order is modifier-head all the time.

This section discussed Kannada compounds in detail where an elaborate account of the types of compounds in Kannada is given and their characteristic features are also discussed. But this study focuses only on noun-noun compounds without any inflections attached to them. In a nutshell, this chapter gave an account of the general issues on compounds in the section 2.1. The theoretical foundations on compounds starting with the etymological history of the term ‘compounding’ was also given in the section 2.2. Section 2.3 discussed the major psycholinguistic studies done on compounds where the first sub section 2.3.1 talked about the semantic transparency effects, the second sub section 2.3.2 talked about representation and processing of compounds. The third sub section 2.3.3 explored the question whether morphological structure is represented in the mind. Section 2.4 of the present chapter gave an overview of Kannada compounds particularly the different types and the features of compounds in Kannada.

CHAPTER 3

Constituent Knowledge in Compounds

The present chapter deals with the first research question of the present research project, namely the constituent knowledge of compounds, the methodology adopted for carrying out the empirical work and an account of how the data required for the research were collected. This research problem aimed at investigating if Kannada-speaking children comprehend compounds as a single word or as two separate words and also determining the age at which they could comprehend meaning of compounds of the noun-noun type. The wider applicability of the work is not to be underestimated though the data required for the study were collected from Kannada.

This chapter is divided into eight sections where the first section 3.1 gives a brief introduction to the chapter. The second section 3.2 deals with the constituent knowledge between compound constituents. Section 3.3 talks about the method employed to elicit data from the subjects. The fourth section 3.4 gives a description of the subjects who participated in this experiment. The design used in this particular task is discussed in the fifth section 3.5. The sixth section 3.6 describes the materials that were used to conduct the experiment. The seventh section takes us through the journey of the procedure of collecting data. The eighth section describes the results and discussions of this particular empirical study.

3.1. Introduction

It is possible that the semantic transparency of compounds has a role to play in children's acquisition of compounds. It is worth noting that there are compounds in which both the constituents contribute to the meaning of the compound and there are certain other compounds in which one of the constituents contributes to the meaning of the compound. There is a third category of compounds where neither of the constituents contributes to the meaning of the compound.

The hypothesis with which this study is set out is that there might be an order of acquisition which children follow while acquiring languages. Here, the order would be such that semantically fully transparent compounds would be acquired first followed by partially transparent compounds and opaque compounds would be acquired last. This has been tested drawing data from Kannada-speaking children of the age 7-9 years.

3.2. Comprehension of Compounds

In English, compound nouns formed from root + root nouns (eg. "stick bug") can refer to a variety of semantic relations between the two nouns and therefore might pose a challenge to children acquiring the language. A "stick bug" is a bug which looks like a stick (Gottfried 1997). In addition to the interaction between whole concrete objects, compound nouns can refer to some property or likeness of one object in modifying another object. English compound nouns are right-headed, meaning that the rightmost noun identifies the category to which the compound as a whole belongs.

For children who learn languages in which compounding is frequent and productive, they learn the sub categorization function very early in development. Compounding is an extremely productive word formation process in Kannada and compound nouns are right-headed in the language. For example, “baTTe angaDi” is a shop where clothes are being sold. Compound nouns are not always semantically transparent in Kannada. In other words, there are different types of compounds depending upon the degree of their semantic compositionality.

3.3. Method

Comprehension and judgment task was used in this study to elicit data from the respondents. The compounds which were to be studied were neatly typed out on white papers and were handed over to the subjects. The subjects were asked to read those compounds, comprehend them and decompose the compounds into their constituents in whichever way they could. This method was used here since the subjects who took part in the task were all of the age 7-9 years and it was not feasible enough to use sophisticated equipments or computer screen in order to gather data required for the study. It is worth mentioning here that this is not a totally new method in the empirical study, but was used earlier by many people for similar studies.

3.4. Subjects

The participants included sixty two children in total out of which thirty six were 8-9 year old and the rest twenty six were of the age 7 years. The participants were segregated into two groups based on their age, that is, all the 7 year old children constituted the younger group and all the 8-9 year old children formed the older group of

participants. All the participants were native speakers of Kannada and were studying in Kannada-medium primary schools in the Kasaragod district of Kerala under the Board of Primary School Education, Government of Kerala.

3.5. Design

The database used for this particular experiment was segregated into three different categories based on the semantic compositionality of the compounds. The three categories were namely semantically transparent compound nouns, partially transparent compound nouns and semantically opaque compounds. There were 64 semantically fully transparent compounds, 35 partially transparent compound nouns and 15 semantically opaque compounds in the database given to the participants. In other words in total 114 compounds were tested in this particular task. All the entries were noun-noun combinations without inflections. Semantically fully transparent compounds included words like *be:sigeka:la* (‘summer season’), *kittaLehaNNu* (‘orange fruit’) etc. *eNNega:yi* (‘an oily dish made of brinjal’), *angavastra* (‘hand kerchief’) etc. comprised the list of partially transparent compounds and *angajanaka* (‘father of Cupid’), *a:neka:lu* (‘filaria, a disease where the vicitm’s legs swell uncontrollably’) were some of the opaque compounds.

3.6. Materials

A semantically non-transparent expression may be described as semantically opaque. It is important to emphasize that transparency is the end point of a continuum of degrees of opacity, much as “cleanliness” is the end-point of a continuum of degrees of “dirtiness” (Cruse 1986). There would basically be two components to the notion of

degrees of opacity. The first is the extent to which constituents of opaque expressions are full semantic indicators: clearly *blackbird,* with two full indicators is less opaque than *ladybird*, with one partial indicator only (-bird), which in turn is less opaque than *red herring* or *in a brown study*, neither of which contains any indicators at all.

Out of the 114 compound nouns of the database, 64 were of the first category namely semantically transparent compounds, 35 of the second category called partially transparent compounds and 15 figured in the third category of semantically opaque compounds. The first category included words like *kudurega:Di* ('horse cart'), *baTTeangaDi* ('textiles shop') etc. The second category of partially transparent compounds included *annada:*na ('giving meals'), *kulagruha* ('house of the family') etc. Opaque compounds, in other words, the third category, consisted of compounds like *kusumaba:Na* ('name of Cupid'), *bisilukudure* ('mirage') etc.

3.7. Procedure

The participants, as mentioned earlier, were all students of Kannada medium primary schools in the Kasaragod district of Kerala. They were all given the papers containing the test materials, that is, noun-noun compounds of three categories based on their semantic compositionality. All the participants were asked to read the compounds and comprehend them. It was assumed that they would be able to segregate the compounds into their constituents if they understood the compounds at the first place.

The first two categories of compounds namely the semantically transparent compounds and partially transparent compounds, it is hypothesized, would prove relatively easier for the children to comprehend than the third category which consisted

of semantically opaque compounds. Since the third category was the most difficult part of the task, a slightly different procedure within the study was followed for the third category. Two possible and a sort of related meanings of the compounds and a third semantically unrelated entry were typed out and the participants were asked to comprehend the compounds and tick whichever they thought was the right meaning of the given compound. The opaque compounds were a kind of abstract words and hence it was difficult for the participants to decipher the meanings of those words. For example, consider the word *angajanaka* and the choices of meanings given for the word.

angajanaka (father of Cupid)

1. Sari:rada Ba:ga (body part)
2. tande (father)
3. ka:mana tande (father of Cupid)

3.8. Results and Discussion

This research question attempted to establish the age at which Kannada-speaking children are able to comprehend compound nouns as consisting of two words, not one. The journey was set out with a hypothesis in mind that there is a possibility of children unconsciously following an order in the case of acquisition of compounds. That is, it is hypothesized that out of the three categories of compound words which constituted the database for this study, semantically fully transparent compounds may be acquired first, followed by the partially transparent compounds and finally the semantically opaque ones.

The data elicited through the experiment do reaffirm the hypothesis that there is a sequence of acquisition of compounds which children follow in the course of language acquisition. The participants were of the age 7-9 years and they were segregated into two groups- one consisting of all 7 year old children and the other of all 8-9 year old children from the bulk of the participants. The database, as previously mentioned, consisted of three different categories based on the semantic compositionality of compounds.

The first category of semantically transparent compounds included 64 compounds like *be:sigeka:la* ('summer season'), *kittaLehaNNu* ('orange fruit'), *si:beka:yi* ('unripe guava'), *kudurega:Di* ('horse cart') etc. which are very much present in the day-to-day parlance of children. Out of the 36 children of the older age group (8-9 years), 56 words of the first category were correctly comprehended by 26 children which forms 72.2% of the total population which is 36/56. The remaining 8 words were comprehended in the right manner by 21, 24, 24,22, 23, 23,24 and 25 children respectively which formed the percentages 58.3%, 66.6%, 66.6%, 60.1%, 63.8%, 63.8%, 66.6% and 69.4% of the total participants.

Table 3.1. Responses of the 8-9 year old children to fully compositional compounds

Compound Noun	Gloss	No. of correct responses	Percentage of correct responses
be:sigeka:la	Summer season	26/36	72.2
kittaLehaNNu	Orange fruit	26/36	72.2
si:beka:yi	Unripe guava	26/36	72.2
kudurega:Di	Horse cart	26/36	72.2

baTTeangaDi	Textiles shop	26/36	72.2
ugibanDi	Steam engine	26/36	72.2
kaNNi:ru	Tears	26/36	72.2
malena:Du	Hilly area	26/36	72.2
keneha:lu	Creamy milk	26/36	72.2
maduvemane	Wedding house	26/36	72.2
bayalusi:me	Plain land	26/36	72.2
ka:luda:ri	Footpath	26/36	72.2
je:nuhuLa	Honeybee	26/36	72.2
ni:rsa:ru	Watery rasam	21/36	58.3
kaigaDiya:ra	Wristwatch	26/36	72.2
sa:ra:yiangaDi	Liquor shop	26/36	72.2
maDikericaLi	Winter at Mercera	26/36	72.2
angavika:ra	Physical deformity	26/36	72.2
angahi:nate	Physical handicap	26/36	72.2
atithisatka:ra	Hospitality	26/36	72.2
a:yudhapu:je	Worship of weapons	24/36	66.6
uNNebaTTe	Woolen cloth	26/36	72.2
kaNNumucca:le	Hide and seek	26/36	72.2
kannaDibaLe	Bangle with mirrors on it	26/36	72.2
ka:Dgiccu	Forest fire	26/36	72.2
gurudakSiNe	Obeisance to a	26/36	72.2

	teacher		
gurupu:je	Worship of a teacher	26/36	72.2
guruBakta	Devotee of a teacher	26/36	72.2
gruhaprave:Sa	House warming	26/36	72.2
gra:made:vate	Village god	26/36	72.2
jananapatrike	Birth certificate	26/36	72.2
janmaBu:mi	Native place	24/36	66.6
jalakri:De	Play in water	26/36	72.2
jalade:vate	Water god	26/36	72.2
jalapa:tre	A vessel to carry water	26/36	72.2
jalapraLaya	Deluge	26/36	72.2
jalaprava:ha	Water flow	26/36	72.2
ja:tisamu:ha	Cluster of castes	26/36	72.2
ji:vada:na	Sacrifice of life	26/36	72.2
ji:vanidhi	Life treasure	26/36	72.2
jalanidhi	Water treasure	26/36	72.2
ji:vara:Si	Living species	26/36	72.2
ji:vavadhe	Murder	26/36	72.2
ji:vahimse	Life torture	26/36	72.2
nya:yanirNa:yaka	Judge	22/36	60.1
nya:yavica:raNe	Enquiry of a law	23/36	63.8

	suit		
panktiBo:jana	Many people having meals together	26/36	72.2
padabandha	Crossword	26/36	72.2
paraka:yaprave:Sa	A science of entering another body	26/36	72.2
paSupa:laka	Cowherd	26/36	72.2
pa:dapu:je	Worshipping one's feet usually of a religious leader	26/36	72.2
Palapu:je	Worship of fruits and other cash crops	26/36	72.2
brahmavidye	Knowledge which is considered divine	26/36	72.2
maNikankaNa	A bracelet with precious stones on it	26/36	72.2
mitradro:hi	One who cheats a friend	26/36	72.2
mrugaya:tre	Procession of animals	26/36	72.2
yakSiNividye	Witch craft	23/36	63.8
yajnakankaNa	Bracelet worn while	24/36	66.6

	performing sacrifices		
yajnakunDa	Pit on which sacrifice is performed	26/36	72.2
yajnaBu:mi	Land where sacrificial fire is burnt	26/36	72.2
yajnaSa:le	Place of sacrificial fire	25/36	69.4
ya:gaSa:le	Place of sacrificial fire	26/36	72.2
yuddhaBu:mi	Battle ground	26/36	72.2
yo:ganidre	Art of sleep in yogic science	26/36	72.2

36 children of the age 8-9 years were asked to read and comprehend 35 partially transparent compounds. 4 words were rightly comprehended and decomposed into compound constituents by 63.8% of the total population, that is, 23 out of 36 children gave the correct responses. 11 words were comprehended and segregated into constituents by 61.1% of the total population, that is, 22 out of 36 children gave the correct responses. 6 words were rightly comprehended by 58.3% of the total population, that is, 21 out of 36 children rightly judged 6 compound words. 11 more words were

rightly judged and split into constituents by 55.5% of the total population, that is, 20 out of 36 children gave correct responses. 1 word was comprehended by 52.7% of the total population, that is, 19 out of 36 children judged a word right. 2 words were comprehended and judged by 50.0% of the total population, that is, 18 out of 36 children were able to give the correct response for 2 words.

Table 3.2. Responses of the 8-9 year old subjects to the partially transparent compounds

Compound Noun	Gloss	No. of correct responses	Percentage of correct responses
eNNega:yi	An oily dish made of brinjal	23/36	63.8
oLamane	Interior room	20/36	55.5
angavastra	Hand kerchief	20/36	55.5
annada:na	Giving meals	20/36	55.5
a:yudhaSa:le	Place where weapons are kept	23/36	63.8
ka:makastu:ri	A leaf which smells nice	20/36	55.5
kudigaNNu	Corner of an eye	23/36	63.8
kudino:Ta	Side glance	21/36	58.3
kulagruha	House of a clan	22/36	61.1
kulade:vate	Chief deity of a clan	19/36	52.7

kulaputra	Son of a clan	22/36	61.1
garBaguDi	Sanctum sanctorum of a temple	20/36	55.5
cakravyu:ha	A maze like system	22/36	61.1
pa:kaSa:le	Kitchen	21/36	58.3
pa:TaSa:le	School	21/36	58.3
ho:maSa:le	Place of sacrificial fire	22/36	61.1
asthipanjara	Skeleton	20/36	55.5
benkipeTTige	Matchbox	22/36	61.1
cuccuma:tu	Taunting words	22/36	61.1
cuccumaddu	Injection	20/36	55.5
gaDDegeNasu	Roots and tubours	20/36	55.5
ga:Lima:tu	Baseless words	22/36	61.1
ga:Lisuddi	Rumour	21/36	58.3
garaDimane	Gymnasium	20/36	55.5
guDikaiga:rike	Cottage industry	18/36	50.0
guddalipu:je	Worship of land before building something	20/36	55.5
hallupuDi	Toothpowder	23/36	63.8
ha:luhallu	Milk teeth	22/36	61.1
haNNumuduka	A very old man	22/36	61.1

kaNNuguDDe	Eyeball	22/36	61.1
prayo:gaSa:le	Laboratory	20/36	55.5
re:Smegu:Du	Nest of a silkworm	18/36	50.0
soLLeparade	Mosquito net	21/36	58.3
suDuga:Dukelasa	Useless work	22/36	61.1
vrittapatrike	Newspaper	21/36	58.3

36 children of the age 8-9 years were asked to read and comprehend 15 semantically opaque compounds of the third category. 5 words were comprehended and decomposed into constituents by 30.5% of the total population, that is, 11 out of 36 children were able to give correct responses. 1 word was rightly comprehended by 27.7% of the total population, that is, 10 out of 36 children gave the right responses. 7 words were rightly understood and segregated into constituents by 25.0% of the total population of the participants, that is, 9 out of 36 children were correct in giving responses. Finally, 2 words were judged correctly by 16.6% of the total population, that is, 6 out of 36 children were able to give the correct responses.

Table 3.3. Responses of the 8-9 year old children to non compositional compounds

Compound Noun	Gloss	No. of correct responses	Percentage of correct responses
angajanaka	Father of Cupid	9/36	25.0
kanya:kuma:ri	Cape Comorin	9/36	25.0
ka:ncanama:le	Feature of prosody	10/36	27.7

kusumaba:Na	Cupid	11/36	30.5
sarasijamitra	Sun	6/36	16.6
hayavadana	Lord Vishnu	6/36	16.6
a:neka:lu	Filaria	9/36	25.0
bisilukudure	Mirage	11/36	30.5
haNebaraha	Fate	9/36	25.0
hasemaNe	Wedlock	11/36	30.5
kapimuSti	Tight grip	11/36	30.5
mincuhuLa	Firefly	9/36	25.0
talebaraha	Destiny	9/36	25.0
dhvanisuruLi	Cassette	11/36	30.5
rajataparvata	Heaven	9/36	25.0

26 children of 7 years of age took part in this task. Out of the 64 words which formed the database, 57 words were rightly comprehended and decomposed into constituents by 46.1 % of the total population which equals 12 out of 26 children. 1 word was rightly comprehended by 26.9% of the participants, that is, 7 out of 26 children. 2 words were correctly judged and segregated into constituents by 23.1% of the participants; that is, 6 out of 26 children. 1 word was rightly understood by 19.2% of the total population, that is, 5 out of 26 children; another word was correctly comprehended by 15.4% of the participants, that is, 4 out of 26 children. 2 words were rightly comprehended and split into constituents by 11.5% of the participants, that is, 3 out of 26 children.

Table 3.4. Responses of the 7- year old children to the fully compositional compounds

Compound Noun	Gloss	No. of correct responses	Percentage of correct responses
be:sigeka:la	Summer season	12/26	46.1
kittaLehaNNu	Orange fruit	12/26	46.1
si:beka:yi	Unripe guava	12/26	46.1
kudurega:Di	Horse cart	12/26	46.1
baTTeangaDi	Textiles shop	12/26	46.1
ugibanDi	Steam engine	12/26	46.1
kaNNi:ru	Tears	4/26	15.4
malena:Du	Hilly area	12/26	46.1
keneha:lu	Creamy milk	12/26	46.1
maduvemane	Wedding house	12/26	46.1
bayalusi:me	Plain land	12/26	46.1
ka:luda:ri	Footpath	12/26	46.1
je:nuhuLa	Honeybee	12/26	46.1
ni:rsa:ru	Watery rasam	3/26	11.5
kaigaDiya:ra	Wristwatch	5/26	19.2
sa:ra:yiangaDi	Liquor shop	12/26	46.1
maDikericaLi	Winter at Mercera	12/26	46.1

angavika:ra	Physical deformity	12/26	46.1
angahi:nate	Physical handicap	12/26	46.1
atithisatka:ra	Hospitality	12/26	46.1
a:yudhapu:je	Worship of weapons	12/26	46.1
uNNebaTTe	Woolen cloth	12/26	46.1
kaNNumucca:le	Hide and seek	12/26	46.1
kannaDibaLe	Bangle with mirrors on it	12/26	46.1
ka:Dgiccu	Forest fire	3/26	11.5
gurudakSiNe	Obeisance to a teacher	12/26	46.1
gurupu:je	Worship of a teacher	12/26	46.1
guruBakta	Devotee of a teacher	12/26	46.1
gruhaprave:Sa	House warming	12/26	46.1
gra:made:vate	Village god	12/26	46.1
jananapatrike	Birth certificate	12/26	46.1
janmaBu:mi	Native place	12/26	46.1
jalakri:De	Play in water	12/26	46.1
jalade:vate	Water god	12/26	46.1
jalapa:tre	A vessel to carry water	12/26	46.1
jalapraLaya	Deluge	12/26	46.1

jalaprava:ha	Water flow	12/26	46.1
ja:tisamu:ha	Cluster of castes	12/26	46.1
ji:vada:na	Sacrifice of life	7/26	26.9
ji:vanidhi	Life treasure	6/26	23.1
jalanidhi	Water treasure	12/26	46.1
ji:vara:Si	Living species	12/26	46.1
ji:vavadhe	Murder	12/26	46.1
ji:vahimse	Life torture	12/26	46.1
nya:yanirNa:yaka	Judge	12/26	46.1
nya:yavica:raNe	Enquiry of a law suit	12/26	46.1
panktiBo:jana	Many people having meals together	12/26	46.1
padabandha	Crossword	12/26	46.1
paraka:yaprave:Sa	A science of entering another body	12/26	46.1
paSupa:laka	Cowherd	12/26	46.1
pa:dapu:je	Worshipping one's feet usually of a religious leader	12/26	46.1
Palapu:je	Worship of fruits and other cash crops	12/26	46.1

brahmavidye	Knowledge which is considered divine	12/26	46.1
maNikankaNa	A bracelet with precious stones on it	12/26	46.1
mitradro:hi	One who cheats a friend	12/26	46.1
mrugaya:tre	Procession of animals	12/26	46.1
yakSiNividye	Witch craft	12/26	46.1
yajnakankaNa	Bracelet worn while performing sacrifices	12/26	46.1
yajnakunDa	Pit on which sacrifice is performed	12/26	46.1
yajnaBu:mi	Land where sacrificial fire is burnt	12/26	46.1
yajnaSa:le	Place of sacrificial fire	12/26	46.1
ya:gaSa:le	Place of sacrificial fire	12/26	46.1
yuddhaBu:mi	Battle ground	12/26	46.1

yo:ganidre	Art of sleep in yogic science		

The second list of compounds was of the partially transparent compounds. Out of the 35 words that comprised the list, 32 words were rightly comprehended by 11 participants out of the total 26 children, which forms the percentage of data 42.3%. The remaining 3 words were comprehended by 9 children out of 26, and the percentage of data is 34.6%.

Table 3.5. Responses of the 7-year old children to partially compositional compounds

Compound Noun	Gloss	No. of correct responses	Percentage of correct responses
eNNega:yi	An oily dish made of brinjal	9/26	34.6
oLamane	Interior room	11/26	42.3
angavastra	Hand kerchief	11/26	42.3
annada:na	Giving meals	11/26	42.3
a:yudhaSa:le	Place where weapons are kept	11/26	42.3
ka:makastu:ri	A leaf which smells nice	11/26	42.3
kudigaNNu	Corner of an eye	11/26	42.3

kudino:Ta	Side glance	11/26	42.3
kulagruha	House of a clan	11/26	42.3
kulade:vate	Chief deity of a clan	11/26	42.3
kulaputra	Son of a clan	11/26	42.3
garBaguDi	Sanctum sanctorum of a temple	11/26	42.3
cakravyu:ha	A maze like system	11/26	42.3
pa:kaSa:le	Kitchen	11/26	42.3
pa:TaSa:le	School	11/26	42.3
ho:maSa:le	Place of sacrificial fire	11/26	42.3
asthipanjara	Skeleton	11/26	42.3
benkipeTTige	Matchbox	11/26	42.3
cuccuma:tu	Taunting words	11/26	42.3
cuccumaddu	Injection	11/26	42.3
gaDDegeNasu	Roots and tubours	11/26	42.3
ga:Lima:tu	Baseless words	11/26	42.3
ga:Lisuddi	Rumour	11/26	42.3
garaDimane	Gymnasium	11/26	42.3
guDikaiga:rike	Cottage industry	11/26	42.3
guddalipu:je	Worship of land before building something	11/26	42.3

hallupuDi	Toothpowder	11/26	42.3
ha:luhallu	Milk teeth	11/26	42.3
haNNumuduka	A very old man	11/26	42.3
kaNNuguDDe	Eyeball	11/26	42.3
prayo:gaSa:le	Laboratory	11/26	42.3
re:Smegu:Du	Nest of a silkworm	11/26	42.3
soLLeparade	Mosquito net	11/26	42.3
suDuga:Dukelasa	Useless work	9/26	34.6
vrittapatrike	Newspaper	9/26	34.6

The third category of the database was the list of semantically opaque compounds. The list contained 15 words in all. 13 words were rightly comprehended by 10 participants out of the total 26 who took part in the task and the percentage of data is 38.5%. The remaining 2 words were correctly judged by 9 participants and the percentage of data is 34.6%.

Table 3.6. Responses of the 7-year old children to non compositional compounds

Compound Noun	Gloss	No. of correct responses	Percentage of correct responses
angajanaka	Father of Cupid	10/26	38.5
kanya:kuma:ri	Cape Comorin	10/26	38.5
ka:ncanama:le	Feature of prosody	10/26	38.5
kusumaba:Na	Cupid	10/26	38.5

sarasijamitra	Sun	10/26	38.5
hayavadana	Lord Vishnu	9/26	34.6
a:neka:lu	Filaria	10/26	38.5
bisilukudure	Mirage	10/26	38.5
haNebaraha	Fate	9/26	34.6
hasemaNe	Wedlock	10/26	38.5
kapimuSti	Tight grip	10/26	38.5
mincuhuLa	Firefly	10/26	38.5
talebaraha	Destiny	10/26	38.5
dhvanisuruLi	Cassette	10/26	38.5
rajataparvata	Heaven	10/26	38.5

The elicited data of the three categories of compounds were also statistically analyzed and the p value was calculated. The data were fed in to the Logistic Regression Model in order to calculate the p value. For the purpose of analysis some codes were given to the three categories of compounds where compound code 1 stood for the fully compositional compounds, compound code 2 for the partially compositional compounds and lastly compound code 3 for the semantically opaque compounds.

```
Logistic Regression Model

lrm(formula = Response ~ factor(Compound.code) * factor(Age),
    data = research1)


Frequencies of Responses
   0    1
 530 3185

       Obs  Max Deriv Model L.R.       d.f.          P          C        Dxy
      3715      2e-08       76.9          5          0      0.605      0.211
     Gamma      Tau-a         R2      Brier
     0.276      0.052      0.037       0.12

                        Coef     S.E.    Wald Z P
Intercept                1.58983 0.07645 20.80  0.0000
Compound.code=2         -0.03168 0.12143 -0.26  0.7941
Compound.code=3         -0.37343 0.18125 -2.06  0.0394
Age=1                    0.78110 0.13849  5.64  0.0000
Compound.code=2 * Age=1  0.14566 0.24483  0.59  0.5519
Compound.code=3 * Age=1 -0.78110 0.31654 -2.47  0.0136

> anova(research1a.lrm)
               Wald Statistics          Response: Response

 Factor                                                Chi-Square d.f. P
 Compound.code  (Factor+Higher Order Factors)          26.88      4    <.0001
  All Interactions                                      7.64      2    0.022
 Age  (Factor+Higher Order Factors)                    52.88      3    <.0001
  All Interactions                                      7.64      2    0.022
 Compound.code * Age  (Factor+Higher Order Factors)     7.64      2    0.022
 TOTAL                                                 70.02      5    <.0001
```

As it is evident from the above diagram, p values were calculated without considering the influence of the age of the participants first and then the effect of age on the responses of the participants was taken into consideration. There is a significant difference in the p value between the two analyses. Without considering the age of the participants, the p value of the partially compositional compounds was 0.7941 which is much higher than the permitted rate of error which is $p<0.05$. Its counterpart of semantically opaque compounds without considering the age of the participants is 0.0394 which is well within the permitted range of p value. Therefore, irrespective of the age,

opaque compounds are statistically significant. When the effect of age of the subjects across the compound type was considered and the p value was calculated, it was well within the permitted range of the percentage of error which had been established globally.

Another perspective to look at the compounds would be to segregate the database into different domains of usage and in turn the compounds would be classified into various domains. The segregated lists of compounds are discussed below-

Table 3.7. Responses of the 7-year old children to the compounds which stand for seasons

Compound Noun	Gloss	Correct response (%)
be:sigeka:la	Summer season	46.1
maDike:ricaLi	Winter in Mercera	46.1

These terms indicating the seasons proved to be easy for children as young as 7 years to comprehend because these are the words which are commonly used and children often hear it in the conversations. Hence the percentage of correct responses was 46.1%.

Table 3.8. Responses of the 7-year old children to compounds which stand for food items/ vegetables/fruits

Compound Noun	Gloss	Correct response (%)
kittaLehaNNu	Orange fruit	46.1
si:beka:yi	Unripe guava	46.1
keneha:lu	Creamy milk	46.1
ni:rsa:ru	Watery rasam	11.5

Except for a slightly unknown word *ni:rsa:ru*, rest of the words were found to be as simple as seasonal terms for children since these are the food items which are seen and used in day-to-day life. Therefore, these words are very much in children's vocabulary and the percentage of correct responses again was 46.1%.

Table 3.9. Responses of the 7-year old children to compounds denoting religious practices and rituals

Compound Noun	Gloss	Correct response (%)
maduvemane	Wedding house	46.1
atithisatka:ra	Hospitality to a guest	46.1
a:yudhapu:je	Worship of weapons	46.1
gurudakSiNe	Obeisance to a teacher	46.1
gurupu:je	Worship of a teacher	46.1
guruBakta	Ardent follower/devotee of	46.1

	one's teacher	
gruhaprave:Sa	Housewarming	46.1
gra:made:vate	Village god	46.1
jalade:vate	Water god	46.1
ja:tisamu:ha	Group of castes	46.1
panktiBo:jana	Having food sitting on the floor	46.1
paraka:yaprave:Sa	Entering another body	46.1
pa:dapu:je	Worshipping the feet of a leader	46.1
Palapu:je	Offering fruits	46.1
brahmavidye	Great learning	46.1
yakSiNividye	Witch craft	46.1
yajnakankaNa	Arm band worn while performing yajna	46.1
yajnakunDa	Pit of sacrificial fire	46.1
yajnaBu:mi	Place of sacrificial fire	46.1
yajnaSa:le	Place of sacrificial fire	46.1
ya:gaSa:le	Place of sacrificial fire	46.1
yudhaBu:mi	Battle field	46.1

Surprisingly enough, the above terms which occur in mythological stories and in the parlance of royal family etc. were comprehended by 46.1% of the total participants. This could be because children are told mythological stories at a young age in most of the middle class families and hence they are aware of such terms at a relatively younger age itself.

Table 3.10. Responses of the 7-year old children to compounds which denote games

Compound Noun	Gloss	Correct response (%)
kannumucca:le	Hide and seek	46.1
jalakri:De	Play in water	46.1
padabandha	Cross word	46.1

The above terms which stand for different games were well comprehended and 46.1% of the subjects rightly comprehended these compounds because these are the words for games which are played by most of the children.

Table 3.11. Responses of the 7-year old children to compounds which stand for cloth and accessories

Compound Noun	Gloss	Correct response (%)
uNNebaTTe	Woolen cloth	46.1
kannaDibaLe	Glass bangle	46.1
maNikankaNa	Pearl bracelet	46.1

Compounds standing for clothes and accessories had also got good response from the subjects and 46.1% of them were able to comprehend these words and they could decompose them into constituents correctly.

Table 3.12. Responses of the 7-year old children to compounds which denote physical deformity and handicap

Compound Noun	Gloss	Correct response (%)
angavika:ra	Physical deformity	46.1
angahi:nate	Handicap	46.1

The above two compounds were also comprehended and decomposed into their constituents by 46.1% of the participants though these were not very commonly found words.

Table 3.13. Responses of the 7-year old children to compound words which stand for mode of transport

Compound Noun	Gloss	Correct response (%)
kudurega:Di	Horse carriage	46.1
ugibanDi	Steam engine	46.1

These two words are very common in children's vocabulary and the response rate proved it so and 46.1% of the participants rightly comprehended them.

Table 3.14. Responses of the 7-year old children to compounds denoting appliances and documents

Compound Noun	Gloss	Correct response (%)
kaigaDiya:ra	Wrist watch	19.2
jananapatrike	Birth certificate	46.1
jalapa:tre	Pitcher	46.1

Though *kaigaDiya:ra* is a very common word the present day scenario has been changed and watch has been borrowed so much into the lives of people that only 19.2% of the participants were able to comprehend *kaigaDiya:ra*. The other two words were well comprehended and decomposed into constituents and the percentage of correct response was 46.1%.

Table 3.15. Responses of the 7-year old children to compound standing for feelings

Compound Noun	Gloss	Correct response (%)
kaNNi:ru	Tears	15.4%

It is very surprising that *kaNNi:ru* which is the word for tears in Kannada was not comprehended by most of the subjects and only 15.4% of them could understand it. This could be because most of the time the verb *aLu* and the different forms of the verb are used to express the act of crying, not the noun *kaNNi:ru*. Therefore, most of the children are not aware of the noun form *kaNNi:ru*.

Table 3.16. Responses of the 7-year old children to compounds denoting different geographical locations

Compound Noun	Gloss	Correct response (%)
bayalusi:me	Plain land	46.1
malena:Du	Lush green land	46.1
ka:luda:ri	Footpath	46.1
janmaBu:mi	Native place	46.1

The above four terms denoting the land and geographical locations were easy for the children to comprehend and 46.1% of them comprehended those compounds and segregated them into their constituents because these words are used much in the day-to-day contexts.

Table 3.17. Responses of the 7-year old children to compound denoting animals

Compound Noun	Gloss	Correct response (%)
je:nuhuLa	Honeybee	46.1

Honeybee is such a common creature and 46.1% of the subjects comprehended the term *je:nuhuLa* and decomposed it into the constituents.

Table 3.18. Responses of the 7-year old children to compounds denoting natural calamity

Compound Noun	Gloss	Correct response (%)
ka:Dgiccu	Forest fire	11.5
jalapraLaya	Deluge	46.1
jalaprava:ha	Water flow	46.1

The words for different kinds of natural calamity especially the slightly tougher terms were rightly comprehended by 46.1% of the participants and the more common word which is *ka:Dgiccu* was understood by fewer participants.

Table 3.19. Responses of the 7- year old children to compounds denoting sacrificial fire and noble deeds

Compound Noun	Gloss	Correct response (%)
ji:vada:na	Life sacrifice	26.9
ji:vanidhi	Life treasure	23.1
jalanidhi	Water treasure	46.1

Two compounds in the above list were difficult for the children to comprehend and only 26.9% and 23.1% could understand *ji:vada:na* and *ji:vanidhi* respectively, whereas jalanidhi was rightly comprehended by 46.1% of the subjects.

Table 3.20. Responses of the 7-year old children to compounds standing for ecology and nature

Compound Noun	Gloss	Correct response (%)
ji:vara:Si	Living beings	46.1
paSupa:laka	Cow herder	46.1
mrugaya:tre	Animal procession	46.1
yo:ganidre	Sleep with awareness of the body	46.1

The compounds denoting the flora and fauna and the rustic life etc. were comprehended and decomposed into compound constituents by 46.1% of the total participants though these were not very common words which are used in daily life.

Table 3.21. Responses of the 7- year old children to compounds which denote law, order and jurisdiction

Compound Noun	Gloss	Correct response (%)
ji:vavadhe	Killing	46.1
ji:vahimse	Life torture	46.1
nya:yanirNa:yaka	Judge	46.1
nya:yavica:raNe	Law suit	46.1
mitradro:hi	Cheat	46.1

The above compounds were surprisingly comprehended by 46.1% of the subjects though they were all a little difficult words for the children of 7 years.

Table 3.22. Responses of the 7- year old children to compounds denoting religious practices and rituals

Compound Noun	Gloss	Correct response (%)
annada:na	Offering food	42.3
kulade:vate	Family god	42.3
garBaguDi	Sanctum sanctorum	42.3
cakravyu:ha	Maze-like system	42.3
guddalipu:je	Worship of weapons by labourers	42.3

The above mentioned compounds are of the second category, namely partially compositional compounds. The decrease in response rate also is evident that these words were more difficult for children to comprehend than the fully compositional ones.

Table 3.23. Responses of the 7- year old children to compounds denoting geographical locations

Compound Noun	Gloss	Correct response (%)
oLamane	A room inside a house	42.3
a:yudhaSa:le	A place where weapons are kept	42.3

kulagruha	House of the clan	42.3
pa:kaSa:le	Kitchen	42.3
pa:TaSa:le	School	42.3
ho:maSa:le	Place of sacrificial fire	42.3
garaDimane	Gymnasium	42.3
prayo:gaSa:le	Laboratory	42.3

The above words were more difficult for children than the fully compositional ones and the percentage of correct response was 42.3%. In other words, only 42.3% of the total participants could comprehend the above compounds and they could decompose them into constituents as well.

Table 3.24. Responses of the 7-year old children to compounds standing for documents

Compound Noun	Gloss	Correct response (%)
vrittapatrike	Newspaper	34.6

Though newspaper is a common entity which occurs in our day-to-day life, the more often used word in Kannada households is just “paper”. The response rate shows it very well that children would have been more accustomed to “paper” than “vrittapatrike,” hence only 34.6% of the participants could rightly comprehend the word and segregate it into constituents.

Table 3.25. Responses of the 7-year old children to compounds denoting food items

Compound Noun	Gloss	Correct response (%)
eNNega:yi	An oily dish made of brinjal	34.6

eNNega:yi is a dish which is not prepared much in the area where the data are collected from and the response rate reflects it very well. Only 34.6% of the participants were able to comprehend it.

Table 3.26. Responses of the 7-year old children to compounds denoting abstract concepts

Compound Noun	Gloss	Correct response (%)
cuccuma:tu	Taunt	42.3
ga:Lima:tu	Baseless talk	42.3
ga:lisuddi	Rumour	42.3
suDuga:Dukelasa	Useless work	34.6

These compounds which stand for abstract concepts were a little difficult for the children to comprehend and therefore, only 42.3% and 34.6% of the subjects could comprehend these compounds and segregate them into constituents.

Table 3.27. Responses of the 7-year old children to compounds standing for body parts

Compound Noun	Gloss	Correct response (%)
kuDigaNNu	Corner of the eye	42.3
asthipanjara	Skeleton	42.3
ha:luhallu	Milk teeth	42.3
kaNNuguDDe	Eyeball	42.3

Words for body parts were comprehensible for the participants and the response rate consistently was 42.3% though two terms were a little poetic.

Table 3.28. Responses of the 7-year old children to compounds standing for medicine

Compound Noun	Gloss	Correct response (%)
cuccumaddu	Injection	42.3
hallupuDi	Toothpowder	42.3

The terms for injection and toothpowder proved to be as easy as the body parts for the participants and 42.3% of the participants comprehended the compounds correctly and decomposed them into their constituents.

Table 3.29. Responses of the 7-year old children to compounds denoting cloth and accessories

Compound Noun	Gloss	Correct response (%)
angavastra	Handkerchief	42.3

The word for handkerchief was rightly comprehended and decomposed into constituents by 42.3% of the total subjects though kerchief is very much used in Kannada in the present scenario.

Table 3.30 Responses of the 7-year old children to compounds denoting flora and fauna

Compound Noun	Gloss	Correct response (%)
ka:makastu:ri	A flower	42.3
gaDDegeNasu	Roots and tubours	42.3

The two words listed above which stand for flowers, roots and tubours were also comprehended and segregated into constituents by 42.3% of the participants.

Table 3.31. Responses of the 7-year old children to compounds denoting different objects

Compound Noun	Gloss	Correct response (%)
benkipeTTige	Matchbox	42.3

re:Smegu:Du	Cocoon of silk worm	42.3
soLLeparade	Mosquito net	42.3

The objects used in the daily life were also comprehended and decomposed into compound constituents by 42.3% of the total subjects.

Table 3.32. Responses of the 7-year old children to compounds denoting feelings

Compound Noun	Gloss	Correct response (%)
kuDino:Ta	A side glance	42.3

The above word which is not commonly used was rightly judged and decomposed into constituents by 42.3% of the participants.

Table 3.33. Responses of the 7-year old children to compounds denoting kinship terms

Compound Noun	Gloss	Correct response (%)
kulaputra	Son of the clan	42.3
haNNumuduka	Very old man	42.3

The kinship terms which generally are comprehended quite early in the language acquisition process were comprehended and decomposed into constituents only by 42.3% of the subjects.

Table 3.34. Responses of the 7-year old children to compounds denoting occupation

Compound Noun	Gloss	Correct response (%)
guDikaiga:rike	Cottage industry	42.3

guDikaiga:rike, which is slightly difficult for children of the age 7 years was surprisingly comprehended and segregated into constituents by 42.3% of the total number of the participants.

Table 3.35. Responses of the 7- year old children to compounds denoting abstract concepts

Compound Noun	Gloss	Correct response (%)
angajanaka	Cupid's father	38.5
ka:ncanama:le	Prosodic parameter	38.5
kusumaba:Na	Cupid	38.5
sarasijamitra	Sun	38.5
hayavadana	Vishnu	34.6
bisilukudure	Mirage	38.5
haNebaraha	Fate	34.6
hasemaNe	Wedlock	38.5
kapimuSti	Tight grip	38.5
talebaraha	Destiny	38.5
rajataparvata	Heaven	38.5

The third category of opaque compounds contained more abstract and metaphoric terms and the response rate of the children was obviously less compared to the former two categories which were semantically more compositional.

Table 3.36. Responses of the 7-year old children to compounds denoting geographical locations

Compound Noun	Gloss	Correct response (%)
kanya:kuma:ri	Cape Comorin	38.5

The word for Cape Comorin was not known to many of the participants and hence only 38.5% of the participants could comprehend the compound word and could decompose it into constituents.

Table 3.37. Responses of the 7-year old children to compound denoting diseases

Compound Noun	Gloss	Correct response (%)
a:neka:lu	Filaria	38.5

The disease filarial was not probably known to a good number of the subjects and only 38.5% of them were able to rightly comprehend and segregate the word *a:neka:lu* into constituents.

Table 3.38. Responses of the 7- year old children to compounds denoting animals

Compound Noun	Gloss	Correct response (%)
mincuhuLa	Firefly	38.5

Firefly is a very common insect, still only 38.5% of the children who took part in this task could comprehend the word *mincuhuLa* and decompose the compound into its constituents.

Table 3.39. Responses of the 7- year old children to compounds standing for music systems

Compound Noun	Gloss	Correct response (%)
dhvanisuruLi	Cassette	38.5

The word for cassette in Kannada is not much used in the present day scenario, rather cassette has been largely nativized. Therefore, only 38.5% of the subjects were able to comprehend and decompose the word into its constituents.

Table 3.40. Responses of the 8-9 year old children to compounds standing for seasons

Compound Noun	Gloss	Correct response (%)
be:sigeka:la	Summer season	72.2
maDike:ricaLi	Winter in Mercera	72.2

The relatively higher response rate of these words is a clear indication that the compounds were easy for the children to comprehend. Moreover, they were semantically compositional. The participants who took part in this task were also older than the other group of respondents.

Table 3.41. Responses of the 8-9 year old children to compounds denoting food items, vegetables and fruits

Compound Noun	Gloss	Correct response (%)
kittaLehaNNu	Orange fruit	72.2
si:beka:yi	Unripe guava	72.2
keneha:lu	Creamy milk	72.2
ni:rsa:ru	Watery rasam	58.3

The above words were very easily comprehended by a good number of participants since they were the names of fruits which are largely available and other edible stuff. The response rate also indicates that the compounds were acquired quite early in the language development.

Table 3.42. Responses of the 8-9 year old children to compounds standing for religious practices and rituals

Compound Noun	Gloss	Correct responses (%)
maduvemane	Wedding house	72.2
atithisatka:ra	Hospitality to a guest	72.2

a:yudhapu:je	Worship of weapons	66.6
gurudakSiNe	Obeisance to a teacher	72.2
gurupu:je	Worship of one's teacher	72.2
guruBakta	Devotee of one's teacher	72.2
gruhaprave:Sa	Housewarming	72.2
gra:made:vate	Village god	72.2
jalade:vate	Water god	72.2
ja:tisamu:ha	Group of castes	72.2
panktiBo:jana	Having food sitting on the floor	72.2
paraka:yaprave:Sa	Entering another body	72.2
pa:dapu:je	Worship of the feet of a leader	72.2
Palapu:je	Offering fruits	72.2
brahmavidye	Divine learning	72.2
yakSiNividye	Witchcraft	63.8
yajnakankaNa	Bracelet worn while performing yajna	66.6
yajnakunDa	Pit of yajna	72.2
yajnaBu:mi	Place of yajna	72.2
yajnaSa:le	Place of yajna	69.4
ya:gaSa:le	Place of yaga	72.2
yudhaBu:mi	Battle field	72.2

The above table consists of words which are not very commonly used, but are related to the sacrificial fire, parlance of royal families etc. But the response rates are quite pleasing which again shows that the compounds were semantically compositional and hence were easy for the children to acquire.

Table 3.43. Responses of the 8-9 year old children to compounds denoting games

Compound Noun	Gloss	Correct response (%)
kaNNumucca:le	Hide and seek	72.2
jalakri:De	Play in water	72.2
padabandha	Cross word	72.2

These words were the names of different games which are very much in children's vocabulary and hence 72.2% of the subjects could comprehend these compounds and segregate them into constituents.

Table 3.44. Responses of the 8-9 year old children to compounds denoting cloth and accessories

Compound Noun	Gloss	Correct response (%)
uNNebaTTe	Woolen cloth	72.2
kannaDibaLe	Glass bangle	72.2
maNikankaNa	Pearl bracelet	72.2

The above compounds which stand for cloth and accessories were rightly comprehended and decomposed into constituents by 72.2% of the total subjects and they were also semantically compositional and easier for children to acquire than the other two categories of compounds.

Table 3.45. Responses of the 8-9 year old children to compounds denoting physical deformity and handicap

Compound noun	Gloss	Correct response (%)
angavika:ra	Physical deformity	72.2
angahi:nate	Handicap	72.2

The above words of physical deformity and handicap were also rightly judged and segregated into constituents by 72.2% of the total participants since they were semantically transparent.

Table 3.46. Responses of the 8-9 year old children to compounds standing for modes of transport

Compound Noun	Gloss	Correct response (%)
kudurega:Di	Horse carriage	72.2
ugibanDi	Steam engine	72.2

These two compounds were well comprehended by the subjects and they could decompose them into constituents too and the percentage of correct response was 72.2%. These words are very much present in the children's vocabulary.

Table 3.47. Responses of the 8-9 year old children to compounds denoting shop or stall.

Compound Noun	Gloss	Correct response (%)
baTTeangaDi	Textiles shop	72.2
sa:ra:yiangaDi	Liquor shop	72.2

The above words were also acquired by children quite early in language development and the percentage of correct response was 72.2% since the compounds were also semantically compositional.

Table 3.48. Responses of the 8-9 year old children to compounds standing for appliances and documents

Compound Noun	Gloss	Correct response (%)
kaigaDiya:ra	Wrist watch	72.2
jananapatrike	Birth certificate	72.2
jalapa:tre	Pitcher	72.2

The compounds listed above proved easy for children to comprehend and the percentage of correct response was 72.2%. These words were also semantically compositional.

Table 3.49. Responses of the 8-9 year old children to compounds denoting feelings

Compound Noun	Gloss	Correct response (%)
kaNNi:ru	Tears	72.2

The word for tears is very common and most of the subjects were able to comprehend it. Therefore, the percentage of correct response was 72.2%.

Table 3.50. Responses of the 8-9 year old children to compounds denoting geographical locations

Compound Noun	Gloss	Correct response (%)
bayalusi:me	Plain land	72.2
malena:Du	Lush green land	72.2
ka:luda:ri	Foot path	72.2
janmaBu:mi	Native place	66.6

Though the first three words of the above list were easy for the children to comprehend, the fourth word was a bit more difficult. Hence the percentage of correct response was 72.2% for the first three words and it was 66.6% for the fourth word.

Table 3.51. Responses of the 8-9 year old children to compounds standing for animals

Compound Noun	Gloss	Correct response (%)
je:nuhuLa	Honey bee	72.2

The word for honey bee was comprehended and decomposed into constituents by 72.2% of the participants which proved that it is very much within their vocabulary and the word is semantically compositional as well.

Table 3.52. Responses of the 8-9 year old children to compounds denoting natural calamity

Compound Noun	Gloss	Correct response (%)
ka:Dgiccu	Forest fire	72.2
jalapraLaya	Deluge	72.2
jalaprava:ha	Water flow	72.2

These three words were also very much in children's parlance and they were correctly comprehended and decomposed into constituents by 72.2% of them.

Table 3.53. Responses of the 8-9 year old children to compounds standing for sacrifices and noble deeds

Compound Noun	Gloss	Correct response (%)
ji:vada:na	Life sacrifice	72.2
ji:vanidhi	Life treasure	72.2
jalanidhi	Water treasure	72.2

The above list contains words which are not very common, yet they were rightly judged and segregated into constituents by 72.2% of the subjects.

Table 3.54. Responses of the 8-9 year old children to compounds standing for ecology and nature

Compound Noun	Gloss	Correct response (%)
ji:vara:Si	Living beings	72.2
paSupa:laka	Cow herder	72.2
mrugaya:tre	Procession of animals	72.2
yo:ganidre	Sleep with awareness of the body	72.2

These two words were also easy for the children to comprehend and the percentage of correct response was 72.2% for both the words.

Table 3.55. Responses of the 8-9 year old children to compounds denoting law, order and jurisdiction

Compound Noun	Gloss	Correct response (%)
ji:vavadhe	Killing	72.2
ji:vahimse	Life torture	72.2
nya:yanirNa:yaka	Judge	60.1
nya:yavica:raNe	Law suit	63.8
mitradro:hi	Cheat	72.2

Two words in the above table were relatively more difficult for the children to comprehend since they do not occur in the day-to-day talk of children. The other three words were comprehended and decomposed into constituents by 72.2% of the participants.

Table 3. 56. Responses of the 8-9 year old children to compounds standing for religious practices and rituals

Compound Noun	Gloss	Correct response (%)
annada:na	Offering food	55.5
kulade:vate	Family god	52.7
garBaguDi	Sanctum sanctorum	55.5
cakravyu:ha	Maze like system	61.1
guddalipu:je	Worship of tools by laborers	55.5

These compounds belonging to the second category namely the partially compositional compounds were a little more difficult for the children to comprehend when compared to the first category of semantically compositional ones. None of the above words had the high percentage as in the first category.

Table 3.57. Responses of the 8-9 year old children to compounds denoting geographical locations

Compound Noun	Gloss	Correct response (%)
oLamane	A room in a house	55.5
a:yudhaSa:le	A place where weapons are kept	63.8
kulagruha	Family house	61.1
pa:kasa:le	Kitchen	58.3
pa:TaSa:le	School	58.3
ho:maSa:le	Place of sacrificial fire	61.1
garaDimane	Gymnasium	55.5
prayo:gaSa:le	Laboratory	55.5

The above compounds were again difficult for the participants to decipher and the correct response rates are less compared to the first category of semantically compositional ones.

Table 3.58. Responses of the 8-9 year old children to compounds denoting documents and papers

Compound Noun	Gloss	Correct response (%)
vrittapatrike	Newspaper	58.3

The word for newspaper in Kannada is not comprehended well which shows that the word "paper" from newspaper has been borrowed and largely used so that not many people know about *vrittapatrike.*

Table 3.59. Responses of the 8-9 year old children to compounds denoting food items

Compound Noun	Gloss	Correct response (%)
eNNega:yi	An oily dish made of brinjal	63.8

This word for a particular dish was surprisingly comprehended better than certain other words which were assumed to be easy for the children to decipher. 63.8% of the total subjects comprehended this word and decomposed it into constituents.

Table 3.60. Responses of the 8-9 year old children to compounds denoting abstract concepts

Compound Noun	Gloss	Correct response (%)
cuccuma:tu	Taunt	61.1
ga:Lima:tu	Baseless talk	61.1

ga:Lisuddi	Rumour	58.3
suDuga:Dukelasa	Useless work	61.1

The above list of compounds was also tough for the children to comprehend and the percentages of correct response were all below 70%. It clearly shows that children are not aware of these abstract concepts early in the course of language development.

Table 3.61. Responses of the 8-9 year old children to compounds denoting body parts

Compound Noun	Gloss	Correct response (%)
kuDigaNNu	Corner of the eye	63.8
asthipanjara	Skeleton	55.5
ha:luhallu	Milk teeth	61.1
kaNNuguDDe	Eyeball	61.1

The words for body parts were also not comprehended by a good number of the subjects wherein the percentages of correct response were all below 70% again.

Table 3.62. Responses of the 8-9 year old children to compounds denoting medicine

Compound Noun	Gloss	Correct response (%)
Cuccumaddu	Injection	55.5
hallupuDi	Tooth powder	63.8

The above compounds of the names of medicine were comprehended and decomposed into constituents only by 55.5% and 63.8% of the total participants.

Table 3.63. Responses of the 8-9 year old children to compounds denoting for cloth and accessories

Compound Noun	Gloss	Correct response (%)
angavastra	Handkerchief	55.5

The word for handkerchief was rightly understood and decomposed into constituents by 55.5% of the total population of subjects.

Table 3.64. Responses of the 8-9 year old children to compounds denoting flora and fauna

Compound Noun	Gloss	Correct response (%)
ka:makastu:ri	A flower	55.5
gaDDegeNasu	Roots and tubours	55.5

The above compounds which denote the flora and fauna were correctly understood and decomposed into constituents by 55.5% of the participants only.

Table 3.65. Responses of the 8-9 year old children to compounds denoting different objects

Compound Noun	Gloss	Correct response (%)
benkipeTTige	Matchbox	61.1
re:Smegu:Du	Cocoon of silk worm	50.0
soLLeparade	Mosquito net	58.3

These were far more common words yet they were comprehended by less number of participants and the response rates further dropped.

Table 3.66. Responses of the 8-9 year old children to compounds denoting feelings

Compound Noun	Gloss	Correct response (%)
kuDino:Ta	Side glance	58.3

This particular compound was not understood by a good percentage of the subjects and the percentage of correct response was only 58.3%.

Table 3.67. Responses of the 8-9 year old children to compounds denoting kinship terms

Compound Noun	Gloss	Correct response (%)
kulaputra	Son of the clan	61.1
haNNumuduka	Very old man	61.1

These terms related to kinship were better comprehended by the children and the percentage of correct response was 61.1%.

Table 3.68. Responses of the 8-9 year old children to compounds standing for occupation

Compound Noun	Gloss	Correct response (%)
guDikaiga:rike	Cottage industry	50.0

This term for cottage industry was less known among the subjects and the percentage of correct response was only 50.0%.

Table 3. 69. Responses of the 8-9 year old children to compounds denoting abstract concepts

Compound Noun	Gloss	Correct response (%)
angajanaka	Cupid's father	25.0
ka:ncanama:le	Prosodic parameter	27.7
kusumaba:Na	Cupid	30.5
sarasijamitra	Sun	16.6
hayavadana	Vishnu	16.6
bisilukudure	Mirage	30.5
haNebaraha	Fate	25.0
hasemaNe	Wedlock	30.5
kapimuSti	Tight grip	30.5

talebaraha	Destiny	25.0
rajataparvata	Heaven	25.0

This is the third category of compounds which is the list of semantically opaque compounds. Therefore, these were the words which were most difficult for the children to comprehend and apparently the correct response rates were much lower than those of the earlier two categories of compounds.

Table 3.70. Responses of the 8-9 year old children to compounds denoting geographical locations

Compound Noun	Gloss	Correct response (%)
kanya:kuma:ri	Cape Comorin	25.0

This name of the place was very less known among the children and the percentage of correct response was only 25% of the total population.

Table 3.71. Responses of the 8-9 year old children to compounds denoting disease

Compound Noun	Gloss	Correct response (%)
a:neka:lu	Filaria	25.0

The children of the age group 8-9 years were not aware of the above mentioned disease and the percentage of correct response was only 25%.

Table 3.72. Responses of the 8-9 year old children to compounds standing for animals

Compound Noun	Gloss	Correct response (%)
mincuhuLa	Firefly	25.0

Surprisingly enough, the word for firefly was very less comprehended and the percentage of correct response was again 25% only.

Table 3.73. Responses of the 8-9 year old children to compounds denoting music systems

Compound Noun	Gloss	Correct response (%)
dhvanisuruLi	Cassette	30.5

The word for cassette was not widely known among the children and the percentage of comprehension was only 30.5%. This research quest started with the hypothesis that there might an order of acquisition which children unconsciously follow while acquiring languages. The order would be such that semantically compositional compounds would be acquired first, followed by partially compositional compounds and at last semantically opaque compounds would be acquired. This empirical study reaffirms that hypothesis and the data elicited show that there indeed is an order of acquisition which children follow in the course of language acquisition.

CHAPTER-4

Acquisition of Relationships between Compound Constituents

This chapter deals with the second research question of the present research work namely the relationships that exist and operate between the constituents of compounds. It explores in detail about the relevance of this particular research topic in the field of language acquisition, the method deployed to carry out the empirical research, the details of the participants who took part in the task, the design of the empirical study that was administered on the subjects, the procedure of data collection etc. The chapter sums up the empirical research carried out and closes with a discussion of the results of the empirical study.

This chapter is divided into seven different subsections wherein the first subsection 4.1 gives a brief introduction to the chapter where it also discusses the need of such a study from the acquisition point of view. The second subsection 4.2 deals with the relationships between compound constituents. The section 4.3 talks about the method deployed to collect data required for the present task. The section 4.4 gives a description of the subjects who took part in this empirical study, while the fifth section 4.5 deals with the materials used to elicit data from the subjects. The sixth section 4.6 describes the procedure which is put to use and the final section 4.7 titled results and discussion puts together the data obtained and the inferences that are arrived at by this empirical study.

4.1. Introduction

Compounds may be seen as the result of a simple merging of two elements, but the relations between the constituents is highly variable. It is highly essential to comprehend the relations that exist between the constituents in order to acquire the meaning of the compound word. This chapter talks at length about some such relationships that exist between the constituents of compounds in Kannada, precisely in the case of noun-noun compounds. It also tries to investigate if some relatively simpler and easier relationships have an edge over certain other relatively difficult and complicated relationships when children undergo the process of language acquisition.

4.2. Relationships between Compound Constituents

There is nothing straightforward between the meaning of a compound and that of its constituents which means to say that one cannot always predict the meaning of a compound by looking at the meanings of its constituents. The meaning of a compound for example, *snowball* is derived not just from the meaning of the constituents, that is, *snow* and *ball* but also from the relation between them which is MADE OF here in the case of *snowball* (Gagne & Spalding 2010). It is interesting to note that the relationship that operates between the constituents of compounds differs from one compound to another and it is this relation which is essential to acquire the semantics of compounds.

Gagne and Spalding (2010) while discussing the relational competition during compound interpretation made use of three sets of experiments. In the first set of experiments, a target compound (eg. *fish bowl*) was preceded by one of the two prime compounds. The prime used to be the same modifier as the target, but varied in terms of

whether the underlying relation was the same as the target (eg. *fishknife,* FOR) or different (*fishpaste*, MADE FROM). Nonsense filler items were also included. The time required to indicate whether the target had a sensible interpretation was less when the compound was preceded by a compound using the same relational structure than when preceded by a compound using a different relational structure. A second set of experiments, which included a modifier-only prime (eg. fish) along with the same and different relation primes, indicated that relational priming is primarily due to inhibition from competing relations rather than to facilitation of a repeated relation. A third set of experiments demonstrated that relation priming does not occur when the prime and target compounds use the same constituent but in a different position. For example, the processing of *readinglamp* (lamp FOR reading) was not faster when preceded by *lampshade*(shade FOR lamp) than when preceded by lamplight (light PRODUCED BY lamp).

Krott, Gagne and Nicoladis (2010) while studying children's preference for HAS and LOCATED relations conducted two experiments. In experiment 1, participants were asked to choose between two interpretations of novel compounds (HAS/LOCATED versus FOR), while their understanding of the constituent relations were enhanced using specific verbal expressions. In this experiment, participants were exposed to quite a number of novel objects together with their functions. Young children might have been overloaded with so much new information, especially function information. It might, therefore, be possible that children revealed a bias towards HAS/LOCATED interpretations because they were overloaded with function information. To rule out such an interpretation, the authors compared participants' responses for the first four and last

four compounds for each group that have been studied. The finding was such that for most age groups responses did not significantly differ for the first and last four compounds.

Experiment 2 conducted by the same authors investigated whether (young) children prefer HAS relations to FOR relations when verbal expressions are kept equally frequent for the two interpretations. The authors compared responses of two-to-three year olds with those of four-to-five year olds in order to compare the performance of children who showed a clear bias towards HAS/LOCATED interpretations in Experiment 1 with the performance of children who did not show such a clear bias or no bias at all. As in experiment 1, none of the children needed more than two attempts to correctly produce the novel names or to pick the correct object when presented with a distracter object. The number of HAS responses was very similar to the HAS/LOCATED responses of experiment 1 for two-to-three year olds and four-to-five year olds. Thus, as in experiment 1for HAS/LOCATED relations, only younger children had a clear preference for HAS relations.

4.3. Method

This section talks about the method employed to elicit data from the subjects for this empirical study. Children's acquisition of relationships between compound constituents is studied here where the relationships that are discussed include LIKE, OF, FOR, novel compounds, metaphoric compounds and finally miscellaneous compounds which could not be put under the aforesaid compound types. All those compounds to be judged and comprehended by the participants are typed out on white papers with four

possible meanings given against each entry. The multiple choice task is chosen mainly because the subjects who took part in the experiment are very young (7-9 years) and they would not be able to use the sophisticated gadgets like a computer screen or the like. This is not a totally new method of eliciting data, people have earlier used this method. The main insights into selecting this method are obtained from Gottfried's (1997) studies on metaphoric compounds.

The multiple choice task was administered on the subjects because not all the target compounds were pictureable. As the compounds have different relations operating between their constituents and some are a little abstract, this was a very convenient method for data elicitation. Special care was taken regarding the design of the multiple choices as to avoid a regular pattern occurring in the different choices and hence the multiple choices were constantly shuffled and typed on papers.

4.4. Subjects

The subjects were all Kannada-speaking children in the age group 7-9 years. Thirty Kannada-speaking children in the age group 7-9 years were taken for the study of the OF relation. Thirty three children of the same age as mentioned above took part in the study dealing with the FOR relation and thirty subjects participated in the task involving the LIKE relation. Thirty subjects took part in the task of novel compounds and metaphoric compounds and another twenty five children participated in the task involving the miscellaneous compounds. The subjects were all doing their primary school education in the Kannada-medium schools of the Kasaragod district, Kerala. The participants were later segregated into two groups namely the older and the younger

group based on their age. The groups were such that all children of the age 7-8 years were put into the younger group and all 9-year old children formed the other group namely the older age group.

4.5. Materials

The materials were divided into six categories based on the relationships that operate between the constituents of the compounds. The six categories were OF, LIKE, FOR relationships between the constituents, novel compounds, metaphoric compounds and finally the sixth category was kept as a separate category since the relationship operating between the constituents in that case was different from the aforementioned five categories. All the compounds were noun-noun compounds without any inflection or case marker added to them. The datasets were structured in such a way that each compound noun was given four meanings where three options were semantically related and one was a totally unrelated term which was meant to be a distracter. The order of the multiple choices was constantly shuffled so that the subjects do not find any fixed pattern in the way the meanings are given.

The list of compound nouns with the relationship FOR between their constituents were baccalumane (‘bath room’), aDigemane (‘kitchen’), buttici:la (‘bag for carrying lunch box’) and a:ra:makurci(‘an easy chair’). Compound nouns with the relationship OF between their constituents were ka:gadado:Ni (‘boat made of paper’), hullumane (‘a house the roof of which is thatched’), go:Nici:la (‘a sack bag’), kobbarimiTa:yi (‘a sweet dish made of coconut’), karimaNisara (‘a necklace made of black beads’) and sangi:tapa:Ta (‘music lessons’). The list of compound nouns with the relationship LIKE

between their constituents comprised ka:gadahu:vu (‘paper-like flower’), pe:pardo:se (‘paper-like dosa’), pe:parmiTa:yi (‘paper-like sweet dish’), nakSatrami:nu (‘star-like fish’), nakSatrakaDDi (‘star-like crackers’), kallusakkare (‘stone-like sugar’) and kalluppu (‘stone-like salt’). The entries in the list of novel compounds were huliki:Ta (‘a bug with stripes on its body like that of a tiger’), ni:rukaDDi (‘a plant the stems of which ooze water when pressed’), sakkarecenDu (‘a sugar ball’), mi:nuhakki (‘a fish bird’), eleko:suci:la (‘a cabbage bag’), baTTeci:la (‘a cloth bag’), soLLeparade (‘a mosquito net’), na:yimane (‘dog’s house’), taraka:rici:la (‘vegetable bag’), ka:gadabombe (‘ paper doll’), taraka:ripeTTige (‘vegetable box’), Sa:lekurci (‘school chair’) and sihimosaru (‘sweet curd’). The metaphoric compounds in the list included compound nouns like beLLimo:Da (‘silver cloud’), padyabanDi (‘a game played by singing songs’), baTTalukaNNu (‘round eyes’), ta:varekaNNu (‘broad eyes’), candramuKi (‘moon-faced person’), ku:pamanDu:ka (‘an ignorant person like a frog in the well’), na:yipa:Du (‘deplorable plight like that of a dog’) and kottambarisara (‘a necklace with coriander-like structures’). The compound nouns in the separate category were ka:yiha:lu (‘coconut milk’), himapa:ta (‘snow fall’) and rabbarha:lu (‘rubber milk’ or ‘latex’).

4.6. Procedure

The database designed for this particular task had 41 compound nouns in total where 7 were compounds with LIKE relationship between their constituents, 6 with OF relationship between their constituents, 4 with FOR relationship between their constituents, 8 compounds with metaphoricity in them, 13 novel compounds and 3 compounds were miscellaneous compounds. All the six categories of compound nouns

were typed out and each entry had four possible meanings typed against it. For example, consider the compound given below with the multiple choices.

Word:

hullumane (house with a thatched roof)

Meaning

1.hu:do:Ta (garden);

2.hullininda ma:Dida mane (house made of grass);

3. hulliga:gi mane (house for grass);

4.. kaDDi (stick)

The choices of meaning are given in such a way that children will have to read them closely and then only comprehend the meaning of the compound word. The participants were asked to read all those compounds one by one, one after another category and were asked to tick the correct meaning according to them. The participants were divided into two groups based on their age. 7-8 year old children constituted the younger group and all 9 year old children formed the older group.

4.7. Results and Discussion

This section focuses on the findings of this particular empirical study across compound type and across the age of the participants. In other words, six different relationships between compound constituents were studied in 7-8 year and 9-year old Kannada-speaking children. The responses of the subjects for different relationships are

given in separate tables. Twenty children of the age group 7-8 years took part in the task involving the relationship FOR between the constituents. The number of correct responses given by the respondents was calculated and the percentage of the same also was calculated. The percentage of correct responses for the compounds of the FOR relationship between the constituents was found to be in the range of 50%-80% in the case of 7-8 year old children. *baccalumane* was correctly comprehended by 75% of the participants. *aDigemane* had the percentage of comprehension 65%, whereas *buttici:la* and *a:ra:makurci* were comprehended by 50.0% and 80% of the total population respectively.

Table 4.1. Responses of 7-8 year old children to the compounds with FOR relation between the constituents.

Compound Noun	Gloss	No. of correct responses	Correct responses (in %)
baccalumane	Bathroom	15/20	75.0%
aDigemane	Kitchen	13/20	65.0%
buttici:la	Bag for carrying lunch box	10/20	50.0%
a:ra:makurci	Easy chair	16/20	80.0%

Sixteen students of the age group 7-8 years participated in the task which involved the LIKE relationship between the constituents of compounds. *ka:gadahu:vu* was rightly comprehended by 37.5% of the participants, *pe:pardo:se* had the percentage

of comprehension as 56.2% and *pe:parmiTa:yi* was comprehended by 18.8% of the total population. *nakSatrami:nu* had the percentage 31.2%, *nakshatrakaDDi* was understood by 31.2% of the participants, *kallusakkare* was comprehended by 75% of the subjects and *kalluppu* was comprehended by 56.2% of the participants.

Table 4.2. Responses of the 7-8 year old subjects to the compounds with LIKE relation between the constituents.

Compound Noun	Gloss	No. of correct responses	Correct responses (in %)
ka:gadahu:vu	Paper flower	6/16	37.5%
pe:pardo:se	Paper dosa	9/16	56.2%
pe:parmiTa:yi	Paper sweet	3/16	18.8%
nakSatrami:nu	Star fish	5/16	31.2%
nakSatrakaDDi	A kind of cracker	5/16	31.2%
kallusakkare	Crystal sugar	12/16	75%
Kalluppu	Rock salt	9/16	56.2%

Fifteen students of the age group 7-8 years took part in the task involving the OF relationship between the constituents. *ka:gadado:Ni* and *hullumane* were rightly comprehended by 73.3% of the participants. *go:Nici:la* was judged by 66.7% of the participants. *kobbarimiTa:yi* was rightly comprehended by 60% of the subjects. *karimaNisara* had the correct response of 60% too and *sangi:tapa:Ta* was comprehended by 40% of the total population.

Table 4.3. Responses of the 7-8 year old subjects to the compounds with OF relationship between the constituents.

Compound Noun	Gloss	No. of correct responses	Correct responses (in %)
ka:gadado:Ni	Paper boat	11/15	73.3%
hullumane	Thatched house	11/15	73.3%
go:Nici:la	Sack bag	10/15	66.7%
kobbarimiTa:yi	Coconut sweet	9/15	60%
karimaNisara	Black bead necklace	9/15	60%
sangi:tapa:Ta	Music lesson	6/15	40%

Fifteen children of the age group 7-8 years participated in this particular task involving novel compounds. Out of the fifteen participants, *huliki:Ta* was rightly comprehended by 40% of the total population. *ni:rukaDDi* was comprehended by 46.7% of the participants. *sakkarecenDu* had 53.3% of correct responses. *mi:nuhakki* was comprehended by 46.7% of the participants. *eleko:suci:la* was comprehended by 53.3% of the participants. *baTTeci:la* was rightly comprehended by 66.7% of the participants, the same was the percentage of comprehension of *soLLeparade*. *na:yimane* was rightly judged by 46.7% of the participants, while *taraka:rici:la* had the percentage of comprehension 53.3%. *ka:gadabombe* was comprehended by 80% of the participants. *taraka:ripeTTige* was comprehended rightly by 53.3% of the participants only, whereas

Sa:lekurci and *sihimosaru* were judged by 66.7% and 73.3% of the participants respectively.

Table 4.4. Responses of the 7-8 year old children to the novel compounds.

Compound Noun	Gloss	No. of correct responses	Correct responses (in %)
huliki:Ta	Tiger insect	6/15	40%
ni:rukaDDi	Water stick	7/15	46.7%
sakkarecenDu	Sugar ball	8/15	53.3%
mi:nuhakki	Fish bird	7/15	46.7%
eleko:suci:la	Cabbage bag	8/15	53.3%
baTTeci:la	Cloth bag	10/15	66.7%
soLLeparade	Mosquito net	10/15	66.7%
na:yimane	Dog house	7/15	46.7%
taraka:rici:la	Vegetable bag	8/15	53.3%
ka:gadabombe	Paper doll	12/15	80%
taraka:ripeTTige	Vegetable box	8/15	53.3%
Sa:lekurci	School chair	10/15	66.7%
sihimosaru	Sweet curd	11/15	73.3%

Fifteen children of the age 7-8 years took part in the task involving metaphoric compounds. There were eight metaphoric compounds which comprised the list of metaphoric compounds. *beLLimo:Da* was correctly comprehended by seven children and

the percentage of correct responses was 46.7%.*padyabanDi* was rightly judged by two subjects only and the percentage of correct responses was 13.3%.*baTTalukaNNu*had 20% of correct responses. *ta:varekaNNu* was comprehended by 60% of the total participants. *candramuKi* was rightly judged by 26.7% of the subjects. 40% of the participants correctly understood the compounds *ku:pamanDu:ka, na:yipa:Du* and *kottambarisara*.

Table 4.5. Responses of the 7-8 year old children to metaphoric compounds

Compound Noun	Gloss	No. of correct responses	Correct responses (in %)
beLLimo:Da	Silver cloud	7/15	46.7%
padyabanDi	Song cart	2/15	13.3%
baTTalukaNNu	Plate eyes	3/15	20%
ta:varekaNNu	Lotus eyes	9/15	60%
candramuKi	Moon faced person	4/15	26.7%
ku:pamanDu:ka	Frog in the well	6/15	40%

Fourteen children of the age group 7-8 years took part in the task involving miscellaneous compounds. This list has compounds which could not be put under the other five categories because of the mixed relationships that exist between the constituents of these compounds. *ka:yiha:lu* had the percentage of comprehension 85.7%, *himapa:ta* was comprehended by 71.4% of the total population and finally *rabbarha:lu* was understood by 35.7% of the participants.

Table 4.6. Responses of the 7-8 year old children to miscellaneous compounds.

Compound Noun	Gloss	No. of correct responses	Correct responses (in %)
ka:yiha:lu	Coconut milk	12/14	85.7
himapa:ta	Snow fall	10/14	71.4
rabbarh:lu	Rubber milk	5/14	35.7

Thirteen children of the age 9 years took part in the task involving FOR relationship. *baccalumane* was correctly understood by 23.1% of the participants. *aDigemane* was rightly comprehended by most of the subjects and the correct responses had the percentage 92.3%.*buttici:la* was rightly comprehended by 0.1% of the children only and finally *a:ra:makurci* was comprehended by 69.2% of the total population.

Table 4.7. Responses of the 9 year old children to compounds with FOR relationship between the constituents.

Compound Noun	Gloss	No. of correct responses	Correct responses (in %)
baccalumane	Bathroom	3/13	23.1%
aDigemane	Kitchen	12/13	92.3%
buttici:la	Bag for carrying lunch box	1/13	0.1%
a:ra:makurci	Easy chair	9/13	69.2%

Fifteen children of the age 9 years participated in the experiment consisting of compounds with the relationship OF between the constituents. *ka:gadado:Ni* was correctly judged by 80% of the participants, so were *hullumane, go:Nici:la* and *kobbarimiTa:yi*. *karimaNisara* was correctly judged by 73.3% of the subjects and *sangi:tapa:Ta* had 53.3% correct responses.

Table 4.8. Responses of the 9- year old children to compounds with OF relationship between the constituents.

Compound Noun	Gloss	No. of correct responses	Correct response (in %)
ka:gadado:Ni	Paper boat	12/15	80%
hullumane	Thatched roof	12/15	80%
go:Nici:la	Sack bag	12/15	80%
kobbarimiTa:yi	Coconut sweet	12/15	80%
karimaNisara	Black beads necklace	11/15	73.3%
sangi:tapa:Ta	Music lesson	8/15	53.3%

Fourteen students of the age 9 years took part in the task of compounds with LIKE relationship between the constituents. *ka:gadahu:vu* and *pe:pardo:se* were comprehended by 28.6% of the total population of subjects. None of the participants could understand *pe:parmiTa:yi* and hence the percentage is 0. *nakSatrami:nu* was correctly judged by 28.6% of the participants. Only 14.3% of the subjects could

understand *nakSatrakaDDi. kallusakkare* was rightly comprehended by 71.4% of the participants and *kalluppu* had the highest percentage of correct responses in this list of compounds which is 78.6%.

Table 4.9. Responses of the 9-year old participants to compounds with LIKE relationship between the constituents.

Compound Noun	Gloss	No. of correct responses	Correct responses (in %)
ka:gadahu:vu	Paper flower	4/14	28.6%
pe:pardo:se	Paper dosa	4/14	28.6%
pe:parmiTa:yi	Paper sweet	0/14	0%
nakSatrami:nu	Star fish	4/14	28.6%
nakSatrakaDDi	Star stick	2/14	14.3%
kallusakkare	Crystal sugar	10/14	71.4%
kalluppu	Rock salt	11/14	78.6%

Fifteen children of the age 9 years took part in the task which involved novel compounds. Out of the fifteen participants, *huliki:Ta* had the percentage of comprehension 40%. 46.7% of the participants rightly comprehended *ni:rukaDDi. sakkarecenDu* was correctly understood by 73.3% of the subjects. 53.3% of the participants rightly comprehended *ni:ruhakki. eleko:suci:la* had the correct response at 46.7%. 73.3% of the subjects correctly comprehended *baTTeci:la. soLLeparade* was comprehended by 66.7% of the children. 60% of the participants rightly understood

na:yimane. *taraka:rici:la* and *ka:gadabombe* were comprehended by 66.7% of the subjects. 80% of the participants rightly understood *taraka:ripeTTige* and *Sa:lekurci*. *sihimosaru* was correctly comprehended by 66.7 % of the total children who took part in this task.

Table 4.10. Responses of the 9-year old children to novel compounds

Compound Noun	Gloss	No. of correct responses	Correct responses (in %)
huliki:Ta	Tiger insect	6/15	40%
ni:rukaDDi	Water stick	7/15	46.7%
sakkarecenDu	Sugar ball	11/15	73.3%
mi:nuhakki	Fish bird	8/15	53.3%
eleko:suci:la	Cabbage bag	7/15	46.7%
baTTeci:la	Cloth bag	11/15	73.3%
soLLeparade	Mosquito net	10/15	66.7%
na:yimane	Dog house	9/15	60%
taraka:rici:la	Vegetable bag	10/15	66.7%
ka:gadabombe	Paper doll	10/15	66.7%
taraka:ripeTTige	Vegetable box	12/15	80%
Sa:lekurci	School chair	12/15	80%
sihimosaru	Sweet curd	10/15	66.7%

Fifteen children of the age 9 years took part in the task involving the metaphoric compounds. *beLLimo:Da* was correctly comprehended by 66.7% of the total subjects. *padyabanDi* had the correct responses of 33.3%.*baTTalukaNNu*was rightly comprehended by 46.7% of the participants whereas *ta:varekaNNu* had the correct responses at 73.3%. *candramuKi* was correctly understood by 5 children only and the percentage of correct responses was 33.3%. Only 26.7% of the participants could rightly comprehend *ku:pamanDu:ka*. 53.3% of the subjects could rightly judge *na:yipa:Du. kottambarisara* was comprehended by 46.7% of the children.

Table 4.11. Responses of the 9- year old children to metaphoric compounds.

Compound Noun	Gloss	No. of correct responses	Correct responses (in %)
beLLimo:Da	Silver cloud	10/15	66.7%
padyabanDi	Song cart	5/15	33.3%
baTTalukaNNu	Plate eyes	7/15	46.7%
ta:varekaNNu	Lotus eyes	11/15	73.3%
candramuKi	Moon faced person	5/15	33.3%
ku:pamanDu:ka	Frog in the well	4/15	26.7%
na:yipa:Du	Deplorable plight like that of a dog	8/15	53.3%
kottambarisara	Black beads necklace	7/15	46.7%

Eleven children of 9 years of age participated in the task involving the miscellaneous compounds. The list of miscellaneous compounds contained three compounds. *ka:yiha:lu* was correctly comprehended by 81.8% of the total participants. 36.4% of the children rightly judged *himapa:ta.* Only 9.1% of the subjects were able to understand *rabbarha:lu*.

Table 4.12. Responses of 9 year old participants to miscellaneous compounds

Compound Noun	Gloss	No. of correct responses	Correct responses (in %)
ka:yiha:lu	Coconut milk	9/11	81.8%
himapa:ta	Snow fall	4/11	36.4%
rabbarha:lu	Rubber milk	1/11	9.1%

For the 7-8 year old respondents, the FOR relationship between compound constituents was the easiest relationship to acquire out of the six different relationships which were tested. On an average, 67.5% of the 7-8 year old children could comprehend the FOR relation. Next in line was the miscellaneous compounds which were better comprehended by the respondents of this age. Then compounds with OF relationships between constituents, novel compounds, compounds with LIKE relationship between constituents and metaphoric compounds were acquired in the descending order. Therefore, it can be concluded that FOR relationship between constituents had an edge over other relationships in the case of 7-8 year old participants.

For the 9 year old respondents, compounds with OF relationship between the constituents proved easier to acquire and on an average 74.4% of the 9 year old children could comprehend this relationship between compound constituents. Second in line were the novel compounds and thereafter metaphoric compounds, compounds with FOR relationship between constituents, miscellaneous compounds and compounds with LIKE relationship between constituents were acquired in the descending order. Hence, for the 9 year old subjects, OF relationship between compound constituents was easier to acquire than the other five relationships.

Another perspective of analyzing the data is to calculate the p-value. In statistical significance testing, the p-value is the probability of obtaining a test statistic at least as extreme as the one that was actually observed, assuming that the null hypothesis is true. In this context, value *a* is considered more "extreme" than *b* if *a* is less likely to occur under the null. One often "rejects the null hypothesis" when the p-value is less than the significance level α (Greek alpha), which is often 0.05 or 0.01. When the null hypothesis is rejected, the result is said to be statistically significant.

```
Frequencies of Responses
  0   1
590 684

       Obs  Max Deriv Model L.R.       d.f.          P          C        Dxy
      1274      9e-14      81.36         11          0      0.641      0.282
     Gamma      Tau-a         R2      Brier
     0.312       0.14      0.083      0.233

                       Coef     S.E.   Wald Z P
Intercept               0.49899 0.2174  2.30  0.0217
Compound.code=2         0.30336 0.3209  0.95  0.3445
Compound.code=3        -0.78667 0.2894 -2.72  0.0066
Compound.code=4        -0.15724 0.2615 -0.60  0.5476
Compound.code=5        -1.27039 0.2851 -4.46  0.0000
Compound.code=6        -0.02899 0.3945 -0.07  0.9414
Age=1                   0.39895 0.2999  1.33  0.1834
Compound.code=2 * Age=1 -1.27826 0.4719 -2.71  0.0067
Compound.code=3 * Age=1 -0.69906 0.4133 -1.69  0.0908
Compound.code=4 * Age=1 -0.22714 0.3646 -0.62  0.5333
Compound.code=5 * Age=1  0.33911 0.3966  0.86  0.3925
Compound.code=6 * Age=1 -0.92025 0.5485 -1.68  0.0934

> anova(research2a.lrm)
               Wald Statistics          Response: Response

 Factor                                                Chi-Square d.f. P
 Compound.code  (Factor+Higher Order Factors)          75.82      10   <.0001
  All Interactions                                     18.18       5   0.0027
 Age  (Factor+Higher Order Factors)                    18.77       6   0.0046
  All Interactions                                     18.18       5   0.0027
 Compound.code * Age  (Factor+Higher Order Factors)    18.18       5   0.0027
 TOTAL                                                 76.59      11   <.0001
```

The frequencies of correct responses and wrong responses were also calculated while the statistical analysis was being done. The frequencies of wrong responses were 590 and 684 for correct responses. For the convenience of calculation the six different categories of compounds were given codes like 1, 2, 3, 4, 5 and 6 were compounds with the OF relationship between the constituents were given code no.1, those with FOR relationship were with the code no.2, compounds with LIKE relationship between the constituents were given code no.3. The novel compounds took the code no.4, metaphoric ones were with the code no.5 and finally miscellaneous compounds were with code no.6.

The compound code no.1 or the compounds with OF relationship between the constituents were taken as the interceptor for the sake of analysis. The entire bulk of data was fed into max derivation model.

The responses of the subjects across the compound type were analyzed both with respect to the age of the participants and without considering the age. Irrespective of the age of the participants p-values of compounds with the codes 1, 3 and 5 were found to be statistically significant. In other words, compounds with OF relationship between the constituents, LIKE relationship between the constituents and metaphoric compounds were found to have p-values less than 0.05 when the age of the participants was not taken into consideration. Compounds with the code 2, 4 and 6 were found to have p-values higher than 0.05. Besides this, the age of the respondents was taken into consideration and then the p-values were calculated. When the effect of age on various compound types was calculated, only compound code no.2 was found to have the p-value less than 0.05 and hence this was statistically significant. The remaining five compound types were found to be having the p-values higher than 0.05 and therefore, they were not statistically significant.

This study was set out with the hypothesis that certain relationships between compound constituents would prove easier for children to acquire than certain others. Now the findings reaffirm that hypothesis and in the age group 7-8 years FOR was the easier relationship and in the 9-year old group it was OF relationship which was easier for the children to acquire. For the 7-8 year old students metaphoric compounds were the most difficult set of compounds to acquire and this fact illustrates that metaphoric comprehension takes longer than literal comprehension. 9 year old children could

relatively better comprehend metaphoric compounds as compared to the 7-8 year old group of participants.

In a nutshell, this chapter investigated six different relationships existing between compound constituents where a detailed account of the method deployed to elicit data, the respondents, materials used for the empirical study etc. are talked about. It also indicates that there might be an order of acquisition as in from the simple to complex in the case of compound acquisition. The simple relationships were different for the two different age groups of respondents which were studied, namely the 7-8 year olds found FOR relationship easier and 9-year olds found OF relationship easier to acquire.

CHAPTER-5

Acquisition of Metaphoric Compounds

This chapter deals with the third research question of this research work namely the acquisition of metaphoric compounds by children of the age group 7-9 years. This research problem is concerned precisely with the acquisition of noun-noun compounds where the compound word has a metaphoric meaning in addition to the literal meaning. For example, a *catfish* is a metaphoric compound which stands for a fish and not a cat (Gottfried 1997). The data required for the empirical study are drawn from Kannada where children's ability of understanding the metaphoricity or the metaphoric meaning of compounds is tested.

This chapter is divided into seven sections where section 5.1 gives an introduction to the present research. Section 5.2 gives a description of the acquisition of metaphoric compounds. The third section 5.3 describes the method deployed to elicit the required data for the current work. An account of the subjects who participated in this study is given in the section 5.4. The materials used for the present study are discussed in the section 5.5. Section 5.6 deals with the procedure by which the task of collecting data is conducted. The chapter ends with section 5.7 which puts together the results of the empirical study and a discussion of the same.

5.1. Introduction

It is traditionally believed that metaphoric language is a difficult skill for young children to master. During the 1970s, much research indicated that although preschoolers produced seemingly metaphoric utterances, comprehension of metaphors lagged behind. It was argued that even ten-to twelve-year old children tend toward literal interpretations of metaphoric sentences, rather than metaphoric ones (Gottfried 1997).

Metaphoric use of languages is a common occurrence in human interaction. Although metaphoric compounds are prevalent in adult conversation and adults often interpret novel compounds in a quite successful manner, no prior research has investigated children's comprehension of this linguistic form. Thus, an investigation of the comprehension of metaphoric compounds provides a novel approach to the question of whether children understand language used in a metaphoric way (Gottfried 1997).

5.2. Acquisition of Metaphoric Compounds

Metaphor is for most people a device of the poetic imagination and the rhetorical flourish- a matter of extraordinary rather than ordinary language. Metaphor is typically viewed as characteristic of language alone, a matter of words rather than thought or action. But, on the contrary, it is pervasive in everyday life, not just in language, but in thought and action (Lakoff 1980). The essence of metaphor is understanding and experiencing one kind of thing in terms of another. Metaphors have entailments through which they highlight and make coherent certain aspects of our experience. For example, "Argument is war" is a metaphor where the concept is metaphorically structured, the activity is metaphorically structured, and, consequently, the language is metaphorically

structured. Metaphorical concepts can be extended beyond the range of ordinary literal ways of thinking and talking into the range of what is called figurative, poetic, colorful, or fanciful thought and language.

It has been often said that metaphoric comprehension takes longer than literal comprehension. Gottfried (1997) and Pollio et al. (1984) have investigated this particular line of research wherein the former studied children's ability to comprehend and produce metaphoric compounds whereas the latter set out his research to determine if metaphoric comprehension necessarily depends upon a more complex process than literal comprehension. The most popular contemporary model for metaphoric comprehension describes it in terms of a multistep, inferential process operating over an underlying set of elements such as semantic features, images, word associations, and logical propositions. For this class of model the usual assumption is that interpretation of a figure of speech is undertaken only once an initial literal analysis of a phrase or sentence has failed to produce a sensible reading. The second-order interpretive act required to bring about such comprehension has been described in terms of semantic transformation (Thomas 1969, Bickerton 1969, Searle 1979) conflict resolution (Osborn & Ehninger 1962), semantic reconstrual (Weinreich 1966, Johnson 1972) or principles derived from a logical analysis of propositions (Kintsch 1974, Clark & Lucy 1975, Miller 1979). What is common to all analyses is that metaphoric comprehension is always seen to involve a second-order cognitive act based on an initial (logical) evaluation of elements joined by the figure.

5.3. Method

The method deployed to elicit data in this particular empirical study is multiple choice task. Since the subjects are quite young, that is in the age group of 7-9 years, more sophisticated methods of obtaining data would not work in this case. The tools used for the study included written questionnaires keeping in mind that the children would be familiar with reading and writing on paper. The database designed for this study consisted of fifteen metaphoric compounds which had four semantically related and unrelated meanings typed out against each entry. The order of the meanings was constantly shuffled in order to avoid a fixed pattern in the questionnaire. Since all the compounds in this particular list were not compounds which could be shown to the children in the form of pictures, the multiple choice task was employed to gather data from the subjects. In the task four options were given in which three were semantically related to the target compound and one was a totally unrelated distracter.

The basic idea of this method was drawn from Gottfried's studies on metaphoric compounds which had made use of multiple choices for the participants to choose the right answer from. For example, a stick-bug would be a bug which looks like a stick, but not a bug next to a stick. Gottfried (1997) used a stimulus set in order to carry out this research wherein the stimulus set included shape stimuli, color stimuli and representational stimuli. Shape stimuli were pictures of objects that clearly belong to one category but have the same shape as objects in another category. For example, shape objects include a bug that is shaped somewhat like a stick and shells that are shaped somewhat like fans. This resemblance is unintentional, the object is not designed to represent something. Color stimuli included pictures of objects that have the canonical

color or color pattern of another object. For example, sea shells that have black and white zigzag stripes have the canonical colour pattern of zebras. Representational stimuli were pictures of objects intentionally designed to look like other objects. For example, representational objects included a plate with the shape and etched features of a fish (eg. fins, face, etc.).

5.4. Participants

The participants included seventy Kannada-speaking children who were further segregated into two groups based on their age. The younger group consisted of all seven and eight year old children who were thirty nine in number. The older group consisted of thirty one children of the age nine years. All the subjects were elementary school children in the Kasaragod district of Kerala under the Board of Primary Education, Government of Kerala.

The participants were not segregated based on gender, rather they were all taken together as a single group where the only variable which is taken into consideration is the age of the participants. The participants were all normally developing children who did not have any physical or mental disability or deficiency.

5.5. Design

The database used for this particular experiment included a list of fifteen metaphoric compounds of the noun-noun category of compounds. These compounds were typed out on white papers and were handed over to the participants. These metaphoric compounds were typed with four possible meanings against each entry for the

participants to choose from. The compounds which comprised the list were *beLLimo:Da* ('silver cloud'), *padyabanDi* (a game played by singing songs), *baTTalukaNNu* (broad eyes), ta*:varekaNNu* (lotus eyed), *candramuKi* (moon faced), *ku:pamanDu:ka* (an idiot just like a frog in the well), *na:yipa:Du* (deplorable plight like that of a dog), *kottambarisara* (a necklace with round coriander-like structures in it), *hulihuNNu* (a wound that never heals), *noNaprati* (exact copy), moTTetale (bald head), *na:yikoDe* (mushroom), *hitta:Lekivi* (a mind which can easily be biased), *lakSmaNare:Ke* (a line which is dangerous if crossed) and *ra:maba:Na* (a very effective solution/medicine).

5.6. Procedure

Children of the age group 7-9 years formed the group of participants. They were divided into two groups based on their age namely the older and the younger group. The older group consisted of all 9 year old children and the younger group comprised all 7-8 year old children. The subjects were asked to read the given list of metaphoric compounds and tick the right choice of meaning from the four given meanings against each entry. The order of the multiple meanings which were the possible meanings of the target compound was constantly shuffled in order to make sure that the participants do not find a fixed pattern occurring in the questionnaire. One example for the list of metaphoric compounds is given below with the four choices of meanings.

beLLimo:Da (silver cloud)

1. beLLiyinda unTa:da mo:Da (cloud made of silver)

2. cinnada mo:Da (cloud made of gold)

3. biLiya:da mo:Da (white cloud)

4. ni:ra:vi (water vapour)

5.7. Results and Discussion

Seventy children in total took part in this experiment. The ability of children to comprehend and judge metaphoric compounds was investigated through this empirical study. Out of the seventy children, thirty nine were of the age 7-8 years and they formed the younger group of the participants. Thirty one subjects were of the age 9 years and they constituted the older group of the participants.

Table 5.1 :Table showing the percentages of correct responses of the 7-8 year old children to metaphoric compounds

Compound Noun	Gloss	No. of correct responses	Correct responses (in %)
beLLimo:Da	Silver cloud	17/39	43.6%
padyabanDi	Song cart	21/39	53.8%
baTTalukaNNu	Plate eyes	0/39	0%
ta:varekaNNu	Lotus eyes	25/39	64.1%
candramuKi	Moon faced person	12/39	30.8%
ku:pamanDu:ka	Frog in the well	18/39	46.2%
na:yipa:Du	Deplorable plight like that of a dog	8/39	20.5%
kottambarisara	Coriander necklace	10/39	25.6%

hulihuNNu	Tiger wound	28/39	71.8%
noNaprati	Housefly copy	22/39	56.4%
moTTetale	Egg head	14/39	35.9%
na:yikoDe	Dog umbrella	9/39	23.1%
hitta:Lekivi	Brass ears	15/39	38.5%
lakSmaNare:Ke	A line if crossed is dangerous	12/39	30.8%
ra:maba:Na	Effective medicine/solution	11/39	28.2%

The above table shows the data elicited from the children of the age 7-8 years. The task given to the participants was to read and comprehend the metaphoric meaning of the compounds and they were asked to tick the correct answer from the given four meanings. In the table, the left most column has the metaphoric compounds which were given to the children. The second column gives the gloss to the compounds, whereas the third column from the left denotes the number of children who responded correctly and who chose the right meaning of the compounds. The fourth column shows the percentage of correct responses given by the participants.

Out of the thirty nine subjects of 7-8 years, *beLLimo:Da* was correctly comprehended by seventeen students and the percentage of comprehension lies at 43.6%.*padyabanDi* was rightly judged by twenty one participants and the percentage of correct responses was 53.8%. None in the group understood *baTTalukaNNu*, so the percentage of correct responses was zero. *ta:varekaNNu* was correctly comprehended by

twenty five children and the correct response was 64.1% in percentage. Twelve subjects rightly judged *candramuKi* and the correct response was 30.8%.

ku:pamanDu:ka was correctly comprehended by eighteen participants of the age 7-8 years and the correct response was 46.2% in percentage. Only eight children could understand the compound *na:yipa:Du* and the percentage of comprehension lies at 20.5%. *kottambarisara* was correctly comprehended by ten participants and the correct response was 25.6% in percentage. Twenty eight subjects out of thirty nine rightly judged *hulihuNNu* and the percentage of comprehension were found to be 71.8%. *noNaprati* was correctly understood by twenty two subjects and the correct response was 56.4%. Fourteen participants out of the thirty nine rightly comprehended *moTTetale* and the percentage of correct response was 35.9%. *na:yikoDe* was correctly understood by nine children and the correct response was 23.1% in percentage. Fifteen subjects rightly comprehended *hitta:Lekivi* and the percentage of correct response was 38.5%. *lakSmaNare:Ke* was correctly judged by twelve subjects and the percentage of correct response was 30.8%. Eleven participants could rightly comprehend *ra:maba:Na* and the correct response was 28.2% in percentage.

Out of the seventy participants, thirty one were of the age 9 years. The following table numbered 5.2 has the metaphoric compounds which were given to the children in the left most column. The second column from the left gives the glosses for those compounds. The third column indicates the number of correct responses given by the subjects and the fourth column shows the percentage of those correct responses given against the respective compound.

Table 5.2. Table showing the percentages of correct responses of the 9 year old children to metaphoric compounds

Compound Noun	Gloss	No. of correct responses	Correct responses (in %)
beLLimo:Da	Silver cloud	15/31	48.4%
padyabanDi	Song cart	15/31	48.4%
baTTalukaNNu	Plate eyes	11/31	35.5%
ta:varekaNNu	Lotus eyes	24/31	77.4%
candramuKi	Moon faced person	13/31	41.9%
ku:pamanDu:ka	Frog in the well	8/31	25.8%
na:yipa:Du	Deplorable plight like that of a dog	12/31	38.7%
kottambarisara	Coriander necklace	7/31	22.6%
hulihuNNu	Tiger wound	25/31	80.6%
noNaprati	Housefly copy	23/31	74.2%
moTTetale	Egg head	15/31	48.4%
na:yikoDe	Dog umbrella	10/31	32.2%
hitta:Lekivi	Brass ears	2/31	6.4%
lakSmaNare:Ke	A line if crossed is dangerous	12/31	38.7%
ra:maba:Na	Effective medicine/solution	2/31	6.4%

beLLimo:Da was correctly comprehended by fifteen participants and the percentage of comprehension was 48.4%. Fifteen children could rightly judge the compound *padyabanDi* and the percentage of correct responses was again 48.4%. *baTTalukaNNu* was rightly comprehended by eleven subjects and the percentage of comprehension was found to be 35.5%. Twenty four participants could understand *ta:varekaNNu* and the percentage of correct responses was 77.4% when calculated. *candramuKi* was correctly comprehended by thirteen subjects and the correct responses were 41.9% in percentage. Only eight children could understand the compound *ku:pamanDu:ka* and the percentage of comprehension was 25.8%. *na:yipa:Du* was correctly comprehended by twelve subjects and the correct response was at 38.7%. Only seven participants could rightly comprehend *kottambarisara* and the correct responses were at 22.6%. *hulihuNNu* was judged by twenty five subjects correctly and the percentage of comprehension was 80.6%. Twenty three subjects rightly understood *noNaprati* and the correct response had the percentage 74.2%. *moTTetale* was correctly comprehended by fifteen participants and therefore the percentage of comprehension was 48.4%. Ten of the subjects could understand the compound *na:yikoDe* and the correct responses were at 32.2%. Only two participants could comprehend *hitta:Lekivi* and the percentage of comprehension was 6.4%. *lakSmaNare:Ke* was correctly understood by twelve children and the correct responses were at 38.7%. Only two subjects could comprehend *ra:maba:Na* and the percentage of comprehension was found to be 6.4%.

As foreseen, children of the age group 7-8 years were not able to comprehend the metaphoricity of compounds significantly well as done by the older age group, that is, children of the age 9 years. The younger age group consisting of children of the age 7-8

years was seen to be selecting the literal meaning of the compound as 'The Meaning' in the case of compounds such as *ku:pamanDu:ka* and *candramuKi*. This could be because one constituent is simple and straightforward and it is very well within the children's day-to-day parlance and the other an abstract one for them in a metaphoric compound as in *hitta:Lekivi* or *ra:maba:Na.*

Apart from the percentages of comprehension another analysis was also done which was the calculation of p-value. All data were fed into the Logistic Regression Model and the p-value was calculated. Frequencies of responses were calculated first which showed there were 641 wrong responses and 424 correct responses in total out of the seventy participants who took part in this experiment. The participants of 7-8 years of age were taken as the intercept for the convenience of calculation of the p-value and their age was taken to be Age 0 and the group of 9 year-old children was taken to be Age 1. Since the age of the subjects was the only variable in this task the responses of children across the age groups was found out.

The p-values were found to be higher than the permitted standard value of 0.05 or the error rate of 5%. Since the p-value is 0.2629 which is higher than 0.05 we could conclude that the data with the effect of age were statistically not significant. There was only one compound type due to which the responses of age across compound type could not be found out and the data were not statistically significant.

```
lrm(formula = Response ~ factor(Age), data = research3)


Frequencies of Responses
  0   1
641 424

       Obs  Max Deriv Model L.R.       d.f.          P          C        Dxy
      1065      2e-13       1.25          1     0.2629      0.517      0.035
     Gamma      Tau-a         R2      Brier
      0.07      0.017      0.002      0.239

          Coef    S.E.    Wald Z P
Intercept -0.4772 0.08506 -5.61  0.0000
Age=1      0.1408 0.12572  1.12  0.2629

> anova(research3a.lrm)
                Wald Statistics          Response: Response

 Factor     Chi-Square d.f. P
 Age        1.25       1    0.2629
 TOTAL      1.25       1    0.2629
```

This particular study specifically was set out with the aim of investigating if children of the age group 7-9 years are able to comprehend the metaphoric meaning of metaphoric compounds. The database consisting of fifteen metaphoric compounds was the same for both 7-8 year old children and for all 9 year- old children and therefore, the only variable which was employed was the age of the participants. When the responses of the participants across age was calculated, it was found that 9 year-old children were able to comprehend the metaphoricity of compounds better than the 7-8 year old ones. The average rate of correct responses of the 7-8 year old children was 37.95% and that of the 9 year old participants was 41.70. Hence the data elicited and reported in this study reaffirms the hypothesis that metaphoric comprehension takes longer than the literal comprehension.

CHAPTER 6

Conclusion

Kannada, being a south Dravidian language of the SOV word order, demonstrates right-headedness as far as compounding is concerned. In this thesis we have pursued a line of research that is concerned with certain semantic issues pertaining to the acquisition of compounds focusing our empirical investigations on the acquisition of noun-noun compounds in Kannada. Compound words are extremely widespread among world's languages and represent perhaps the easiest way to form a new cognitive representation from two or more existing ones. Compound words such as *handbook* and *table cloth* are perhaps the most fundamental of such complex representations. These two compounds cited above represent words that have already been interpreted as fixed expressions in the English language. However, novel combinations of the constituents of these compounds are also quite easily comprehended by native speakers of the language. Thus, *table-book* and *book-cloth* can also be said to be potential words of English that are made available by the compounding word formation process.

With the advent of science and technology and the ever-growing needs of languages to have more expressions to communicate with speakers across various linguistic communities, there is the need of a process by which new expressions could be coined and hence the needs of languages could be met. Compounding is a word formation process which meets these requirements by creating new words in languages. This research work investigated three research questions in the area of language

acquisition in general and acquisition of noun-noun compounds in Kannada in particular. They are as following:

1.To Test the Ability of Children to Comprehend the Constituents of Noun-noun Compounds

This is the research question we have encountered at the outset where children's ability to comprehend compounds as consisting of individual constituents was investigated. Our empirical study tested if Kannada speaking children are able to comprehend the fact that compounds are consisted of two separate words, namely the constituents. An empirical study was carried out in order to elicit data from the participants. The participants included a group of sixty two Kannada speaking children of the age group 7-9 years. The database designed for the study included noun-noun compounds of three different categories where the categories were segregated based on the semantic compositionality of the compounds. Out of the 114 compound nouns of the database, 64 were of the first category, that is, semantically transparent compounds, 35 were of the second category which is partially transparent compounds and the rest 15 were opaque compounds which formed the third category.

The participants were given the list of compounds and were asked to read them and segregate them in whichever way they could. This method anticipated that the subjects would segregate the compounds into two provided they know that the compounds could be decomposed into their constituents. The journey was set out with a hypothesis that there might be an order of acquisition while children undergo the process of language acquisition. The order would be such that the semantically fully transparent

compounds would be acquired first followed by partially transparent compounds and finally the fully opaque ones would be acquired.

Out of the thirty six children of the age 9 years, fifty six words of semantically fully compositional compounds were correctly comprehended by twenty six children which formed the percentage of correct responses 72.2% of the total population which was 36/56. Twenty six children could decompose the compounds into their constituents. Rest eight words were decomposed into constituents and the meanings of compounds were comprehended by 21, 24, 24, 22, 23, 24 and 25 children respectively which formed the percentage of correct responses 58.3%, 66.6%, 66.6%, 60.1%, 63.8%, 63.8%, 66.6% and 69.4% of the total participants.

Thirty six children of the age group 8-9 years were asked to comprehend thirty five partially transparent compounds. Four words were rightly segregated into constituents and their meanings were comprehended by 63.8% of the total population, that is, twenty three out of thirty six children gave correct responses. Eleven words were comprehended by 61.1% of the total population, that is, twenty two out of thirty six children gave correct responses. Six words were rightly comprehended and decomposed into constituents by 58.3% of the total population, that is, twenty one out of thirty six children rightly judged six compound words. Eleven more words were rightly judged and understood by 55.5% of the total population, that is, twenty out of thirty six children gave correct responses. One word was comprehended by 52.7% of the participants and two words were comprehended and judged by 50% of the population.

Thirty six children of the age group 8-9 years were asked to read and comprehend fifteen semantically opaque compounds of the third category. Five words were comprehended and decomposed into constituents by 30.5% of the total population, that is, eleven out of thirty six children were able to give correct responses. One word was rightly segregated into constituents and the meaning was comprehended by 27.7% of the participants. Seven words were rightly understood by 25% of the total population. Finally, two words were judged correctly by 16.6% of the total population.

Twenty six children of the age 7 years were asked to read and comprehend sixty four semantically transparent compounds. Out of the sixty four words which formed the database, the meanings of fifty seven words were rightly comprehended and the compounds were decomposed into constituents by 46.1% of the total participants. One word was rightly comprehended and divided into constituents by 26.9% of the participants. Two words were correctly judged and split into constituents by 23.1% of the participants, one word was rightly understood by 19.2% of the total population and another word was correctly comprehended by 15.4% of the participants. Two words were rightly comprehended and decomposed into constituents by 11.5% of the participants, that is, three out of twenty six children could comprehend the meanings of compounds and segregate the words into constituents.

The second list of compounds consisted of the partially transparent compounds. Out of the thirty five words that comprised the list, thirty two words were rightly comprehended and decomposed into constituents by eleven participants out of the total twenty six children, which formed the percentage of correct responses 42.3%. Remaining

three words were comprehended by nine children and the percentage of correct responses was 34.6%.

The third category of the database consisted of fifteen semantically opaque compounds. Thirteen words were rightly comprehended and decomposed into constituents by ten participants out of the twenty six who took part in the task and the percentage of correct responses was 38.5%. The remaining two words were correctly judged by nine participants and the percentage of correct responses was 34.6%.

The results indicate that there is indeed an order of acquisition while children acquire languages. The compounds which are semantically transparent are acquired first, followed by partially transparent compounds and the opaque compounds are acquired later. In other words, the data elicited reaffirm the hypothesis with which the quest was started. It was seen that 8-9 year old participants were able to comprehend the meanings of compounds and decompose them into constituents in a better way than the 7-year old ones.

2. To Test if Children are able to comprehend the Different Relationships that Operate between the Constituents of Compounds

This research question investigated children's ability to comprehend compounds which have different relationships operating between their constituents. It is worth noting that there is no straightforward relationship between the meaning of a compound and its constituents. The meaning of a compound largely is different from the literal meaning of its constituents.

The subjects who took part in this empirical study were thirty seven Kannada speaking children of the age 7-9 years from the Kasaragod district of Kerala. The database designed for this study was segregated into different categories based on the relationship between the constituents. The relationships studied here are FOR, OF, LIKE, metaphoric compounds, novel compounds and yet another category which was called miscellaneous compounds for the sake of convenience and this particular relationship between the constituents was different from rest of the categories.

Eighteen children of the age group 7-8 years took part in the task involving the relationship FOR between the constituents. The percentage of correct responses was found in the range of 50%-83.3% with the average of 70.8% in the participants of the age 7-8 years.

Eight students of the age 7-8 years participated in the task which involved the LIKE relationship between the constituents of compounds. The percentage of correct responses lies in the range of 37.5%-87.5% with an average of 58.9%.

Five students of the age group 7-8 years took part in the task involving the OF relationship between the constituents. The percentage of correct responses reported lies in the range of 40%-100% with an average of 66.6%.

Seven children of the age group 7-8 years participated in the task involving novel compounds. The percentage of correct responses elicited was found to be lying in the range of 28.6%- 100% with an average of 57.1%.

Fourteen children of the age group 7-8 years took part in the task with the miscellaneous compounds. The percentage of correct responses lies in the range of 35.7%-85.7% with an average of 64.3%.

Two children of the age 9 years participated in the task involving FOR relationship between the constituents. The percentage of correct responses elicited lies in the range of 50%-100% with an average of 87.5%.

Eleven children of 9 years of age participated in the task involving compounds with OF relationship between their constituents. The percentage of comprehension and correct responses reported lies in the range of 36.3%-72.7% with an average of 65.1%.

Seven students of age 9 years took part in the task involving compounds with LIKE relationship between the constituents. The percentage of correct responses collected was in the range of 0-100% with an average of 36.7%.

Nine children of age 9 years took part in the task containing the metaphoric compounds and the percentage of correct responses was in the range of 22.2%-77.7% with an average of 51.3%.

Thirteen children of 9 years of age participated in the task involving novel compounds. The percentage of correct responses was found to be lying in the range of 38.4%-84.6% with an average of 64.5%.

For the 7-8 year old respondents, the FOR relationship between compound constituents was the easiest relationship to acquire out of the six different relationships which were tested. On an average, 67.5% of the 7-8 year old children could comprehend

the FOR relation. Next in line were the miscellaneous compounds which were better comprehended by the respondents of this particular age group. Then compounds with OF relationships between constituents, novel compounds, compounds with LIKE relationship between constituents and metaphoric compounds were acquired in the descending order. Therefore, it can be concluded that FOR relationship between constituents had an edge over other relationships in the case of 7-8 year old participants.

For the 9 year old respondents, compounds with OF relationship between the constituents proved easier to acquire and on an average 74.4% of the 9 year old children could comprehend this relationship between compound constituents. Second in line were the novel compounds and thereafter metaphoric compounds, compounds with FOR relationship between constituents, miscellaneous compounds and compounds with LIKE relationship between constituents were acquired in the descending order. Hence, for the 9 year old subjects, OF relationship between compound constituents was easier to acquire than the other five relationships.

3. To Test Children's ability in Understanding Metaphoricity of Compounds

This is the third research question which is studied in the present research work wherein children's ability to comprehend metaphoric compounds is being tested. The predominant notion is that metaphoric comprehension takes longer than literal comprehension. Hence an attempt is made here to test Kannada speaking children of the age group 7-9 years for their metaphoric comprehension.

The participants included seventy children in total out of which fifty seven were of the age 8-9 years and the remaining thirteen were of the age 7 years. All the participants were students of Kannada medium schools in the Kasaragod district of Kerala under the board of Primary Education, Kerala.

The data base designed for this study included fifteen metaphoric compounds of the noun-noun type and the participants were asked to read and comprehend those compounds and choose the correct meaning from the given choices of meanings. Thirteen children of 7-8 years of age took part in the task and the percentage of their metaphoric comprehension was found to be in the range of 0-84.6% with an average of 43.6%.

Fifty seven children of the age 9 years took part in the task of comprehending metaphoric compounds. The percentage of comprehension of this group was found to be in the range of 12.3%-75.4% with an average of 38.7%.

As foreseen, children of the age group 7-8 years were not able to comprehend the metaphoricity of compounds significantly well as done by the children of the age 9 years. The younger age group consisting of children of the age 7-8 years was seen to be selecting the literal meaning of the compound as 'The Meaning' in the case of compounds such as *ku:pamanDu:ka* and *candramuKi*. This could be because one constituent is simple and straightforward and it is very well within the children's day-to-day parlance and the other an abstract one for them in a metaphoric compound as in *hitta:Lekivi* or *ra:maba:Na.*

This study took children of the age only 7-9 years into consideration and the future directions would be to take diverse groups of participants with a wider gap in age like one group of children of the age 7-9 years and another with participants of 10-12 and the like. It would give better results in the study of language acquisition. Another angle to continue this study would be to consider the reaction time of the participants for different relationships between compound constituents and to use sophisticated gadgets and tools to ensure better results.

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APPENDIX-1

1. List of the Fully Compositional Compound Nouns in Kannada

Sl .No	Compound Noun	Word 1	Word 2
1	be:sigeka:la		
2	kittaLehaNNu		
3	si:beka:yi		
4	kudurega:Di		
5	baTTeangaDi		
6	ugibanDi		
7	kaNNi:ru		
8	malena:Du		
9	keneha:lu		
10	Maduvemane		
11	bayalusi:me		
12	ka:luda:ri		
13	je:nuhuLa		
14	ni:rsa:ru		
15	kaigaDiya:ra		
16	sa:ra:yiangaDi		
17	maDike:ricaLi		
18	angavika:ra		
19	angahi:nate		

20	atithisatka:ra		
21	ayudhapu:je		
22	uNNebaTTe		
23	kaNNumucca:le		
24	kannaDibaLe		
25	ka:Dgiccu		
26	gurudakSiNe		
27	gurupu:je		
28	guruBakta		
29	gruhaprave:Sa		
30	gra:made:vate		
31	Jananapatrike		
32	janmaBu:mi		
33	jalakri:De		
34	jalade:vate		
35	jalapa:tre		
36	jalapraLaya		
37	jalaprava:ha		
38	ja:tisamu:ha		
39	ji:vada:na		
40	ji:vanidhi		
41	Jalanidhi		
42	ji:vara:Si		

43	ji:vavadhe		
44	ji:vahimse		
45	nya:yanirNa:yaka		
46	nya:yavica:raNe		
47	pamktiBhojana		
48	Padabamdha		
49	paraka:yaprave:Sa		
50	paSupa:laka		
51	pa:dapu:je		
52	Palapu:je		
53	Brahmavidye		
54	maNikankaNa		
55	mitradro:hi		
56	mrugaya:tre		
57	yakSiNividye		
58	yajnakankaNa		
59	yajnakunDa		
60	yajnaBu:mi		
61	yajnaSa:le		
62	ya:gaSa:le		
63	yuddhaBu:mi		
64	yo:ganidre		

2. List of the Partially Compositional Compound Nouns

Sl. No	Compound Noun	Word 1	Word 2
1	eNNega:yi		
2	oLamane		
3	Angavastra		
4	annada:na		
5	a:yudhaSa:le		
6	ka:makastu:ri		
7	kuDigaNNu		
8	kuDino:Ta		
9	Kulagruha		
10	kulade:vate		
11	Kulaputra		
12	garBaguDi		
13	cakravyu:ha		
14	pa:kaSa:le		
15	pa:TaSa:le		
16	ho:maSa:le		
17	Asthipanjara		
18	benkipeTTige		
19	cuccuma:tu		
20	Cuccumaddu		

21	gaDDegeNasu		
22	ga:Lima:tu		
23	ga:Lisuddi		
24	garaDimane		
25	guDikaiga:rike		
26	guddalipu:je		
27	hallupuDi		
28	ha:luhallu		
29	haNNumuduka		
30	kaNNuguDDe		
31	prayo:gaSa:le		
32	re:Smegu:Du		
33	soLLeparade		
34	suDuga:Dukelasa		
35	vrittapatrike		

APPENDIX-2

Questionnaires

List of Non Compositional Compound Nouns

SL No	Compound Noun	Word 1	Word 2
1	Angajanaka		
2	kanya:kuma:ri		
3	ka**:**ncanama:le		
4	kusumaba:Na		
5	Sarasijamitra		
6	Hayavadana		
7	a:neka:lu		
8	Bisilukudure		
9	haNebaraha		
10	hasemaNe		
11	kapimuSti		
12	mincuhuLa		
13	Talebaraha		
14	dhvanisuruLi		
15	Rajataparvata		

Tick the right meaning from the given choices.

1.angajanaka	1. Sari:rada Ba:ga
	2. tande
	3.ka:mana tande
2.kanya: kuma:ri	1. maduveya:gada huDugi
	2. ondu ja:gada hesaru
	3. maduveya:da huDugi
3. ka:ncanama:le	1. ondu vrittada hesaru
	2. cinnada ma:le
	3. beLLiya ma:le
4. kusumaba:Na	1. hu:vina ba:Na
	2. marada ba:Na
	3. ka:made:vana hesaru
5. sarasijamitra	1. ta:vare
	2. Sun God
	3. gula:bi
6. hayavadana	1. Lord Vishnu
	2. kudureya muKa
	3. a:neya muKa

7. a:neka:lu	1.a:neya ka:lu
	2. kudureya ka:lu
	3. ondu ro:ga
8. bisilukudure	1.mari:cike
	2. ni:rukudure
	3. katte
9. haNebaraha	1. kaibaraha
	2. vidhi
	3. leKana
10.hasemaNe	1. marada maNe
	2. halage
	3. maduveya Ba:gya
11.kapimuSti	1. bigiya:da hiDita
	2. mangana muSti
	3. saDilava:da hiDita
12.mincuhuLa	1. mincina huLa
	2.di:pada huLa

	3. kaDDi ki:Ta
13. talebaraha	1. vidhi
	2. taleyalli bareda baraha
	3. prabandha
14.dhvanisuruLi	1. ka:gadada ha:Le
	2. ka:gadada suruLi
	3. ha:Dugalannu sangrahisiDuva vyavasthe
15.rajataparvata	1. beLLiya parvata
	2. kaila:sa
	3. cinnada parvata

Tick the right answer from the given four choices.

1. ka:gadado:Ni

1.ka:gadadinda ma:Dida do:Ni

2.ka:gadadantiruva do:Ni

3.haDagu

4.teppa

2. hullumane

1. hu:do:Ta

2.hullininda ma:Dida mane

3.hulliga:gi mane

4. kaDDi

3. go:Nici:la

1.go:Niyinda ma:Dida ci:la

2.nu:lu

. 3.ci:ladantiruva go:Ni

4.hagga

4. kobbarimiTa:yi

1. kobbarituri

2.laDDu

3.kobbariyinda ma:Dida miTa:yi

4.tenginaka:yi

5. karimaNisara

1. karimaNi

2. karimaNiyiruva sara

3. ma:le

4. gejje

6. sangi:tapa:Ta

1. sangi:tada pa:Ta

2. kanTapa:Ta

3. padya

4. sangi:tada ha:giruva pa:Ta

Tick the right answer from the given four choices.

1.baccalumane

1. ko:Ne

2. mane

3.sna:na ma:Duva ko:Ne

4.jagali

2.aDigemane

1.aDigema:Duva ko:Ne

2.ko:Neyalli ma:Duva aDige

3.maneyalli ma:Duva aDige

4. mane

3. buttici:la

1.ci:ladalli butti

2. buttiyannu oyyuva ci:la

3.hoige

4. go:Ni

4. a:ra:makurci

1. manca

2. kurci

3.me:ju

4. a:ra:ma ma:Duva kurci

Tick the right answer from the given four choices.

1.ka:gadahu:vu

1.hu:vinantiruva ka:gada

2. ka:gadadantiruva hu:vu

3. haNNu

4. ka:gadadinda ma:Dida hu:vu

2. pe:pardo:se

1. pe:parinanta do:se

2. do:seyanta pe:par

3. pe:parininda ma:Dida do:se

4. iDli

3. pe:parmiTa:yi

1. pe:parininda ma:Dida miTa:yi

2. laDDu

3.miTa:yiyanta pe:par

4. pe:parinanta miTa:yi

4.nakSatrami:nu

1.mi:ninanta nakSatra

2.nakSatradinda ma:Dida mi:nu

3.nakSatradanta mi:nu

4.ko:Li

5. nakSatrakaDDi

1. nakSatradanta kaDDi

2.kaDDiyanta nakSatra

3. nakSatradantiruva paTa:ki

4. ma:lepaTa:ki

6. kallusakkare

1. kallinantiruva sakkare

2.sakkareyantiruva kallu

3.bella

4.sakkareyinda ma:Dida kallu

7. kalluppu

1.uppinanta kallu

2.kallinanta uppu

3.huLi

4.uppininda ma:Dida kallu

Tick the right answer from the given four choices.

1.huliki:Ta

. 1.ki:Tadanta huli

. 2.huliyanta ki:Ta

3.ciTTe

4.huL

2.ni:rukaDDi

1. ottidare ni:ru surisuva kaDDi

2. ni:rinalli baLasuva kaDDi

3. kaTTige

4. ko:lu

3.sakkarecenDu

1.cenDinanta sakkare

2. bella

3. bya:tu

4. sakkareya cenDu

4.mi:nuhakki

1. mi:nina ha:giruva hakki

2.hakkiya ha:giruva mi:nu

3.timingila

4. ko:Li

5.eleko:suci:la

1.eleko:sininda ma:Dida ci:la

2. hu:ko:su

3. eleko:su ha:kaliruva ci:la

4. tonDeka:yi

6. baTTeci:la

1. baTTeyinda ma:Dida ci:la

2. baTTeyanniDuva ci:la

3. ci:la

4. baTTe

7.soLLeparade

1. parade

2. soLLe ba:rada ha:ge kaTTuva parade

3. je:Dana bale

4. soLLego:skara kaTTuva parade

8.na:yimane

1. na:yi kaTTida mane

2. gu:Du

3. mane

4. na:yiya gu:Du

9. taraka:rici:la

1. taraka:riyinda ma:Dida ci:la

2. haNNu

3. taraka:riyanniDalu baLasuva ci:la

4. ci:lada ha:giruva taraka:ri

10.ka:gadabombe

1. bombeyantiruva ka:gada

2. ka:gadadinda ma:Dida bombe

3. a:Tike

4. pennu

11. taraka:ripeTTige

1. peTTigeyalliruva taraka:ri

2. haNNu

3. ka:yi

4. taraka:riyiDuva peTTige

12. Sa:lekurci

1. Sa:leyalli upayo:gisuva kurci

2. me:ju

3. Sa:leya horagiruva kurci

4. bencu

13. sihimosaru

1. majjige

2. sakkare

3. sihiya:da mosaru

4. huLiya:da mosaru

Tick the right answer from the given choices.

1.beLLimo:Da

1. beLLiyinda unTa:da mo:Da
2. cinnada mo:Da
3. biLiya:da mo:Da
4. ni:ra:vi

2. padyabanDi

1. padya ha:Di a:Duva a:Ta
2. padyadinda ma:Dida banDi
3. SabdabanDi
4. B:avagi:te

3.baTTalukaNNu

1. baTTaloLage kaNNu
2. biLikaNNu
3. meLLegaNNu
4. baTTalinantiruva kaNNu

4.ta:varekaNNu

1.unDekaNNu

2. ta:vareya ha:giruva kaNNu

3. udda kaNNu

4. kivi

5. candramuKi

1. candrana muKa

2. udda muKa

3. agala muKa

4. candrana muKadantiruva muKa

6.ku:pamanDu:ka

1. ba:viyoLagina kappeyante pedda

2. ba:viyalliruva kappe

3. nelada me:lina kappe

4. mi:nu

7. na:yipa:Du

1. na:yiya ha:giru

2. katteyantiru

3. na:yiya stitiyantiruva stiti

4. bekkinantiru

8. kottambarisara

1. kottambariyinda ma:Dida sara

2. kottambariyante ka:Nuva sara

3. muttina sara

4. ungura

Tick the right answer from the given choices

1.ka:yiha:lu

1. tenginaka:yiyinda tegeda ha:lu
2. ni:ruha:lu
3. ni:ru
4. dappa ha:lu

2. himapa:ta

1. manju
2. hima bi:Luvudu
3. ni:ra:vi
4. maLehani

3. rabbarha:lu

1. rabbarinantiruva ha:lu
2. danada ha:lu
3. kabbina ha:lu
4. rabbar maradindaa tegeda ha:lu

APPENDIX-3

Tick the right answer from the given choices.

1.beLLimo:Da

1. beLLiyinda unTa:da mo:Da
2. cinnada mo:Da
3. biLiya:da mo:Da
4. ni:ra:vi

2.padyabanDi

1. padya ha:Di a:Duva a:Ta
2. padyadinda ma:Dida banDi
3. SabdabanDi
4. Ba:vagi:te

3.baTTalukaNNu

1. baTTaloLage kaNNu
2. biLikaNNu
3. meLLegaNNu
4. baTTalinantiruva kaNNu

4.ta:varekaNNu

1. unDekaNNu

2. ta:vareya ha:giruva kaNNu

3. udda kaNNu

4. kivi

5.candramuKi

1.candrana muKa

2. udda muKa

3. agala muKa

4. candrana muKadantiruva muKa

6. ku:pamanDu:ka

1. ba:viyoLagina kappeyante pedda

2. ba:viyoLagina kappe

3. nelada me:lina kappe

4. mi:nu

7.na:yipa:Du

1. na:yiya ha:giru

2. katteya ha:giru

3. na:yiya stitiyantiruva stiti

4. bekkinantiru

8. kottambari sara

1. kottambariyinda ma:Dida sara

2. kottambariyante ka:Nuva sara

3. muttina sara

4. ungura

9.hulihuNNu

1.oNagada huNNu

2. katti

3. ga:ya

4. e:Tu

10. noNaprati

1. Sa:le

2. ka:gada

3. ka:gadadalliruva noNavannu: ku:Da bareda prati

4. noNa

11.moTTetale

1. bakkatale

2. taleku:dalu

3. ba:caNige

4. moTTe

12. na:yikoDe

1. malege hiDiyuva koDe

2. bisilige hiDiyuva koDe

3. aNabe

4. male

13.hitta:Lekivi

1.sulaBava:gi badala:yisabahuda:da manassu

2. beLLi

3.hitta:leyinda ma:Dida kivi

4. cinnada kivi

14.lakSmaNare:Ke

1. citra

2. ra:ma eLeda re:Ke

3. pennininda eLeda re:Ke

4. da:Tidare apa:yaviruva re:Ke

15.ra:maba:Na

1. battaLike

2. pariNa:maka:riya:da auSadha

3. ra:manu biTTa ba:Na

4. lakSmaNanu biTTa ba:Na