PRONOMINAL ANAPHORIC REFERENCE
IN THE NARRATIVES OF 3-YEAR-OLD CHILDREN

By
NORMA JEAN GOMME
B.Sc., The University of Victoria, 1991

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE

in
THE FACULTY OF GRADUATE STUDIES
THE FACULTY OF MEDICINE
THE SCHOOL OF AUDIOLOGY AND SPEECH SCIENCES

We accept this thesis as conforming
to the required standard

THE UNIVERSITY OF BRITISH COLUMBIA
September, 1994
©Norma Jean Gomme, 1994
In presenting this thesis in partial fulfilment of the requirements for an advanced degree at the University of British Columbia, I agree that the Library shall make it freely available for reference and study. I further agree that permission for extensive copying of this thesis for scholarly purposes may be granted by the head of my department or by his or her representatives. It is understood that copying or publication of this thesis for financial gain shall not be allowed without my written permission.

(Signature)

Department of Audiology and Speech Sciences
The University of British Columbia
Vancouver, Canada

Date August 26, 1994
ABSTRACT

The general purpose of the present study was to investigate the way in which 3-year-old children use pronouns to refer to characters in a narrative. A form/function approach was taken, exploring not only the forms used to refer to story protagonists, but also the functions those forms served to create coherence in the narrative as a whole. The study had three specific goals. The first of these was to compare the results of this study with those of Bamberg (1987), specifically to determine whether the 3-year-old English-speaking children in this study were using the same reference strategy as the 3-year-old German-speaking children in Bamberg's study (the thematic advancement strategy). The second goal was to compare the children's referential use of pronouns at times when they were unfamiliar and familiar with the story. The third goal was to compare the results of this study with those of Karmiloff-Smith (1981) in an attempt to resolve differences between her study and Bamberg's regarding the age at which children move from deictic to referential use of pronouns, and the exact nature of the thematic advancement strategy.

Ten English-speaking children between the ages of 3;2.3 and 3;9.12 participated in this study. Each child told two stories, first when they were unfamiliar with the book (T₁), and again after reading the book with their caregiver(s) over the course of a week (T₂). Results showed that these children as a group demonstrated the developing ability to create textual coherence through pronominal reference in a manner consistent with Bamberg's thematic advancement strategy. Closer analysis of individual stories pointed
to the presence of several substrategies, and showed developmental variation in the children's abilities to use pronouns referentially. No significant difference was found in the children’s referential use of pronouns between T1 and T2, although other developmental measures showed improvement with story familiarity. Further, the results did not provide evidence for purely deictic use of pronouns, or the inability to create any level of textual coherence as found by Karmiloff-Smith for English-speaking 4-year-olds. Results also disputed Karmiloff-Smith’s proposal that the thematic subject strategy involves exclusive preference for clause-initial position to be reserved for reference to the protagonist. It is proposed here that differences between the studies can be attributed to variation in experimental design.
<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. INTRODUCTION AND REVIEW OF THE LITERATURE</td>
<td>1</td>
</tr>
<tr>
<td>Introduction</td>
<td></td>
</tr>
<tr>
<td>Outline of the Thesis</td>
<td></td>
</tr>
<tr>
<td>Background of the Study</td>
<td></td>
</tr>
<tr>
<td>Narrative Production</td>
<td></td>
</tr>
<tr>
<td>The Effect of Task and Context on Children’s Story Production</td>
<td></td>
</tr>
<tr>
<td>Cohesion and Coherence</td>
<td></td>
</tr>
<tr>
<td>Pronominal Anaphora</td>
<td></td>
</tr>
<tr>
<td>The Development of Pronominal Anaphora</td>
<td></td>
</tr>
<tr>
<td>Hypotheses</td>
<td>22</td>
</tr>
<tr>
<td>2. METHOD</td>
<td></td>
</tr>
<tr>
<td>Overview</td>
<td></td>
</tr>
<tr>
<td>Subjects</td>
<td></td>
</tr>
<tr>
<td>Procedures for Data Collection</td>
<td></td>
</tr>
<tr>
<td>Part I (Unfamiliar Condition)</td>
<td></td>
</tr>
<tr>
<td>Part II (Familiarization)</td>
<td></td>
</tr>
<tr>
<td>Part III (Familiar Condition)</td>
<td></td>
</tr>
</tbody>
</table>

ABSTRACT ii

LIST OF TABLES vii

ACKNOWLEDGEMENTS x

CHAPTER 1

1. INTRODUCTION AND REVIEW OF THE LITERATURE 1

Introduction
Outline of the Thesis

Background of the Study
Narrative Production
The Effect of Task and Context on Children's Story Production
Cohesion and Coherence
Pronominal Anaphora
The Development of Pronominal Anaphora

Hypotheses

2. METHOD 22

Overview

Subjects

Procedures for Data Collection
Part I (Unfamiliar Condition)
Part II (Familiarization)
Part III (Familiar Condition)
Transcription and Coding
Form Categories
Function Categories
Subcategories
Mention of Other Characters
Mention of Characters Accompanied by Finger Point
Story Structure Elements
Indicators of Picture Description or Story Line
Words Per Clause

Analysis

3. RESULTS AND DISCUSSION

Overview

Group Data

Comparison with Bamberg's Data and Results
Distribution of Reference Between the Two Main Characters
Distribution of Nominal and Pronominal Forms
Switch Reference
Maintain Reference
Reference to the Boy Contrasted With Reference to the Dog

Summary

Comparison of Performance at T₁ and T₂.
Measures to Assess Form/Function Pairings at T₁ vs. T₂
Nonreferential Measures of Narrative Competence

Comparison with Karmiloff-Smith (1981)
The Use of Gesture (Point) with Pronouns
Distribution of Referents to Pronouns in Initial Position

Across-Subject Measures

Errors and Self-Corrections

Individual Data
Use of Nominals to Switch Reference to the Boy
Use of Pronominals to Switch Reference to the Dog
4. SUMMARY AND CONCLUSIONS

General Summary

Summary of Results
- Comparison with Bamberg’s Results
- Comparison Between T. and T.
- Joint Reference
- Comparison with Karmiloff-Smith (1981)
- Individual Data
- Across Subject Measures

Overall Summary of Results

Explanation of Differences Between Studies

The Scope of the Present Study

Future Research

Concluding Remarks

BIBLIOGRAPHY

APPENDIX

   Picture by Picture Description

B. Sample Transcript

C. Subcategorized Form/Function Coding Pairs
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Gender and age of subjects at time of first story elicitation (T₁)</td>
<td>24</td>
</tr>
<tr>
<td>2a.</td>
<td>Number (and percentage) of nominal, pronominal and elliptical reference to the boy and to the dog, at T₁ and T₂ (joint reference to boy and dog included)</td>
<td>46</td>
</tr>
<tr>
<td>2b.</td>
<td>Number (and percentage) of nominal, pronominal and elliptical reference to the boy and to the dog, at T₁ and T₂ (joint reference to boy and dog excluded)</td>
<td>47</td>
</tr>
<tr>
<td>3a.</td>
<td>Proportions of reference in nominal form made to each main character (boy and dog) for specified functions at each time (joint reference to boy and dog included)</td>
<td>51</td>
</tr>
<tr>
<td>3b.</td>
<td>Proportions of reference in nominal form made to each main character (boy and dog) for specified functions at each time (joint reference to boy and dog excluded)</td>
<td>52</td>
</tr>
<tr>
<td>4a.</td>
<td>Comparison of proportion of pronominal reference out of total reference made for a specified function and time, reference to boy vs. reference to dog (joint reference to boy and dog included)</td>
<td>56</td>
</tr>
<tr>
<td>4b.</td>
<td>Comparison of proportion of pronominal reference out of total reference made for a specified function and time, reference to boy vs. reference to dog (joint reference to boy and dog excluded)</td>
<td>57</td>
</tr>
<tr>
<td>5a.</td>
<td>Comparison of pronominal reference to the boy and to the dog, for specified reference functions, T₁ vs. T₂ (joint reference to boy and dog included)</td>
<td>61</td>
</tr>
<tr>
<td>5b.</td>
<td>Comparison of pronominal reference to the boy and to the dog, for specified reference functions, T₁ vs. T₂ (joint reference to boy and dog excluded)</td>
<td>62</td>
</tr>
</tbody>
</table>
6. Total number of clauses and number of thematic advancement clauses at each telling, individual and group; percentage of total clauses contributing to advancement of the story theme, individual and group, at T1 and T2

7. Comparison of the proportion of clauses which contribute to thematic advancement out of the total number of clauses summed for all subjects, T1 vs. T2

8. Mean Length of Clause* for all subjects at T1 and T2

9. "Goodness" of stories, as determined by presence/absence of six basic story elements (based on Berman, 1986), at T1 and T2

10a. Gestural data summed for all videotaped subjects: Number of pronominal and nominal full referential forms and deictic terms with point, number of deictic terms without point, and number of occurrences of point with terms other than deictic or full referential forms, at T1 and T2

10b. Gestural data summed for all videotaped subjects: Number of pronominal and nominal full referential forms and deictic terms with point, number of deictic terms without point, and number of occurrences of point with terms other than deictic or full referential forms, at T1 and T2 (excluding Subject 3)

11. Comparison between summed number of deictic terms accompanied by point and number of deictic terms unaccompanied by point, at T1 and T2, with and without Subject 3

12. Utterance-initial pronouns used by each subject at T2 to refer to the boy and jointly to the boy and dog, shown as total and by switch reference, maintain reference and maintain reference (local) functions

13. Test for positive linear correlation between across subject measures: Mean Length of Clause (MLC), Goodness of Story, Age (months)
14. Comparison of proportion of pronominal reference out of total reference made to the boy serving the switch reference function between the oldest four subjects and the youngest four subjects, summed for T₁ and T₂ (joint reference to boy and dog included)
ACKNOWLEDGEMENTS

The completion of this thesis marks the end of a long, meandering process. At each stage in its creation, different people have offered the kindness and support necessary to "keep going". I thank the children of this study, who brought spirit and innocence to their story telling, qualities lost in the static pages of the transcripts. I thank my husband, Graham, for his confidence and optimism, and my parents for their technical, emotional and culinary support. My deepest thanks are reserved for Dr. Carolyn Johnson, whose generosity has known no limits.

I dedicate this thesis to my daughter, Hannah, who has enriched my life beyond all expectation, and whom I thank in advance for the stories she will tell when she turns three.
CHAPTER ONE

INTRODUCTION AND REVIEW OF THE LITERATURE

Introduction

The purpose of this investigation was to examine the manner in which 3-year-old children use pronouns to refer to characters within a narrative. In particular, the difference between how children used pronouns to refer to the protagonist of a story as opposed to another main character was observed. Investigation of this specific aspect of the reference system may aid in the understanding of the functional ability of 3-year-old children to maintain cohesive structure throughout a story in order to create coherence for the text as a whole. The young age of the children being investigated in this study may result in evidence of a developing form/function relationship between pronouns and their use to serve a discourse function.

This study was designed to meet three main goals. First, the study closely replicated part of a study conducted by Bamberg (1987), which examined this same use of reference in the stories of German-speaking children from the ages of 3;6 to 10;1. It was intended that this study and Bamberg’s be close enough in design and analysis to allow direct comparison of results. From his collected data, Bamberg proposed a series of developmental stages through which children move to reach the adultlike applications
of pronominal anaphoric reference within narratives. Therefore, the results from this study will be compared with, and if appropriate, inserted into Bamberg's developmental scheme.

Second, the data was compared with that of Karmiloff-Smith (1981), another prominent study into the development of pronominal anaphoric reference. Karmiloff-Smith's study supported a notion similar to Bamberg's of the first stages in the development of adultlike pronominal anaphora (with minor variation), but differed considerably with respect to the age at which the first stage of referential use of pronouns appears. Because Karmiloff-Smith's study was conducted with English-speaking (and French-speaking) children, it was important here to compare the two sets of English data. Any differences and/or similarities between the data are discussed with respect to experimental design and analysis. The discussion is enriched by results found by other researchers.

A third goal of the study was to observe the effect of story familiarity on the use of pronouns to make reference. Therefore the difference in use of pronominal reference between a condition where children had no previous adult model of a story and a condition in which they had repeatedly received an adult model was examined. The Bamberg study focused only on the condition in which the child had received an adult model.
Outline of the Thesis

The remainder of chapter 1 is a review of the research literature that motivated the present study and a statement of my hypotheses. Chapter 2 presents the method used to test these hypotheses. Chapter 3 presents the results of the study and a discussion of these results in the context of the research findings of other authors. Chapter 4 offers a summary of the results and conclusions drawn from them. Chapter 4 also presents recommendations for further study.

Background of the Study

When we ask a child to "tell us a story," what exactly are we asking the child to do? What knowledge and resources are we expecting the child to have in place in order to accomplish the task? First, we expect that the child has knowledge of what a story is. In other words, we expect that at least an immature form of an adultlike story schema (as discussed by such authors as Stein & Glenn, 1982) is already part of the child’s knowledge base. We also expect the child to draw heavily on not only experience with the basic structure of stories, but also on personal and social experience with problem-solving behaviour (including such elements as goal-setting and achievement, and the types of problems that occur). Further, we expect the child to be able to utilize her developing language skills to produce a string of utterances that, when considered as a whole text, contain enough elements of a "good" story and enough textual organization (coherence) to be considered a story at all. Finally, we expect the child to monitor all of the above with respect to the effect the story is having on the listener. Therefore, we
are asking the child to integrate simultaneously developing abilities in the areas of cognition, communicative competence and language in order to "simply" tell us a story.

A significant body of research in the area of narrative acquisition has focused on the development of story schema knowledge in children (e.g. Stein & Glenn, 1982; Hudson & Shapiro, 1991). Through various studies, mainly examining comprehension and recall, the bulk of the data indicates that children begin to demonstrate knowledge of an adultlike story schema between the ages of three to four years. Most research indicates that the development of a full story schema is not completed by most children until they are well into their elementary school years.

Less research has focused on the production of narratives and the developing ability to use linguistic elements as cohesive devices in order to produce a coherent narrative text. Narratives provide uninterrupted, child-generated strings of utterances which can provide insight into the processes by which children choose form "the myriad of structures available to create coherent narrative text" (Liles, 1993: 870). Further, because these strings of utterances are placed in the context of a narrative genre, factors present in the narrative context which influence a child's choice of form to serve a given cohesive function may also be uncovered (e.g. tense and aspect, or the advancement of a story line). Spontaneously generated narratives also produce errors and self-corrections, which can give further information regarding the developing processes underlying the production of coherent text.
In the following review of the literature I will first discuss some issues surrounding the conflicting experimental results in studies of narrative development. Following this I will briefly define the terms cohesion and coherence as they are used in this study. Finally I will discuss pronominal anaphora and its development, focusing on two pivotal studies in this area: Bamberg (1987) and Karmiloff-Smith (1983).

Narrative Production

In the work that has been done with narrative production, there have been conflicting results with respect to the age at which children demonstrate knowledge of a story schema in their productions and the age at which they can ultimately tell "coherent, goal-based, fictional stories" (Hudson & Shapiro, 1991: 102) similar to those told by adults, although the research generally places the latter achievement well into the elementary school years. Further, there is disagreement in the literature as to the ages at which children begin to use various linguistic forms to serve specific cohesive functions, resulting in a connected, coherent narrative. Discussion of these differences in results between studies which investigate similar aspects of narrative structure and organization, or the linguistic devices used to create text coherence, has focused on variation in task and context among studies.

The Effect of Task and Context on Children's Story Production

First, the issues of narrative length and narrative complexity must be considered. If a narrative is too short, the incidence of a particular feature of the narrative may be too low to provide useful information. For instance, if one is interested in determining the
statistical significance of the frequency of use of one form as opposed to another to fill a cohesive function within the narrative (as in the present study), then low incidence of the forms could jeopardize the statistical significance of results and magnify the importance of individual variation (Liles, 1993). A longer narrative may increase the incidence of particular forms and eliminate restrictions on statistical analysis. With respect to narrative complexity, research has indicated that the complexity of linguistic structure within a narrative increases with an increased number of characters and episodes (e.g. Peterson & McCabe, 1983). It follows that if a narrative is too simple a child may not be required to "actively process [the] organizational strategies under investigation" (Liles, 1993: 878). However, if a narrative is too complex, including not only its number of characters and events, but also the required level of vocabulary and organization, the resulting production may be too minimal to warrant analysis (Ripich & Griffin, 1988, as cited in Liles, 1993).

Further to narrative length and complexity, the context of elicitation of a narrative is also crucial to the resulting production, in particular the coherence of the text. Research has shown that if a child is familiar with the content and topic of a narrative, more developmentally sophisticated production results (Hudson & Shapiro, 1991). Hudson & Shapiro conclude that "children may display more advanced cohesive devices...in narrative genres they have already mastered" because the difficulties children

1 Hudson & Shapiro distinguish among fictional narratives, personal narratives and scripts, and discuss the formal characteristics and task demands of each of these genres.
experience in creating coherence may detract form their abilities to use cohesive devices (1991: 106).

Following from the discussion above, one must take a critical view of the experimental methods and resulting narratives from which data and conclusions are drawn when comparing studies into the development of narrative structure and the linguistic forms through which local cohesion and textual coherence are created. With respect to the focus of the present study, these cautions certainly apply to the investigation into the development of pronominal anaphoric reference, where similar variations in method and data driven conclusions also exist.

**Cohesion and Coherence**

Before entering a discussion on the development of pronominal anaphoric reference, it is necessary to define briefly the terms "cohesion" and "coherence," due to the wide range of interpretations these terms have entertained in the literature. The view to be taken here will reflect those of Bamberg (1987) and Karmiloff-Smith (1981). Coherence can be defined as "that quality which makes the discourse stand as a whole text; that is, which makes the utterances of the text related to one another in some salient way, and not just random strings" (Bennett-Kastor, 1983: 136). This coherence of a whole text is in part the result of sequential cohesion: the use of linguistic forms (cohesive devices) to create these connections between utterances. Cohesion has often been studied in sentence pairs, concentrating on the function of a cohesive device in a local context.
However, local cohesion in a narrative works to produce textual coherence, and therefore the function of such a cohesive device is expanded, if not altered.

In order to recognize the influence of the narrative context on the use and function of cohesive devices, Bamberg (1987) defines cohesion as involving the relationship between two different levels: the linguistic level (at which linguistic elements cue intersentential and interclausal relationships) and the conceptual level (at which events combine to produce units which constitute the narrative "whole"). According to Bamberg, a "globally coherent" interpretation is the result of both top-down and bottom-up strategies: top-down strategies involving personal experience with the world and with narratives that allow the listener to make predictions, and bottom-up strategies involving the cohesive devices that cue the context-dependent interpretation of sequential utterances. This functionalist perspective is also reflected in the theoretical stance Karmiloff-Smith brings to her research.

The view of coherence taken here is different from the view of many researchers in that it is focused on the perspective of the speaker and the specific cues a speaker inserts into a text to create coherence for a listener. Naturally, this view is tied to the speaker's production of discourse and the specific linguistic forms which serve as cues. Other authors, such as Brown & Yule (1983) have considered coherence from the perspective of the listener, and the expectations of textual connectedness a listener brings to a

2 In this way, Bamberg diverges from those who reserve "cohesion" to refer to formal linguistic marking of semantic relations. See Halliday & Hasan (1976) and Brown & Yule (1983).
discourse context (such as a narrative). This view of coherence has been part of the theoretical basis for many investigations into discourse abilities. It follows that the design of such studies is based on comprehension of discourse, not production. (See Brown & Yule, 1983, for further discussion. See Halliday & Hasan, 1976, for a detailed explication of cohesion from the production point of view that is related, but not identical, to the framework used in this thesis.)

If cohesion is to be viewed from the perspective of the speaker, then it is necessary to describe not only the linguistic forms which serve as cohesive devices, but also the function(s) they serve in the particular linguistic and textual context in which they occur. This is easily illustrated by the fact that many linguistic forms have plural functions, and, therefore, disambiguating the form/function relationship at a specific instance is highly dependent on context (Bamberg, 1987). In addition to its ability to disambiguate function, a form/function approach to studying cohesive devices is a powerful tool for assessing the changing use of linguistic forms to serve particular cohesive functions over developmental time.

**Pronominal Anaphora**

Pronominal anaphora can be generally defined as the use of pronouns as contextual cues to indicate that sentences or groups of sentences are related and are to be jointly interpreted with respect to referent (Bamberg, 1987). Pronominal anaphora and its development have been the subject of discussion in the work of various authors. Halliday & Hasan (1976) formally stipulated that pronouns on their own have no
inherent referential meaning, but rely on nominal expressions found elsewhere in the text to gain referential meaning. However, this notion of strict reliance of pronouns on substitution by nominals to gain meaning has been rejected, at least in part, by several researchers.

Brown & Yule (1983) are two authors whose interpretation of the meaning relationship between a referential pronoun and its referents has moved away from Halliday & Hasan's "substitution" view. Brown & Yule argue that a simple "substitution relationship" can be misleading and falls short of explaining the function of pronouns as anaphors. They suggest that the interpretation of pronominal reference in discourse relies not only on the antecedent nominal expression, but also on other linguistic and pragmatic factors. For example, in the sentence "Even an apprentice can make over twenty pound a week and they don't get much tax [taken] from that" (1983: 217), a reference to the antecedent nominal "an apprentice" is made by the plural pronoun "they." This would seem to be a problem of number agreement from a strict substitution view of pronominal reference. However, when the antecedent nominal is considered in the context of the attached predicate "can make over twenty pound a week" the antecedent nominal is interpreted as being one of a set of individuals; the following pronoun therefore refers to the whole set.

Wiese also argues that pronouns carry meaning and emphasizes that this meaning "reflect(s) social... classifications of possible referents" (1983: 373). He also emphasizes that the referents of pronouns need not be found directly in the preceding text, but that
referents need only be assumed by the speaker to be inferred by the listener due to their shared knowledge of the "universe of discourse" (1983: 373). In keeping with this view, Martin (working within the framework of Halliday's systemic grammar) proposed a network of reference (of which pronominal anaphora is a part) which describes "the operations a listener might perform in locating the referent of a phoric nominal group" (1985: 271). This system is dynamic and, like Wiese's, recognizes the interplay of culture, context and text in the interpretation of reference.

This move away from viewing pronominal anaphora as a strict anaphor-antecedent substitution relationship may be the result of researchers analysing anaphora in whole, connected texts rather than simply in sentence pairs. This further begs the analysis of anaphora by a form/function approach, as has been adopted by such authors as Karmiloff-Smith (1981) and Bamberg (1987), who have examined the development of pronominal anaphora in the narrative context. The narrative context is rich with anaphoric reference, due to the repeated actions and interactions of characters. From the perspective of studying pronominal anaphora it is ideal, because "not just the repetition of an NP, but the form of its introduction and subsequent mention, and the grammatical and semantic characteristics of it, reveal what the story is the child has in mind, as well as his grasp of the linguistic tools available for expression of the specific discourse" (Bennett-Kastor, 1983: 147).
The Development of Pronominal Anaphora

As was discussed above for the study of narratives in general, in the examination of pronoun function in narrative text one of the more contentious issues has been the developmental point at which pronouns stop being used only deictically and start being used referentially. The deictic use of pronouns involves the creation of a joint, nonlinguistic focus between the speaker and listener in the "here and now," often accompanied by a pointing gesture in appropriate extralinguistic contexts (e.g. pointing to a character on the page of a picture book). In contrast, referential use of pronouns is not linked to the "here and now," but rather connects related propositions linguistically and contributes to the overall textual structure of connected discourse (Hickman, 1983; Wales, 1986). There is even discussion as to whether it is possible to separate referential and deictic function of pronouns after referential use is acquired; the functions may be at work simultaneously (Schiffrin, 1990). However, it is not disputed that in development children move from deictic to referential use of pronouns, in particular third person pronouns, as they undergo the process of acquiring adultlike anaphoric pronominal reference. Indeed, this change from unifunctional to bifunctional use of the pronoun in the narrative context fits with the generally accepted developmental trend in which linguistic forms are first used unifunctionally and only later move to plurifunctional use. Rather, it is the developmental age at which referential use first appears, and the stages through which children progress toward the adult system, which have received differing interpretations. Although other authors have addressed this issue, this study will focus on the research of Bamberg (1987) and Karmiloff-Smith (1981). These studies are regarded as "some of the best research into the textual context
of children's narratives" (Liles, 1993: 873). Further, their view of the developmental process toward adultlike pronominal anaphora is similar, excepting a wide discrepancy in their opinions concerning the age at which the first signs of referential use of pronouns appear.

In her study of 350 English and French children, ages four to nine years, Karmiloff-Smith (1981) defines stages of acquisition of pronominal anaphora in narrative productions. The design of the study involved showing the children books containing six pictures each, and for each sequence of pictures asking the children to say "what is happening." Each collection of pictures introduced a different number of characters, and these characters differed in their involvement or "importance" in the story. For example, in one story type there existed one main character, with another character who was involved only fleetingly (story type A). In another story type (story type C) two characters were present throughout. In analysing the various stories told by the children, Karmiloff-Smith concluded that the children under the age of six were using personal pronouns deictically. They seemed to be treating the pictures as separate entities, not creating a coherent text from the sequential pictures and corresponding events. The fact that pronouns were generally accompanied by a point to the character on the page, thereby drawing on shared nonlinguistic contextual knowledge of both the child and the experimenter, was interpreted by Karmiloff-Smith to indicate the deictic nature of the pronoun use.
In contrast, by the time the children reached about six years of age, they began to
evidence the use of pronouns in what Karmiloff-Smith labelled a "thematic subject" strategy. For the younger children (i.e. starting at six years), when this strategy was employed, pronouns appeared only in utterance-initial position and were reserved for reference to the thematic subject, or main protagonist, of the story. Other characters were referred to by full nominal expressions. In this way, the child was interpreted to be paying attention to the relationship between the depicted events, using pronouns to advance the thematic progress of the narrative. As the children got older, they began to locally refer to characters other than the main protagonist by utterance-initial pronouns, but they added a postposed nominal phrase to clarify the referent for that pronoun (French data). Further, even when children employed this latter strategy, if a personal pronoun occurred in utterance-initial position without a clarified referent, it was always in reference to the main protagonist, even if the last mention of that character was sequentially removed in the text (Karmiloff-Smith, 1981; Bamberg, 1987).

This "thematic subject" strategy of pronominal reference is not a strategy employed by adult speakers. Adult pronominal reference is truly anaphoric in nature, using pronouns to follow and refer to local mention of characters regardless of their "prominence" as protagonists. Adults use pronouns anaphorically to maintain reference to characters, using full nominal expressions to switch reference in a text as characters are alternately introduced or mentioned (Bamberg, 1987). According to the Karmiloff-Smith data, this adultlike system of pronominal anaphora is not in place until after nine years of age.
This relatively late age for the acquisition of adultlike use of pronominal anaphora was confirmed in a study of similar design by Bamberg (1987). In this study of narratives produced by German children between the ages of 3;6 and 10;1, Bamberg also found that only seven of nine children in the age range of nine to ten years utilized an adultlike system of pronoun anaphora, (i.e. consistently using pronouns to serve a reference-maintaining function and nominal phrases to serve a reference-switching function). However, other results of Bamberg's study contrast with those found in the Karmiloff-Smith (1981) study, particularly with respect to the age at which the "thematic subject" strategy is first evidenced, and the details of the progression through which children move as they acquire an adultlike system.

Bamberg's study differed from Karmiloff-Smith's in several ways, which may have contributed to the different results and interpretations derived from the data. First, the picture book used to elicit the narratives (Mercer Mayer's Frog, Where Are You?) was four times as long (twenty-four pictures), and therefore allowed for longer pieces of text to be analyzed for each telling. Second, again in part due to the length of the picture-book, events throughout the book involved one or both of the two protagonists (the boy and his dog), as well as several minor characters. Therefore, there were many chances within a single story for pronominal reference to be made with respect to multiple characters. Third, Bamberg closely analyzed the stories of individual children, recording their idiosyncratic uses of pronouns as well as their uses in common with other children. In doing so, Bamberg was able to more finely describe the stages in the acquisition of pronominal anaphora that the children in his study appeared to exhibit.
By examining the linguistic devices through which the children maintained and switched reference with respect to the two main characters of the story, Bamberg found a developmental trend as follows. The younger children almost exclusively chose to switch reference to the boy through use of a pronoun. However, as children got older they began (like adults) to use a nominal expression to accomplish the task. For switching reference to the dog, children of all ages (like adults) preferred to use a nominal expression, not a pronoun. For maintaining reference at a local level, all age groups (including adults) preferred to do so with a pronoun, regardless of the character being referred to.

Bamberg sees the different treatment of the two protagonists as being highly significant. He reasons that it is not possible to explain the highly preferential use of pronouns to switch reference to the boy as being deictic in nature because of the different method the youngest children consistently chose to switch reference to the boy, as opposed to the dog. Rather, he explains the phenomenon in terms of the "thematic subject" strategy previously proposed by Karmiloff-Smith. The pronominal form used in the function of switching reference is interpreted to exclusively refer to the boy, chosen to be the "main protagonist" of the story. Bamberg believes that, in making this distinction, the children are choosing a strategy through the use of pronouns for "advancing thematic progression" of the narrative (1981: 97), thereby demonstrating knowledge of the narrative whole. The children appear to be using pronouns when they believe that in doing so they will provide thematic coherence to the whole text; they use nominals when they believe thematic progress will be interrupted (i.e. when characters other than
Bamberg interprets this strategy of thematic advancement as a "global level discourse organization device" (1987: 98), of which the "thematic subject" strategy is a subcomponent.

After closer analysis of individual stories, Bamberg concludes that children begin development of pronoun anaphora by employing this "global" thematic advancement strategy, then move through a stage of applying "local" contrastive rules while still keeping the thematic strategy at a global level. In other words, as this second strategy comes to be used children are beginning to recognize at a purely local, intersentential level that nominal reference to the boy must be inserted if the use of a pronoun could refer (locally) to either the boy or the dog. However, at the same time, in unambiguous local contexts pronouns will still be used exclusively to switch reference to the boy. During this intermediate stage of acquisition, Bamberg notices that there is no clear form/function relationship which serves to maintain or switch reference; rather there are two strategies being applied on different levels. Bamberg therefore proposes that the final acquisition of the adult system of pronominal anaphora is the result of the merging of the local and global strategies to produce one strategy that satisfies both a local disambiguating and a textual cohesive function.

It can be drawn from the discussion above that Bamberg’s interpretation of his data support and further explain Karmiloff-Smith’s results (excepting the younger age at which he found the "thematic subject" strategy to appear). By viewing the "thematic subject" strategy as a subcomponent of an early "global" strategy which must later be
blended with "local" rules applied to prevent ambiguous reference, Bamberg is able to go on to propose "forces" which may be driving the child toward the adultlike anaphoric use of pronouns. First, and perhaps most obvious, children in a literate environment are constantly confronted with narratives employing the adult system of anaphoric reference. The children are therefore pressured to resolve the differences between the adult input and their own productions. Second, Bamberg proposes that the emergence of the "local" strategy of contrastive nominalization, which interrupts the "global" strategy at a local level, serves to push children toward a resolution of the strategies employed at the two separate levels. Therefore, the proposed forces are both external and internal with respect to children's developing language system.

The combined results of these two studies, in particular the interpretations of the data set out by Bamberg, lead to interesting conclusions regarding what is presently known about the development of pronominal anaphora in narrative production. First, Bamberg found evidence of consistent nondeictic use of pronouns in the productions of children as young as 3;6, as well as sensitivity to the thematic development of the story. This sensitivity to thematic development is consistent with comprehension studies, which have pointed to knowledge of an adultlike story schema by three to four years of age (e.g. Hudson & Shapiro, 1991). It is not surprising, and indeed should be expected, that as children acquire story schema knowledge they should attempt to incorporate that knowledge into their early narrative productions. Second, while children begin to exhibit this merging of story schema knowledge and linguistic portrayal of that knowledge at such a young age, their attempts do not consistently reflect the adult
system of pronominal anaphora until after the age of ten years. Rather, there is a developmental progression through which children move before the "global" strategy of thematic advancement and the "local" strategy of disambiguating referents merge to finally mirror the adult anaphoric strategy, which satisfies both local and textually global needs for cohesion and coherence.

Hypotheses

This examination of the literature pertaining to the nature and development of pronominal anaphoric reference leads to several hypotheses regarding the proposed study. First, it is expected that the results of this study with English-speaking children will be comparable with those found for German-speaking children. Specifically, it is expected that the data will contain evidence that English-speaking children as young as 3;6 are consistently using pronouns in a nondeictic, referential manner in their narratives. Beyond this, if Bamberg's interpretation of his own data is valid, it is expected that the data from English speaking children will support his proposed developmental process in the acquisition of anaphoric pronominal reference, by demonstrating the presence of a thematic advancement strategy as described above.

Second, it is expected that the referential use of pronouns by all children will be affected by story familiarity. As was discussed above, there is evidence that when children are more familiar with the structure, content and organization of a story, their use of cohesive devices is more developmentally advanced. For the most part, such evidence was obtained through cross-sectional developmental studies, in which older children
(with more developed story schemas) told more linguistically advanced stories (Hudson & Shapiro, 1991). However, the principle will be extended to the context of this study, and the expectation here is that when children have their story knowledge supported (by exposure to an adult model), there will be an improvement in their ability to use cohesive devices to serve specified functions. In particular, the children may demonstrate more frequent usage of pronominal reference and/or a stronger tendency to utilize the thematic advancement strategy when telling a familiar, as opposed to an unfamiliar, story. If in fact these children are in the active process of acquiring a story schema, in addition to acquiring the use of pronominal anaphoric reference, then by familiarizing the children with a story (thereby providing a model for story content and structure) enough of the cognitive burden may be removed from this area of knowledge required for narrative production to allow more effort in aspects of the referential system.

Third, it may be expected that the results of the proposed study for children younger than 3;6 will more closely mirror those found in the study of Karmiloff-Smith in two ways. First, they may demonstrate deictic, nonreferential use of pronouns in the context of the narrative task and an inability to create textual coherence. This may reflect insufficiently developed knowledge of a story schema and/or the referential system, or an insufficient ability to integrate these (and other) areas of knowledge required for the story production task (Hudson & Shapiro, 1991). Second, even if the children evidence referential use of pronouns, there may be a tendency for clause-initial pronouns to be
reserved for reference to the story protagonist, an integral part of Karmiloff-Smith's thematic subject strategy.
CHAPTER TWO

METHOD

Overview

The design of this study was intended to replicate part of Bamberg’s 1987 study, in order to allow direct comparison of the results. A second purpose was to compare the results with the Karmiloff-Smith’s study (1981). Finally, the study was intended to measure any change in performance with respect to the use of pronominal reference in a narrative between a time when the children were unfamiliar with a story and a time when they were familiar with it.

It was hypothesized that the data of this study of English-speaking 3-year-olds would support Bamberg’s results for German-speaking children of the same age, namely that they would use the proposed thematic advancement strategy. Further, it was expected that story familiarity would have a positive effect on the ability of children to apply this thematic advancement strategy. Finally, it was hypothesized that the children would use pronouns in a manner that reflected the results of Karmiloff-Smith: either they would use pronouns in (a) a purely deictic manner, not referentially (in conflict with Bamberg’s results, but in agreement with Karmiloff-Smith), or (b) referentially, but more closely reflecting the thematic subject strategy proposed by Karmiloff-Smith.
The study involved analysis of recorded stories elicited from ten 3-year-olds. The study was conducted in three parts for each subject: (1) unfamiliar condition, (2) familiarization, and (3) familiar condition. The unfamiliar condition involved elicitation and recording of a story told by each child in a private room at her preschool site during regular preschool hours (with one exception, when elicitation occurred in the child's home). The story was elicited through presentation of a picture book provided by the researcher and previously unknown to the child (Frog, Where Are You? [Mayer, 1969]). In the second part, familiarization, the book was sent home with the child for one week, during which time the parent(s)/guardian(s) "read" the book with the child on a minimum of four different occasions. The final stage involved repeat elicitation and recording of the story told by the child exactly one week following the original story elicitation. The stories were then transcribed and analyzed for the children's use of nouns and pronouns to refer to the two main characters in the story. A picture-by-picture synopsis of the story is presented in Appendix A.

Subjects

Ten subjects between the ages of 3;0 and 3;11<sup>1</sup> were selected from the regular attenders in the preschool program at the U.B.C. Child Study Centre. Subjects were selected with the assistance of the Program Coordinator of the U.B.C. Child Study Centre, who was asked to nominate children according to the following criteria:

1. between the ages of 3;0 and 3;11
2. monolingual English home environment

<sup>1</sup> Ages are reported as years;months.days.
3. no known physical, mental or emotional handicaps
4. no known delays in language acquisition

A parental consent form was sent to the caregivers of eighteen children who met the above criteria, and consent was given for the participation of sixteen of these children. From these, ten subjects (six girls and four boys) were chosen according to subject availability at times allotted for data collection. The ages of subjects at the time of the first story elicitation (T₁) is listed below (Table 1).

In order for chosen subjects to become more familiar with the experimenter before leaving their classrooms for the purpose of data collection, the experimenter spent at least one session in the classroom participating in regular classroom activities and

Table 1. Gender and age of subjects at time of first story elicitation (T₁)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Gender</th>
<th>Age at T₁* in years;months;days</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1 BT</td>
<td>♂</td>
<td>3;8.12</td>
</tr>
<tr>
<td>S2 JT</td>
<td>♂</td>
<td>3;5.17</td>
</tr>
<tr>
<td>S3 KS</td>
<td>♂</td>
<td>3;8.5</td>
</tr>
<tr>
<td>S4 SK</td>
<td>♂</td>
<td>3;6.2</td>
</tr>
<tr>
<td>S5 DA</td>
<td>♂</td>
<td>3;9.12</td>
</tr>
<tr>
<td>S6 JB</td>
<td>♂</td>
<td>3;6.2</td>
</tr>
<tr>
<td>S7 DM</td>
<td>♂</td>
<td>3;3.5</td>
</tr>
<tr>
<td>S8 RL</td>
<td>♂</td>
<td>3;4.22</td>
</tr>
<tr>
<td>S9 RS</td>
<td>♂</td>
<td>3;6.18</td>
</tr>
<tr>
<td>S10 EH</td>
<td>♂</td>
<td>3;2.3</td>
</tr>
</tbody>
</table>

*Age range: 3;2.3 - 3;9.12
informing subjects that "next time" they would be given the opportunity to go with the experimenter to play a "story game."

Procedures for Data Collection

Part I (Unfamiliar Condition):
The experimenter invited chosen subjects individually to come outside their classroom to read a book with her. If a child refused to participate, even with gentle encouragement, she would be left and approached again at a later time, but was never required to participate against her wishes. No child refused to participate. Each child was asked to look through the picture book *Frog, Where Are You?* (Mayer, 1969) until she felt she knew the book well enough to tell the story. The experimenter asked the child if she was ready to tell the story. If the child responded "yes," the child and the experimenter then looked through the book together while the child told the story. Some difficulty was encountered in this part of the data collection process, when a few subjects began to tell the story immediately when looking through the book for the first time. For certain of these subjects, when asked to tell the story again after becoming familiar with the book, they had become disinterested in the task, apparently feeling they had already finished what the experimenter had asked them to do. For these subjects, the first telling of the story is marked in the data. It was decided that the "better" of the two stories would be taken, even if that was the first story (i.e. with no self-familiarization). The justification for this decision and the method for deciding the "better" story are discussed below.
The experimenter provided encouragement and showed interest in the child's story, but did not in any way enhance the content or enhance or model the use of pronominal reference in the child's production. The type of prompting and responding used, which consisted of nonpropositional utterances (such as "Mmmhmm," or "wow!") has been shown not only to provide contingent responses to the child's utterances, but also to encourage the child to keep participating in the narrative task (Pellegrini & Galda, 1990). Nonpropositional utterances of this type were supplemented by repetitions of some child utterances, primarily to assure accurate transcription of unpredictable or difficult-to-hear utterances. Finally, utterances such as "Then what happened?" or "What's going on?" were used when it was necessary to encourage the child to remain on task. Utterances like the latter (e.g. "Then what happened?") while chosen to be compatible with Bamberg's methods, were also deemed to be appropriate for the elicitation of a story as opposed to other kinds of narrative or picture description. The words were chosen carefully and limited to only those chosen because it has been shown that "instructions to children [represent] a situational context to the speakers that obligate[s] them to form distinctions in organizational structure of their language" (Liles, 1993: 872).

The child was encouraged to tell the story as many times as she wished. The experimenter gave positive feedback regarding the first telling (e.g. "What a good story!") and asked the child directly if she would like to tell the story again, but did not insist on multiple tellings. The motivation for encouraging the children to tell the story more than once comes from evidence which suggests that when children are more familiar with events and the structure in a story, they will be more likely to demonstrate the
upper limits of their knowledge of narrative cohesion (including pronominal reference) (Hudson & Shapiro, 1991). Therefore, by allowing the child some kind of "self-familiarization" process in the first part of this study, it was intended that the children would have the opportunity to tell the most linguistically sophisticated story they could without yet having the benefit of an adult model. Only three subjects actually ventured a second story in the first telling, apparently for the same reasons previously mentioned. For subjects who did give two stories, the "better" of the stories was chosen for analysis, according to completeness of the story with respect to six basic story schema elements: (a) Initial Event Chain (two parts), (b) Search Motif, (c) End (three parts) (based on Berman, 1988; see Transcription & Coding section below for details). Therefore, even if two stories were given, the second was not necessarily the one chosen for analysis.

The story was recorded using both audio and visual recording equipment. However, the recording of the first telling by Subject 9 (RS) was not recorded by video due to battery failure, and neither telling of Subject 10 (EH) was recorded with video due to her distractibility. Audio recording equipment included the following: audio recorder (Marantz, model PMD420), microphone (Samson remote), transmitter (Samson VHF FM ST-2) and receiver (Samson VHF FM SR-2). Video recording equipment included: camera (JVC Super VHS GF-S 550), tripod (Davis & Sanford Model F-10) and tapes (Scotch Colour Plus High Grade). Video tapes were viewed on a Mitsubishi Hi-Fi U54 video cassette recorder. Transcription of audiotaped material was done over headphones with a General Electric 3-526OA audio cassette player.
Part II (Familiarization):

During the week following the first story elicitation, a copy of *Frog, Where Are You?* was sent home with the child. The parents were instructed (by letter) to "read" the story to the child on at least four different occasions throughout the week. The parents were informed of this aspect of the study in the letter of initial contact, but a letter of reminder was sent home with the book, as well as reinstruction that any questions regarding procedure or the study itself could be directed to the experimenter or her faculty supervisor. The parents were also asked to record one example of their stories during that week, for possible later analysis.

Part III (Familiar Condition):

One week after the first story elicitation (Part I), the researcher again invited the individual children to tell the same story. As in Part I, each child was asked to tell the story while looking through the picture book *Frog, Where Are You?* with the experimenter. Again, the child was encouraged to repeat telling the story if she wished. In the second telling only two subjects gave more than one story, and in these two cases the "better" of the stories was taken for analysis according to the six story element criteria noted in Part I above. All experimenter prompts and responses during the child's telling of the story were restricted as outlined in Part I above. This second telling of the story was also recorded using audio and video recording equipment (except for Subject 10, as noted in Part I).
Transcription & Coding

Transcription of raw data was done on a clause by clause basis, following the guidelines of Berman et al. (1986), who define a clause as a "unified predicate," i.e. one which "expresses a single situation (activity, event, state)" (p. 37).

The coding procedure employed conformed to that used by Bamberg (1987) to the extent that the differences between the English and German languages allow. All aspects of Bamberg’s coding were not explicitly detailed in his study; where his explanation of coding procedures was vague, coding was done by comparison with examples given in his text.

Form Categories

All mentions of the two main characters of the story (the boy and the dog) were first coded according to their form and function. Coding categories for form were divided into three categories:

1. Nominal: reference to a character by a full nominal expression  
   e.g. _The boy_ looked in his boot.

2. Pronominal: reference to a character by a personal pronoun  
   e.g. _He_ landed on a reindeer.

3. Ellipsis: referential subject of clause not explicitly mentioned.  
   e.g. And _he_ look.  
   ___ calling "Freddy, Freddy!" in the hole.
Function Categories

The two categories for function were:

1. **Switch Reference (SR):** Introduction of a character into the story, or reintroduction of a character after mention of other characters or events.

2. **Maintain Reference (MR):** Continued mention of a character after his introduction or reintroduction, with no interruption by mention of other characters or events.

Subcategories

Each clause coded according to the form and function categories above was further coded according to whether it fit one or more of the following subcategories:

1. Joint reference to the boy and the dog
   e.g. They looked everywhere...

2. Proper noun
   e.g. (um) well Andrew looks in the boots.
   (reference to the boy)

3. Maintain reference to last-mentioned character by full nominal when this reference occurs at the outset of a new event or page

4. "Appropriate" use of a pronoun to switch reference (SR*) where a full nominal may otherwise be expected (see below for explanation of "appropriate")

   e.g. He chased that dog. -> he (SR) -> that dog (SR)

   He trying to chase the dog. -> he (SR*) -> the dog (SR)

In the example of subcategory 4 above, the second mention of the deer is technically a pronoun serving a switch reference function to a character other than the protagonist in
the story. Because the second clause contains same subject and object in identical
positions, and actually repeats the information in the first clause, there is no doubt as
to the referent of the pronoun in the second clause. In fact, had the second clause read
"He trying to chase him" the object pronoun "him" would also have been coded
"appropriate" due again to the utter clarity of the referent of the pronoun. Although
such use of pronouns could be construed as a violation of the Bamberg’s developmental
theory of the acquisition of pronominal anaphora, because of the lack of ambiguity of
the referent of the pronoun in examples such as these, they were deemed "appropriate"
uses of the pronoun in the switch reference function (as will be discussed in chapter 3).
The coding of reference according to the four subcategories described above allows for
discussion of the children’s use of pronominal vs. nominal reference forms, but does not
affect the total counts of pronominal and nominal reference. Therefore, the data are still
directly comparable to Bamberg’s.

**Mention of Other Characters**

The mention of characters (and objects) other than the boy or the dog was also coded,
but for a different purpose. The purpose of this coding (which also recorded whether
the expression was nominal or pronominal in form) was to determine if the mention of
this other character was important in the thematic advancement of the story. If it was
considered to be so, then the next mention of one of the two main characters was coded
as a ‘switch reference’. If mention of the other character was not considered to be
important to thematic development, then reference to a main character immediately was
considered a ‘maintain reference’ if and only if this character was the object of reference
immediately prior to the "interrupting" utterances. Intervening mentions of other characters judged not to be important for thematic advancement were primarily descriptive statements (e.g. The moon is out) and narrator comments (e.g. What’s that? or He’s funny!). Mentions of other characters who were judged to be part of the thematic advancement of the story included the telling of episodes which were part of but not central to the main story line (e.g. the episode of the bees chasing the dog) or characters which interacted with one or both of the main characters or participated in the main story line (e.g. the frog’s actions at the beginning of the story, or the episode in which the deer carries the boy to the cliff-side). The following examples show 1. a case where intervening utterances are not important to thematic advancement, and 2. a case where the intervening utterances are important.

1. **The frog** is in. -> the frog (SR)

   **The moon** is up. [static observation, of no import to thematic development]

   Oh, **he**’s out! -> **he** (MR) - frog

2. **He** landed on a **reindeer** -> **he** (SR) - boy

   Then the **reindeer** throws **him** down into the river
   -> the **reindeer** (MR)
   -> **him** (SR) - boy

The referents and function (i.e. switch or maintain reference) of pronouns in clause-intial position were also coded to allow comparison with Karmiloff-Smith’s data regarding
positional constraints on referential pronoun use by young children (1981). Clauses which had been identified as important to the thematic advancement of the story were marked if they contained an initial referential pronoun. These occurrences of clause-initial pronouns were then broken down with respect to their reference function, their referent (boy or other) and, in the case of the maintain reference function, with respect to whether or not the occurrence of maintain reference was "local." "Local" maintain reference pertained to a clause which contained a pronoun (serving the maintain reference function) which refers to the character most recently established by a full nominal. Either no clauses intervened between the (re)introduction of the character by a nominal, or any intervening clauses contained reference by pronouns to the only the same character and no reference of any type to any other character. An example of "local" maintain reference is as follows:

There's a big big rock.  (SR - rock)

It's biting his knee.  (MR (local) - rock)

Mention of Characters Accompanied by Finger Point

To allow further comparison with Karmiloff-Smith's data and results (1981), each use of a pronominal form for mention of a character was coded according to whether it was accompanied by a physical point. Data showing co-occurrence of pronominal forms and physical deictic point were used in analysis designed to indicate possible deictic as opposed to referential use of pronouns.
**Story Structure Elements**

Each story was analyzed for basic elements that reflect the developmental sophistication of the child's knowledge of the story schema, as demonstrated in this production task. This general analysis of story organization and structure provided a frame for discussion of children's ability to achieve global coherence and maintain cohesive structure through local use of cohesive devices (in this case pronominal reference). To this end, each story was coded and analyzed for the following:

First, the stories were coded as including or not including the following six basic story elements (based on Berman, 1988)²:

- **a. Initial Event Chain: [Onset of Problem]**
  1. Frog leaves jar
  2. Protagonists(s) discover that frog has gone

- **b. Search motif: [Goal]**
  3. Protagonist(s) search for missing frog

- **c. End: [Resolution of Problem]**
  4. Boy finds frog
  5. Boy takes a frog
  6. Frog is same as or substitute for missing pet.

**Indicators of Picture Description or Story Line**

The stories were also coded for forms that can differentiate between the case in which a child is treating each page of the story book as a separate picture description task, and

---

² These six story elements were also used as the criteria for judging the "goodness" of a given story in order to choose between two stories for the purpose of coding and analysis (see Procedures for Data Collection).
the case in which a child recognizes a story line that results from the sequential interconnectedness of characters and events represented in the pictures.

These forms include the following:

1. Indicators of picture description
   a. The use of such forms as Here's/there's a..., or I see a... at the beginning of or during a set of utterances pertaining to each picture frame;
   b. The use of the indefinite article a in the first mention of a character for each picture frame, regardless of prior appearance or mention of that character in previous picture frames.

2. Indicators of story line
   a. The use of the definite article the in mention of characters which have received prior mention;
   b. Use of temporal forms such as then, next or after that, as well as other connectives such as so, because, and and but, all of which indicate the continuity and interconnectedness of subsequent events.

Words Per Clause

Clauses that contributed to thematic development were also marked for number of words per clause in order to allow calculation of the mean length of clause (MLC) for each story.
Analysis

A prime motivation for the arrangement and presentation of the data is direct comparability with Bamberg's results. To achieve this end I will describe the use of anaphoric reference by individual subjects and the group as a whole, which compares performance across subjects. Similarly, the results of this study will be arranged to allow comparison with Karmiloff-Smith's, in particular data pertaining to the deictic use of pronouns and evidence of local cohesion and/or textual coherence in the stories.

In addition, data will be presented which shows whether and how the data "splits" with respect to age, i.e. "young" vs. "old" 3-year-olds and their use of pronouns to make reference. To further explore the notion of a developmental "time-line" for language (including pronominal anaphora), the various developmental measures utilized in this study will be checked for correlation. Analysis of errors and spontaneous self-corrections in individual stories will be discussed. Finally, data and information comparing the children's performance on many of the above-listed measures in the unfamiliar and familiar conditions will be presented, to assess the effect of story familiarity on the use of pronominal reference.

Due in most part to the number of different categories into which instances of reference were coded, data for individual children did not produce large enough sample sizes per coding category to allow statistical comparison between categories describing use of pronouns in making reference. Individual data will be discussed descriptively. However, data summed for the group did result in sample sizes sufficient to allow
parametric statistical procedures to be applied. Therefore, the significance of differences in group performance with respect to various measures could be assessed. With few exceptions, the hypothesis tests involved in this study concerned comparison of single population proportions to preselected null values, and comparison of two population proportions. The appropriate distribution to describe such random variables is the binomial distribution, which is usually well approximated by the normal distribution in many cases, including all cases involved in this study. This leads appropriately to the use of the standard normal distribution, or z distribution, in the hypothesis tests concerning proportions in this study (Triola, 1992).

The only hypothesis test in this study which did not concern population proportions were tests of correlation between selected pairs of measures. The Pearson correlation coefficient, r, was chosen as the appropriate test statistic in these hypothesis tests (Triola, 1992).

Throughout, hypothesis tests using the z distribution were applied with a consistent level of significance (α) at 0.05. The significance level is deemed appropriate for a study of this type, which aims to replicate results not previously tested for significance. Description of the statistical treatment of various measures will be discussed in detail below with respect to each of the hypothesis statements set out in chapter 1.
Hypothesis 1: The use of pronominal anaphoric reference by English-speaking children will compare with that of German-speaking children, and in doing so support the developmental process proposed by Bamberg (1986). Specifically, 3-year-olds will use a global thematic advancement strategy in their narratives.

As discussed in chapter 1, Bamberg's proposed theory of the developmental process for the acquisition of the adultlike use of pronominal anaphoric reference contains four stages, beginning with deictic, nonreferential use of pronouns and ending with the adult preferences for referential pronoun use. He proposed that children as young as 3;6 are able to use pronouns in a referential (as opposed to deictic) manner and show the use of a "global" thematic advancement strategy, whereby they favour the use of a personal pronoun to introduce and reintroduce the story character deemed to be the main protagonist. Children would concomittantly favour the use of a full nominal to introduce and reintroduce characters other than the main protagonist. Pronouns remain, however, the form by which reference to these characters is maintained.

In order to test this strategy against the data collected here, all instances of anaphoric reference to the two main characters in the story (the boy and the dog) were recorded and coded according to their form (pronominal, full nominal, or ellipsis) and their function (switch reference or maintain reference). This procedure of coding was done in a manner as similar as possible to that in Bamberg's study. The clauses were coded and tabulated at T1 (unfamiliar condition) and T2 (familiar condition).
The two characters (boy and dog) are appropriately chosen because they both occur throughout the entirety of the story, and the boy is the natural protagonist of the story (although the dog is part of and sometimes central to certain episodes). Therefore, if in fact the children selected the boy as the story protagonist, then their preference for using pronouns to make anaphoric reference to the boy in contrast with nominal reference to the dog could be analyzed with respect to Bamberg's developmental progression. Further, for a given character, preference for use of pronouns as opposed to full nominals to serve different reference functions could be assessed. In all statistical tests, the null hypothesis and alternate hypothesis were set up such that if the data showed significant trends similar to those consistent with Bamberg's theory, then the null hypothesis would be rejected in favour of the alternate.

The summed counts of anaphoric reference forms and functions for all subjects provided the data base to compare these English-speaking children's use of pronominal reference against Bamberg's theory of pronominal reference development. Observation of trends in the data (namely distribution of nominal vs. pronominal forms, and the comparative number of total references to the boy vs. the dog) was made to provide an initial comparison of my data with Bamberg's. Following this initial check for data comparability, two different tests were performed which looked at (1) the significance of any difference in the proportions of pronominal and nominal reference used to switch or maintain reference to the boy and to the dog, and (2) the significance of any difference in the proportion of pronouns used to make a given type of reference to the boy compared with the dog. The first test would therefore show any tendencies in how
the children are using full nominals and pronouns to serve different reference functions for the protagonist, and for another (main) character. The second test would indicate any tendency that exists for the children to use a different strategy for referring to the protagonist and nonprotagonist. These two tests are sufficient to compare the obtained data with Bamberg's according to hypothesis 1 above.

Hypothesis 2: The referential use of pronouns by all children will be affected by story familiarity. Specifically, if the children are in the developmental process of acquiring pronominal anaphoric reference, then when they are more familiar with the content and schema of a story, they will exhibit more developmentally advanced use of pronominal reference, and in addition may exhibit a greater quantity of pronominal reference.

Evidence to support or not support this claim requires information regarding the difference in performance between the unfamiliar condition (T₁) and familiar condition (T₂) on the same measures that were used to test the fit of the data to Bamberg's theory of pronominal reference development. In other words, the goal was to determine whether or not the children showed a significantly greater tendency to use pronouns in the manner proposed by Bamberg for their age range (i.e. the use of the "global" thematic advancement strategy). Therefore, tests were designed to compare (1) the children's preference to use pronouns to switch reference to the boy at T₁ and T₂, and
(2) any difference between T1 and T2 in the children's preference to use pronouns to switch and maintain reference to each of the boy and the dog.

The possibility exists that individual children may have utilized strategies for making reference that deviated from those used by most other children, but not enough to alter grouped data. This issue will be addressed in the discussion of individual data.

Also of interest here was evidence of whether children are "better" at telling the story after having received an adult model, therefore lending support to the notion that familiarity may ease their "cognitive load" with respect to the content and schema of the story, allowing them to demonstrate more mature use of pronominal reference.

First, the "goodness" of children's stories according to the presence or absence of the six basic story schema elements at T1 and T2 will be presented. Second, the Mean Length of Clause for each subject at T1 and T2 will be presented. Third, the proportion of clauses which contributed to thematic development out of all clauses in the story (summed for all subjects) will be presented and statistically examined for difference between the unfamiliar and familiar conditions.
Hypothesis 3a: The children are using pronouns deictically (as opposed to referentially) in the story.

Hypothesis 3b: The children are using pronouns in a referential manner, but their use may more closely conform to the thematic subject strategy proposed by Karmiloff-Smith.

In order to determine whether pronouns were being used deictically, rather than referentially, data regarding the accompaniment of pronouns by point was investigated. (Simultaneous point with a pronoun is one indicator of deixis, discussed in chapter 1). It was reasoned that if pronouns were being used deictically, then there should exist the tendency for them to be accompanied by a point. This use of point would be a distinguishing mark which would separate pronouns from a nondeictic term, for example a full nominal. Therefore, a test was designed which compared the number of pronouns accompanied by point with the number of full nominals accompanied by point, considering forms that made mention to the boy and/or the dog in clauses deemed to be contributing to the thematic advancement of the story (i.e. coded clauses). The goal of this test was to determine if there was any difference in the frequency of point with the pronouns as opposed to the full nominals. If the results showed that there was no difference in the distribution of point between the two forms, this would point to nondeictic use of pronouns.
Further information regarding the quantity and variety of deictic terms in the stories and the presence or absence of point with these terms was tabulated for individual subjects and summed for all subjects. These data were not subjected to statistical measures, but were compared with the data regarding the accompaniment of pronouns and nominals by point. These results will be discussed descriptively.

Karmiloff-Smith found evidence of a thematic subject strategy, but only in children over the age of six (years older than the children studied by Bamberg). In her description of the thematic subject strategy, the utterance-initial position was almost exclusively reserved for pronominal reference to the protagonist. Therefore, occurrences of pronominal reference in clause-initial position were extracted from the transcripts and assessed in order to further compare with the proposed thematic subject strategy by Karmiloff-Smith. Information regarding the utterance-initial pronouns serving an apparent reference function (to any character) in coded clauses will be presented. These tables will show the percentage of initial, subject pronouns which had the boy as referent, along with the reference functions of these pronouns.

A secondary interest in this study was to determine whether measures of language development other than pronominal reference were correlated in this narrative context. If two measures are correlated then one might serve as an indicator of the other. Two of the measures used to assess whether the children were "better" at telling the story in the familiar condition (story "goodness" and MLC) were also selected as measures of language development, in addition to chronological age. Such use of MLC and the
presence of story schema elements in narratives as developmental scales are well documented in the literature (e.g. Brown, 1973; Stein & Glenn, 1982). A correlation test between each pairing of developmental measures was therefore carried out.

Closely related to the test of correlation between the developmental measures, it was of interest to see whether there was any relationship between chronological age and the use of pronouns to make anaphoric reference. Such a result would support the proposed developmental sequence for acquisition pronominal reference proposed by both Bamberg and Karmiloff-Smith. Therefore, a test was designed to determine any difference between the youngest four subjects’ and oldest four subjects’ preferential use of pronouns to switch reference to the boy, anticipating that the older children would show a greater preference of pronouns to fill this reference function.

Finally, throughout the presentation and discussion of the results, instances where reference to the boy and/or reference to the dog are in question for analysis, there will always be two different versions of the data and results presented, one which includes joint reference to the boy and the dog (for example by pronouns such as "they" or "them") and one which does not include joint reference. During the coding procedure, instances of joint reference were kept separate, and assigned to both the boy and the dog ("double coded"). Bamberg did not describe the case of joint reference to the two characters, so it is unknown how he dealt with these cases. The results are presented both ways in the interest of precision and completeness. Any differences in the results for the cases of included and excluded joint reference will be discussed.
CHAPTER THREE
RESULTS AND DISCUSSION

Overview

In this chapter I will present and discuss the results of this study. First, the results of the analyses of data grouped for all subjects will be presented and discussed in the order of the three hypotheses set in chapter 1. This will be followed by the results and accompanying discussion with respect to across-subject measures. I will then present and discuss relevant errors and self-corrections made by subjects, which give further weight to conclusions already drawn from the data. Finally, I will present and discuss the analysis of individual stories.

Group Data

Comparison with Bamberg's Data and Results

The raw counts and the percentage of total reference for each pairing of the categories of reference form and function are shown in tables 2a and 2b. Table 2a shows all reference occurrences, including joint reference to the boy and dog. Table 2b shows the same information as table 2a, but excludes joint reference to the boy and dog. (For a breakdown of the form/function category pairings into subcategories, please see Appendix C.)
Table 2a. Number (and percentage) of nominal, pronominal and elliptical reference to the boy and to the dog, at T1 and T2 (joint reference to boy and dog included)

<table>
<thead>
<tr>
<th></th>
<th>SWITCH</th>
<th></th>
<th></th>
<th>MAINTAIN</th>
<th></th>
<th></th>
<th>SUM</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T1 (%)</td>
<td>T2 (%)</td>
<td>T1 (%)</td>
<td>T2 (%)</td>
<td>T1 (%)</td>
<td>T2 (%)</td>
<td>T1 (%)</td>
<td>T2 (%)</td>
</tr>
<tr>
<td>To the boy:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal</td>
<td>14 (13)</td>
<td>10 (6)</td>
<td>-- --</td>
<td>1 (1)</td>
<td>14 (13)</td>
<td>11 (7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pronominal</td>
<td>56 (50)</td>
<td>88 (57)</td>
<td>35 (31)</td>
<td>42 (28)</td>
<td>91 (81)</td>
<td>131 (85)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ellipsis</td>
<td>3 (2)</td>
<td>4 (2)</td>
<td>4 (4)</td>
<td>9 (6)</td>
<td>7 (6)</td>
<td>13 (8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sum</td>
<td>73 (65)</td>
<td>102 (65)</td>
<td>39 (35)</td>
<td>53 (35)</td>
<td>112</td>
<td>155</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To the dog:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal</td>
<td>40 (42)</td>
<td>24 (21)</td>
<td>-- --</td>
<td>3 (3)</td>
<td>41 (42)</td>
<td>27 (24)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pronominal</td>
<td>25 (27)</td>
<td>40 (36)</td>
<td>26 (28)</td>
<td>41 (37)</td>
<td>51 (55)</td>
<td>81 (73)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ellipsis</td>
<td>--</td>
<td>--</td>
<td>3 (3)</td>
<td>3 (3)</td>
<td>3 (3)</td>
<td>3 (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sum</td>
<td>65 (69)</td>
<td>64 (58)</td>
<td>29 (20)</td>
<td>47 (43)</td>
<td>94</td>
<td>111</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sum to the boy &amp; dog:</td>
<td>138</td>
<td>166</td>
<td>68</td>
<td>100</td>
<td>206</td>
<td>266</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2b. Number (and percentage) of nominal, pronominal and elliptical reference to the boy and to the dog, at T₁ and T₂ (joint reference to boy and dog excluded)

<table>
<thead>
<tr>
<th></th>
<th>SWITCH</th>
<th>MAINTAIN</th>
<th>SUM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T₁ (%)</td>
<td>T₂ (%)</td>
<td>T₁ (%)</td>
</tr>
<tr>
<td>To the boy:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal</td>
<td>13 (14)</td>
<td>10 (8)</td>
<td>-- --</td>
</tr>
<tr>
<td>Pronominal</td>
<td>46 (50)</td>
<td>67 (53)</td>
<td>26 (28)</td>
</tr>
<tr>
<td>Ellipsis</td>
<td>3 (3)</td>
<td>4 (3)</td>
<td>4 (5)</td>
</tr>
<tr>
<td>Sum</td>
<td>62 (67)</td>
<td>81 (64)</td>
<td>30 (33)</td>
</tr>
<tr>
<td>Sum to the boy &amp; dog:</td>
<td>116</td>
<td>124</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To the dog:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal</td>
<td>39 (53)</td>
<td>24 (30)</td>
<td>-- --</td>
</tr>
<tr>
<td>Pronominal</td>
<td>15 (20)</td>
<td>19 (23)</td>
<td>26 (28)</td>
</tr>
<tr>
<td>Ellipsis</td>
<td>-- --</td>
<td>-- --</td>
<td>3 (3)</td>
</tr>
<tr>
<td>Sum</td>
<td>54 (73)</td>
<td>43 (53)</td>
<td>20 (27)</td>
</tr>
<tr>
<td>Sum to the boy &amp; dog:</td>
<td>116</td>
<td>124</td>
<td>50</td>
</tr>
</tbody>
</table>
Distribution of Reference Between the Two Main Characters

To compare the number of references to the boy with number of references to the dog, it is most telling to look at table 2b, which excludes joint reference to both characters. This eliminates any question of referent in a joint reference situation. The summed data show that, out of the 166 references exclusively to the boy or the dog, 92 (or 55%) referred to the boy, and 74 (45%) referred to the dog at T1. At T2, 61% of the 207 references were exclusively to the boy and 39% to the dog. The trend in the data to refer to the boy more often than to the dog is consistent with Bamberg's data, which also showed that, although the boy and the dog are depicted in approximately the same number of pictures, there is a greater tendency to refer to the boy. This may reflect and support the children's apparent decision to choose the boy as the protagonist of the story. From Bamberg's results, it was expected that more of the children's referring expressions would be directed toward the protagonist of the story.

Distribution of Nominal and Pronominal Forms

The distribution of use of pronominal vs. nominal forms to refer to the boy and to the dog irrespective of function can be seen in table 2a (including joint reference) and table 2b (excluding joint reference). With respect to the boy, the data show the children's strong preference to use pronouns to refer to the boy at both times, regardless of the inclusion of joint reference (81% at T1 and 85% at T2 when joint reference is included, 78% at T1 and 82% at T2 when joint reference is excluded). This is consistent with Bamberg's data, which also showed that children in the 3;6 - 4 year age group demonstrated a preference for referring to the boy with a pronoun. In fact, the data in...
this study show a greater trend toward preference of the pronominal form for reference to the boy (Bamberg found only 53% of references to the boy were pronominal).

For reference to the dog, the data did not show a clear preference to use nominal or pronominal forms (see tables 2 and 3). In the case where joint reference to the boy and dog is excluded (table 2b), at T₁ a slight preference for the nominal form was shown (53%), but at T₂ there was a preference for the pronominal expression (64%). Bamberg found a preference in referring to the dog to use nominal expressions (61%).

Of importance to note is the ratio of the number of expressions that switch reference to the dog to the number of expressions that maintain reference to the dog. In Bamberg’s data, similar to the T₁ numbers listed above for this study, there were approximately twice the number of switch reference as maintain reference expressions in reference to the dog. However, in the T₂ condition above, the ratio of switch to maintain was almost even (43:38). This difference is noted, but is of no real significance when the two reference functions are discussed separately.

Of note as well is the more extreme preference for use of pronominals for reference to the dog when joint reference to the boy and dog is included (table 2a). In this case, at T₁ the percentage of pronominals was 55% (a switch of preference), and at T₂ it was 73%. Important here is the fact that all joint references to the boy and dog (regardless of function) are pronominal. This may indicate that when the boy and dog are referred to jointly, the children may be adhering to the strategy for exclusive reference to the boy
(which utilizes pronouns to switch reference as will be discussed below), overriding the strategy for referring to the dog, despite the dog's equal role as referent.

The results obtained above indicated that, while there were differences from the Bamberg's results as noted, these differences did not seriously affect the basic similarity of the two data sets. Therefore, closer and more specific analysis of the data was warranted.

The next analytic step was to investigate the distribution of form with respect to function for the boy and for the dog. The differences between pairings of form and function for a given character, and the difference in choice of form to serve a given function between the two characters were measured. Going beyond Bamberg's study, the data were subjected to statistical tests, such that the trends in the data could be reported with a known degree of confidence.

**Switch Reference**

With respect to Bamberg's proposed theory, it was expected that children of three to four years would prefer to use pronouns to switch reference to the protagonist (boy). This predicts that the proportion of nominals out of the total number of reference forms used to switch reference to the boy should be less than half (*H₁ in tables 3a and 3b). As can be seen in tables 3a and 3b (including and excluding joint reference, respectively) at both times there was evidence that nominals formed significantly fewer than half of the forms used to switch reference to the boy.
Table 3a. Proportions of reference in nominal form made to each main character (boy and dog) for specified functions at each time (joint reference to boy and dog included)

<table>
<thead>
<tr>
<th></th>
<th>x</th>
<th>n</th>
<th>( \mu_x )</th>
<th>test statistic (z)</th>
<th>( z_{crit} )</th>
<th>Reject if:</th>
<th>Reject ( H_0 )?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch Boy, ( T_1 )</td>
<td>14</td>
<td>70</td>
<td>35</td>
<td>-5.02</td>
<td>-1.64</td>
<td>( z &lt; z_{crit} )</td>
<td>*Y</td>
</tr>
<tr>
<td>Switch Boy, ( T_2 )</td>
<td>10</td>
<td>98</td>
<td>49</td>
<td>-7.88</td>
<td>&quot;</td>
<td>&quot;</td>
<td>*Y</td>
</tr>
<tr>
<td>Switch Dog, ( T_1 )</td>
<td>40</td>
<td>65</td>
<td>32.5</td>
<td>1.86</td>
<td>+1.64</td>
<td>( z &gt; z_{crit} )</td>
<td>#Y</td>
</tr>
<tr>
<td>Switch Dog, ( T_2 )</td>
<td>24</td>
<td>64</td>
<td>32</td>
<td>-2.00</td>
<td>&quot;</td>
<td>&quot;</td>
<td>#N</td>
</tr>
<tr>
<td>Maintain Boy, ( T_1 )</td>
<td>0</td>
<td>35</td>
<td>17.5</td>
<td>-5.92</td>
<td>-1.64</td>
<td>( z &lt; z_{crit} )</td>
<td>*Y</td>
</tr>
<tr>
<td>Maintain Boy, ( T_2 )</td>
<td>1</td>
<td>44</td>
<td>22</td>
<td>-6.33</td>
<td>&quot;</td>
<td>&quot;</td>
<td>*Y</td>
</tr>
<tr>
<td>Maintain Dog, ( T_1 )</td>
<td>0</td>
<td>26</td>
<td>13</td>
<td>-5.10</td>
<td>&quot;</td>
<td>&quot;</td>
<td>*Y</td>
</tr>
<tr>
<td>Maintain Dog, ( T_2 )</td>
<td>3</td>
<td>44</td>
<td>22</td>
<td>-5.73</td>
<td>&quot;</td>
<td>&quot;</td>
<td>*Y</td>
</tr>
</tbody>
</table>

\( \alpha = 0.05 \)

\( x \) = number of nominal reference to a specified character in a specified function at a given time.
\( n \) = summed number of pronominal and nominal reference to a specified character at a given time.
\( \mu_x \) = \( np \), where \( p \) is the test proportion consistent with the null hypothesis

* \( H_0 : p = .5 \)
\( H_1 : p < .5 \)

# \( H_0 : p = .5 \)
\( H_1 : p > .5 \)
Table 3b. Proportions of reference in nominal form made to each main character (boy and dog) for specified functions at each time (joint reference to boy and dog excluded)

<table>
<thead>
<tr>
<th></th>
<th>x</th>
<th>n</th>
<th>μ_x</th>
<th>test statistic (z)</th>
<th>z_crit</th>
<th>Reject if:</th>
<th>Reject H_0?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch Boy, T_1</td>
<td>13</td>
<td>59</td>
<td>29.5</td>
<td>-4.30</td>
<td>-1.64</td>
<td><em>z&lt;z_crit</em></td>
<td>*Y</td>
</tr>
<tr>
<td>Switch Boy, T_2</td>
<td>10</td>
<td>77</td>
<td>38.5</td>
<td>-6.50</td>
<td>_</td>
<td>&quot;</td>
<td>*Y</td>
</tr>
<tr>
<td>Switch Dog, T_1</td>
<td>39</td>
<td>54</td>
<td>27</td>
<td>3.26</td>
<td>+1.64</td>
<td><em>z&gt;z_crit</em></td>
<td>#Y</td>
</tr>
<tr>
<td>Switch Dog, T_2</td>
<td>24</td>
<td>43</td>
<td>21.5</td>
<td>0.762</td>
<td>_</td>
<td>&quot;</td>
<td>#N</td>
</tr>
<tr>
<td>Maintain Boy, T_1</td>
<td>-</td>
<td>26</td>
<td>13</td>
<td>-4.71</td>
<td>-1.64</td>
<td><em>z&lt;z_crit</em></td>
<td>*Y</td>
</tr>
<tr>
<td>Maintain Boy, T_2</td>
<td>1</td>
<td>37</td>
<td>18.5</td>
<td>-5.75</td>
<td>_</td>
<td>&quot;</td>
<td>*Y</td>
</tr>
<tr>
<td>Maintain Dog, T_1</td>
<td>-</td>
<td>17</td>
<td>8.5</td>
<td>-3.64</td>
<td>_</td>
<td>&quot;</td>
<td>*Y</td>
</tr>
<tr>
<td>Maintain Dog, T_2</td>
<td>3</td>
<td>36</td>
<td>18</td>
<td>-5.00</td>
<td>_</td>
<td>&quot;</td>
<td>*Y</td>
</tr>
</tbody>
</table>

α = 0.05

_x_ = number of nominal reference to a specified character in a specified function at a given time.

_n_ = summed number of pronominal and nominal reference to a specified character at a given time.

_μ_x_ = np, where p is the test proportion consistent with the null hypothesis

* H_0 : p = .5
H_1 : p < .5

# H_0 : p = .5
H_1 : p > .5
Therefore, it follows that significantly more than half of these expressions were pronominal in form, supporting Bamberg’s theory of preferred use of the pronoun to refer to the chosen protagonist of the story. This held true both when joint reference was included (table 3a) and when it was excluded (table 3b).

For switching reference to the dog, Bamberg’s theory predicted that the preferential form would be a full nominal. Therefore, one would expect that significantly more than half of the forms used to switch reference to the dog would be nominal. This was true for the first telling of the story (T₁), but no evidence for the preference of nominals to switch reference to the dog was found in the second telling (T₂), even when the joint reference to the boy and dog was excluded (although in the latter case more than half of the switch references were nominal, but not enough to be significant at an α level of 0.05). This lack of clear preference to use nominals at T₂ is inconsistent with Bamberg’s results. The preference for nominal use in switching reference to the dog at T₁ is consistent, however, and supports Bamberg’s theory.

These results indicate that, in the stories of the subjects in this study, the English-speaking children did not make as clear a distinction between use of nominals and pronominals to switch reference to the dog as the German-speaking 3-year-olds in Bamberg’s study did. This may be due to the fact that the average age of children was lower for this study than for Bamberg’s (the youngest child from whom he obtained data was 3;6).
The younger age range may be important, in that the children in this study may be (as a group) at a point in development of this "global" thematic advancement strategy which is behind that of the children in Bamberg's study. The question which then remains important is: while the trend toward use of nominals to switch reference to the dog is only statistically significant at \( T_1 \), is there still a significant difference at both times between the form/function pairings in making reference to the boy as opposed to the dog? As will be seen below (tables 4a, 4b and subsequent discussion), this significant difference is found.

Maintain Reference

Next to be looked at was the maintain reference function and the forms used to fill this function for the boy and the dog. According to Bamberg's results, it was expected that the children would choose to use pronominal forms to maintain reference to all characters. In other words, once a character was established or reestablished by a switch reference, the children should have used pronouns to continue to make further reference, regardless of the character involved. Therefore, for both the boy and the dog, it was expected that there would be a strong preference to use pronominals as opposed to nominals to serve this function. As can be seen in tables 3a and 3b, the proportion of nominal forms used to serve the maintain reference function was significantly less than half. This is consistent with expectation and Bamberg's proposed theory.
Referencing the Boy Contrasted with Reference to the Dog.

The second set of statistical measures had the purpose of examining any differences in choice of form to serve a given function for the boy as opposed to the dog. The results of the first statistical measure (above) allowed comment as to whether there was a difference between forms preferred to switch vs. to maintain reference to a given character. It did not allow comment as to whether the characters were being treated differently with respect to a given function.

From Bamberg's theory, the first expectation from the data is that there should be a significantly larger proportion of pronouns used to switch reference to the boy as opposed to the dog. Tables 4a and 4b show the results of this measure (joint reference included and excluded, respectively), which support this expectation. This held true for the data regardless of the inclusion or exclusion of joint reference.

As discussed above, there was no evidence for children's preference at T2 to use full nominals to switch reference to the dog. However, at T2 significantly more pronouns were used to switch reference to the boy. Therefore, the data still support the notion that the two characters are being treated differently at T2, even though clear evidence for the preference of nominals to switch reference to the dog was not found.

The second expectation in looking at the reference forms referring to the boy and the dog was that there should be no difference in the proportion of nominal (and therefore pronominal) forms used to maintain reference to both characters. This also held true for
Table 4a. Comparison of proportion of pronominal reference out of total reference made for a specified function and time, reference to boy vs. reference to dog (joint reference to boy and dog included)

<table>
<thead>
<tr>
<th></th>
<th>$x_b/n_d$</th>
<th>$x_d/n_d$</th>
<th>test statistic (z)</th>
<th>$z_{crit}$</th>
<th>Reject $H_0$ if:</th>
<th>Reject $H_{0?}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch</td>
<td>0.778</td>
<td>0.385</td>
<td>4.67</td>
<td>1.64</td>
<td>$z &gt; z_{crit}$</td>
<td>*Y</td>
</tr>
<tr>
<td>$T_1$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switch</td>
<td>0.863</td>
<td>0.625</td>
<td>3.55</td>
<td></td>
<td>&quot;</td>
<td>*Y</td>
</tr>
<tr>
<td>$T_2$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintain</td>
<td>0.897</td>
<td>0.897</td>
<td>0.00</td>
<td></td>
<td>&quot;</td>
<td>#N</td>
</tr>
<tr>
<td>$T_1$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintain</td>
<td>0.811</td>
<td>0.872</td>
<td>-0.830</td>
<td></td>
<td>&quot;</td>
<td>#N</td>
</tr>
<tr>
<td>$T_2$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$\alpha = 0.05$

$x$ = number of pronominal reference for a specified function and time

$n$ = summed number of all reference types for a specified function and time

$x/n =$ sample proportion ($p_{est}$)

* $H_0: p_b - p_d = 0$
  $H_1: p_b - p_d > 0$

# $H_0: p_b - p_d = 0$ reject $H_0$ if $z > +z_{crit}$
  $H_1: p_b - p_d <> 0$ or $z < -z_{crit}$
Table 4b. Proportion of pronominal reference out of total reference made for a specified function and time, reference to boy vs. reference to dog (joint reference to boy and dog excluded)

<table>
<thead>
<tr>
<th></th>
<th>x_b/n_b</th>
<th>x_d/n_d</th>
<th>test statistic (z)</th>
<th>z_{crit}</th>
<th>Reject H_0 if:</th>
<th>Reject H_{null}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch</td>
<td>0.754</td>
<td>0.278</td>
<td>5.10</td>
<td>1.64</td>
<td>z &gt; z_{crit}</td>
<td>*Y</td>
</tr>
<tr>
<td>T_1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switch</td>
<td>0.827</td>
<td>0.441</td>
<td>4.43</td>
<td>&quot;</td>
<td>&quot;</td>
<td>*Y</td>
</tr>
<tr>
<td>T_2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintain</td>
<td>0.867</td>
<td>0.850</td>
<td>0.166</td>
<td>+1.96,</td>
<td>z &gt; z_{crit}</td>
<td>#N</td>
</tr>
<tr>
<td>T_1</td>
<td></td>
<td></td>
<td></td>
<td>-1.96</td>
<td>or z &lt; -z_{crit}</td>
<td></td>
</tr>
<tr>
<td>Maintain</td>
<td>0.800</td>
<td>0.868</td>
<td>-0.829</td>
<td>&quot;</td>
<td>&quot;</td>
<td>#N</td>
</tr>
<tr>
<td>T_2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

α = 0.05

x = number of pronominal reference for a specified function and time
n = summed number of all reference types for a specified function and time
x/n = sample proportion (p_{est})

* H_0 : p_b \cdot p_d = 0
H_1 : p_b \cdot p_d > 0

# H_0 : p_b \cdot p_d = 0 \ reject H_0 \ if \ z > +z_{crit}
H_1 : p_b \cdot p_d \ < \ 0 \ \ \ or \ z < -z_{crit}
the data, with and without joint reference (see tables 4a and 4b). Therefore the data support the expectation that there should be no difference in how children treat the protagonist and another (main) character while maintaining reference.

Summary
Consistent with Bamberg's results, the English-speaking children referred to the boy more often than to the dog, and even more strongly preferred to use pronouns to refer to the boy. Inconsistent with Bamberg's results, the children did not show a strong preference for referring to the dog with nominal forms. The children used significantly more pronouns than nouns to switch reference to the dog (consistent with Bamberg's results), but only showed a significant preference to use nominals to switch reference to the dog at T₁ (therefore the results were inconsistent with Bamberg's at T₂). Despite this, the children still showed a significantly greater tendency to use pronouns to switch reference to the boy than to the dog, therefore indicating that they were treating the two characters differently when choosing referring expressions. Consistent with Bamberg's results, the children significantly preferred pronouns to maintain reference to both characters. The results of this section therefore confirm Hypothesis 1 (with the few noted exceptions).
Comparison of Performance at T₁ and T₂

Measures to Assess Form/Function Pairings at T₁ vs. T₂

The next set of measurements was designed to determine whether and how performance changed when the children were more familiar with the story, having received an adult model of the story on at least four occasions between the first and second telling. Of particular interest here were the measures reported above which tested the children's preference to choose a pronoun to serve a given reference function for each character.

As discussed in chapter 2, the expectation was that if performance did change between the two times, then there should be more evidence of the thematic advancement strategy at T₂ (although individual differences in strategy may have been present, and will be discussed with the individual data). Specifically, at T₂, (1) more pronouns would be chosen to switch reference to the boy; (2) fewer pronominals should be chosen to switch reference to the dog, reflecting a further separation in the treatment of the two characters; and (3) children should continue to exclusively use pronouns to maintain reference to both characters.

Before entering into a discussion of the results, it is important to note that research which has compared the narratives resulting from story generation and story retelling shows that the stories obtained by story retelling are longer and more complete (i.e. contain more information about events) but that the basic level of organization (i.e. story schema) is not significantly different between tasks (Merritt & Liles, 1987; Ripich &
Griffin, 1988, as cited in Liles, 1993). The two conditions in this study can be viewed as story generation (unfamiliar) and story retelling (familiar). Therefore, the story data from the two tellings can be compared with confidence.

First, the proportion of pronominal reference used to switch reference to the boy was examined for any change between T_1 and T_2. This is a key element of the thematic advancement strategy, and therefore should reflect any change in children's application of the strategy to their story telling. As can be seen in Tables 5a and 5b (joint reference to boy and dog included and excluded, respectively), although the proportion of pronominals used to switch reference to the boy did increase between the two times, the difference was not significant at the 0.05 level.

The other key element in Bamberg's proposed "global" thematic advancement strategy is children's preferred use of nominals to switch reference to the dog. However, in this set of data, the children chose a greater number of pronouns to switch reference to the dog at T_2, even when joint reference to the boy and dog were excluded (see tables 5a and 5b). Therefore there was no evidence that the children made significant performance gains in applying the "global" thematic advancement strategy of choosing pronouns to switch reference to the protagonist and nominals to switch reference to other characters. In fact, the children showed a weaker separation of the treatment of the two characters in the switch reference function. It must be kept in mind, however, that there was still a significant difference between treatment of the boy and treatment
Table 5a. Comparison of pronominal reference to the boy and to the dog, for specified reference functions, T₁ vs. T₂ (joint reference to boy and dog included)

<table>
<thead>
<tr>
<th></th>
<th>x/n = p&lt;sub&gt;est&lt;/sub&gt;</th>
<th>test statistic (z)</th>
<th>z&lt;sub&gt;crit&lt;/sub&gt;</th>
<th>Reject H₀ if: z&lt;sub&gt;est&lt;/sub&gt; &lt; z&lt;sub&gt;crit&lt;/sub&gt;</th>
<th>Reject H₀</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Switch Boy</strong></td>
<td>0.388</td>
<td>-2.69</td>
<td>-1.64</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td><strong>Maintain Boy</strong></td>
<td>0.448</td>
<td>-0.919</td>
<td>&quot;</td>
<td>&quot;</td>
<td>N</td>
</tr>
<tr>
<td><strong>Switch+ Maintain Boy</strong></td>
<td>0.410</td>
<td>-2.68</td>
<td>&quot;</td>
<td>&quot;</td>
<td>Y</td>
</tr>
<tr>
<td><strong>Switch Dog</strong></td>
<td>0.385</td>
<td>-1.86</td>
<td>&quot;</td>
<td>&quot;</td>
<td>Y</td>
</tr>
<tr>
<td><strong>Maintain Dog</strong></td>
<td>0.388</td>
<td>-1.83</td>
<td>&quot;</td>
<td>&quot;</td>
<td>Y</td>
</tr>
<tr>
<td><strong>Switch+ Maintain Dog</strong></td>
<td>0.386</td>
<td>-2.68</td>
<td>&quot;</td>
<td>&quot;</td>
<td>Y</td>
</tr>
</tbody>
</table>

α = 0.05

x = number of pronominal references serving a specified reference function (switch or maintain) at T₁.

n = summed number of pronominal references serving a specified reference function at T₁ and T₂.

x/n = sample proportion (p<sub>est</sub>)

H₀ : p = .5

H₁ : p < .5
Table 5b. Comparison of pronominal reference to the boy and to the dog, for specified reference functions, T₁ vs. T₂ (joint reference to boy and dog excluded)

<table>
<thead>
<tr>
<th></th>
<th>x/n = pₑₑₚ</th>
<th>test statistic (z)</th>
<th>zₑₑₚ</th>
<th>Reject H₀ if:</th>
<th>Reject H₀?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch Boy</td>
<td>0.407</td>
<td>-1.97</td>
<td>-1.64</td>
<td>z &lt; zₑₑₚ</td>
<td>Y</td>
</tr>
<tr>
<td>Maintain Boy</td>
<td>0.419</td>
<td>-1.27</td>
<td></td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Switch+ Maintain Boy</td>
<td>0.411</td>
<td>-2.34</td>
<td></td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Switch Dog</td>
<td>0.441</td>
<td>-0.686</td>
<td></td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Maintain Dog</td>
<td>0.340</td>
<td>-2.26</td>
<td></td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Switch+ Maintain Dog</td>
<td>0.380</td>
<td>-2.18</td>
<td></td>
<td>Y</td>
<td></td>
</tr>
</tbody>
</table>

α = 0.05

x = number of pronominal references serving a specified reference function (switch or maintain) at T₁.

n = summed number of pronominal references serving a specified reference function at T₁ and T₂.

x/n = sample proportion (pₑₑₚ).

H₀ : p = .5
H₁ : p < .5
of the dog (with respect to pronoun preference for switching reference) at both T₁ and T₂, consistent with Bamberg's theory (tables 4a and 4b).

Looking at the maintain reference function, there is no significant difference between T₁ and T₂ in the preference for pronouns to maintain reference to each of the boy and the dog (see tables 5a and 5b). This is consistent with expectation and indicates that the children continued to choose pronouns to maintain reference almost exclusively. Indeed, in all cases but one (maintain reference, dog, T₂), there were more examples of ellipsis as the form used to maintain reference than of full nominals (see tables 2a and 2b).

Nonreferential Measures of Narrative Competence

Three other measures were used to indicate the children's ability to tell a "good story" at both T₁ and T₂. These were (1) the percentage of clauses contributing to thematic advancement, (2) Mean Length of Clause (MLC) (where a clause refers to a clause which contributes to thematic advancement), and the "goodness" of the story based on the presence/absence of six basic story elements (based on Berman, 1986). The results of these measures are shown below (tables 6 through 9).

The percentage of thematic advancement clauses showed a wide range across all subjects (14% to 60% in the first telling, 46% to 79% in the second telling; see table 6). From table 6 it can also be noted that for all subjects except Subject 1 the percentage of thematic advancement clauses was higher on the second telling. When the data was summed for all subjects, there was a significantly higher percentage of clauses
Table 6. Total number of clauses and number of thematic advancement clauses at each telling, individual and group; percentage of total clauses contributing to advancement of the story theme, individual and group, at T1 and T2.

<table>
<thead>
<tr>
<th>Subject</th>
<th># clauses</th>
<th># thematic advancement clauses</th>
<th>% thematic advancement clauses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>T1</td>
<td>T2</td>
</tr>
<tr>
<td>S1</td>
<td>73</td>
<td>97</td>
<td></td>
</tr>
<tr>
<td>S2</td>
<td>45</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>S3</td>
<td>69</td>
<td>141</td>
<td></td>
</tr>
<tr>
<td>S4</td>
<td>82</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>S5</td>
<td>56</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>S6</td>
<td>69</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>S7</td>
<td>62</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>S8</td>
<td>66</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>S9</td>
<td>60</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>S10</td>
<td>57</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>All subj.'s</td>
<td>639</td>
<td>561</td>
<td>248</td>
</tr>
</tbody>
</table>

Table 7. Comparison of the proportion of clauses which contribute to thematic advancement out of the total number of clauses summed for all subjects, T1 vs. T

<table>
<thead>
<tr>
<th>x1/n1</th>
<th>x2/n2</th>
<th>test statistic (z)</th>
<th>z_crit</th>
<th>reject H0 if:</th>
<th>reject H0?</th>
</tr>
</thead>
<tbody>
<tr>
<td>.388</td>
<td>.582</td>
<td>-6.74</td>
<td>-1.64</td>
<td>z&lt;z_crit</td>
<td>Y</td>
</tr>
</tbody>
</table>

α=0.05

x = # clauses contributing to advancement of theme summed for all subjects at a specified time
n = total # clauses, summed for all subjects at a specified time
x/n = sample proportion for a specified time (p_est)

H0: p1 = p2
H1: p1 < p2
Table 8. Mean Length of Clause* for all subjects at T₁ and T₂

<table>
<thead>
<tr>
<th></th>
<th>S1</th>
<th>S2</th>
<th>S3</th>
<th>S4</th>
<th>S5</th>
<th>S6</th>
<th>S7</th>
<th>S8</th>
<th>S9</th>
<th>S10</th>
<th>Ave.</th>
</tr>
</thead>
<tbody>
<tr>
<td>T₁</td>
<td>4.1</td>
<td>3.8</td>
<td>4.9</td>
<td>5.7</td>
<td>6.2</td>
<td>5.4</td>
<td>6.2</td>
<td>5.2</td>
<td>4.4</td>
<td>4.9</td>
<td>5.08</td>
</tr>
<tr>
<td>T₂</td>
<td>4.4</td>
<td>6.7</td>
<td>5.4</td>
<td>5.8</td>
<td>4.7</td>
<td>6.2</td>
<td>5.2</td>
<td>5.7</td>
<td>5.4</td>
<td>4.4</td>
<td>5.39</td>
</tr>
</tbody>
</table>

* Measured over clauses that contribute to thematic development.

contributing to thematic advancement at T₂ (see table 7). Further to this, except for two subjects (S₁, S₃), the total number of clauses at T₂ was lower than at T₁. This means that for the most part the children were telling shorter, more focused stories at T₂ (in the sense that more of their utterances were directed at the development of theme within the story).

The mean length of clause (MLC) for each subject at each time is shown in table 8. As can be seen, there is variation among subjects. Seven subjects increased their MLC from T₁ to T₂, and three decreased their MLC. The overall average for the MLC's at T₁ is 5.08, and at T₂ is 5.39. This is not a large change, but the trend is toward longer clauses in the second telling. An increase in MLC (or MLU) is often taken to be an indicator of an increase in the complexity of constructions in a child’s language (e.g. Brown, 1973); therefore, it could be proposed that a longer MLC at the second telling is an indicator that the children are using more complex language in their second tellings.
As can be seen in table 8, Subject 2 showed the greatest increase in MLC. Examples of clauses from her second telling which were responsible for the relatively large increase in MLC are as follows:

There are two little frogs and a mom and a daddy down there.
They're going to be a sleeping boy's.
They gave him one of their little babies.

The final nonreferential measure to be examined was story "goodness." The presence of basic story elements is a performance indicator of a child's point in acquisition of a story schema. The six story elements considered basic to a "good" story are listed below table 9. The expected result was that children should include more of these elements at T2 after hearing an adult model repeatedly over the period of a week. This held true for all but one subject (S1). Three subjects increased their number of basic story elements by three, five subjects by two and one subject by one (see table 9). This indicates that the children were generally able to produce more complete stories after being exposed to an adult model.

It was not expected that the children would produce "perfect" stories after hearing the adult model, in light of the fact that children do not normally begin to produce organized and complete stories (according to a story schema) until around age 5 (e.g. Botvin & Sutton-Smith, 1977; Applebee, 1978, both as cited in Liles, 1993).
Table 9. "Goodness" of stories, as determined by presence/absence of six basic story elements* (based on Berman, 1986), at T₁ and T₂

<table>
<thead>
<tr>
<th></th>
<th>T₁</th>
<th></th>
<th>T₂</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Story Elements</td>
<td></td>
<td>Story Elements</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>S1</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>S2</td>
<td>✓</td>
<td>X</td>
<td>✓</td>
</tr>
<tr>
<td>S3</td>
<td>✓</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>S4</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>S5</td>
<td>✓</td>
<td>X</td>
<td>✓</td>
</tr>
<tr>
<td>S6</td>
<td>✓</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>S7</td>
<td>✓</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>S8</td>
<td>✓</td>
<td>X</td>
<td>✓</td>
</tr>
<tr>
<td>S9</td>
<td>✓</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>S10</td>
<td>X</td>
<td>✓</td>
<td>X</td>
</tr>
</tbody>
</table>

*Story Schema Elements:

1. Frog leaves jar
2. Protagonist(s) discover frog’s absence
3. Protagonists search for frog
4. Boy finds frog
5. Boy takes frog
6. Frog is same as or substitute for missing frog.

The stories were still expected to reflect the findings of Orsolini (1990), who found that 3- and 4-year-old children produce stories that contain incomplete and minimal episodes, even if a number of essential story elements are still present. The stories of the children in this study certainly were characterized by incomplete, minimal or absent episodes in both conditions. The trend toward inclusion of more story elements indicates that the
children were able to incorporate more information in their stories to create a more complete story from the story schema perspective.

The results of the three nonreferential measures show a trend toward children telling more developmentally advanced stories from various perspectives. They produce longer clauses, more efficient clauses (with respect to thematic advancement) and include more elements deemed to be central to an adultlike story schema. This supports the proposed idea that with exposure to an adult model, children will have a greater opportunity to reveal in their productions what they know about stories. It also directly supports the conclusions of Merritt & Liles (1987), which indicated that children told longer, more complete stories in a story retelling task, although the basic structure of the narrative was not significantly different from that in a generation task.

However, as was described above, the data did not provide any indication that children were more able to apply strategies for use of pronominal reference after their week of reading the book with their caretakers. Therefore, Hypothesis 2 was not confirmed. The most probable explanation for this is that any advantages resulting from exposure to the adult model in terms of allowing more opportunity for processing and producing the form/function pairing strategies for pronominal reference may not have been sufficient to result in significant differences in production or knowledge.
Comparison with Karmiloff-Smith (1981)

The next two sections of the results present the data in ways which will allow comparison with the results of Karmiloff-Smith (1981). The two main points of inquiry are (1) the extent to which pronouns are being used deictically, and (2) the degree to which pronominal reference in clause-initial position is reserved for reference to the boy.

The Use of Gesture (Point) with Pronouns

Karmiloff-Smith interpreted her data to indicate that children under the age of six were using pronouns deictically, not in a referential manner. After age six, children used a thematic subject strategy (preferential use of pronoun in utterance-initial position to refer to a protagonist). Her main argument to support her conclusion was that most utterances that contained pronouns were isolated statements, static picture descriptions with no apparent intention on the part of the child to link them linguistically. This statement was entirely observational and not supported by specific evidence from her data or that of other researchers. The only data-driven evidence she gives was at the single utterance level, and this was: (1) the high frequency of spatial deictics and (2) the high frequency of pointing that accompanied pronoun use. Because most subjects in the present study were videotaped, it was possible to examine the data collected here with regard to point.

There is no doubt that in the 3-year-old children in the present study used a substantial amount of deictic language. In the stories there are such unmistakable examples of deictic nonnarrative language as description of pictured background information,
occasional use of the indefinite article "a" to reintroduce an established character, and
(relatively frequent) use of constructions like There's a X, I see a(n) X, or This/That/These
X. In fact, for the most part the stories were similar at a glance to the short example of
a 4-year-old's story provided by Karmiloff-Smith; there was frequent use of the
connectives and then at the beginning of clauses, and the clauses often had the feeling
of being "isolated" as Karmiloff-Smith described them. It is dangerous, however, to rely
simply on "feelings," and a measure was sought which would allow empirical
assessment of the nature of pronoun use. Therefore I set out to determine whether
pronouns were being used in a referential rather than only deictic manner, despite the
significant presence of other deictic constructions. The measure which seemed most
appropriate and rigorous for analysis was use of point in accompaniment of pronouns,
an indicator of deixis Karmiloff-Smith noted and one which has been noted by others
as well (e.g. Wales, 1986; Tomasello et al., 1984/85).

Simply counting the number of pronouns accompanied by point is not an informative
measure, due to the nature of the experimental task. The book served as a joint focus
of reference between the children and the experimenter, and the experimenter did not
engage in any talk which would normally accompany a joint story "reading" (as
described in chapter 2). Therefore, the task generally promoted the accompaniment of
utterances with point, as a way for the children to request feedback and interaction,
which were unnaturally absent during their story tellings. From this, the clauses
accompanied by point were not expected to be exclusively deictic in construction and
function. Therefore, it was deemed to be more informative if the number of points
which accompanied a pronoun (in clauses important to thematic advancement of the story, i.e. coded clauses) were compared with the number of points which accompanied a full nominal (which by definition is not deictic). If there are no significant differences between the number of points that accompanied pronominals and the number of points that accompanied nominals, then it cannot be concluded that the point which accompanies a pronoun is a strong indicator of deictic use.

These results were then compared with results showing the difference between the number of deictic terms accompanied by point and the number of deictic terms unaccompanied by point. It was expected that there would be significantly more deictic terms that were accompanied by point than those which weren't.

Important to remember during the discussion of these results is that the numbers for nominals and pronominals in tables 10a and 10b include only those forms that occurred with a point. Therefore, these numbers are only a portion of the total numbers presented above in tables 2a and 2b.

Tables 10a and 10b contain summed "point data" for all subjects, and are similar except for the exclusion of the counts for Subject 3 in table 10b. Subject 3 seemed to be applying a different strategy in her story telling with respect to pointing. She pointed with almost every utterance regardless of form or function, especially in her second telling. This indiscriminate pointing was not seen to the same degree in any other subject. Furthermore, she had by far the longest stories of all subjects, and therefore a
Table 10a. Gestural data summed for all videotaped subjects*: Number of pronominal and nominal full referential forms and deictic terms with point, number of deictic terms without point, and number of occurrences of point with terms other than deictic or full referential forms, at T₁ and T₂

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Occurrences</th>
<th>T₁ Deictic Term:</th>
<th>T₂ Deictic Term:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>point+full referential nom term</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>point+other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>point + deictic term</td>
<td>42</td>
<td>7</td>
<td>25</td>
</tr>
<tr>
<td>no point + deictic term</td>
<td>15</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>point+full referential nom term</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>point+other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>point + deictic term</td>
<td>41</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>no point + deictic term</td>
<td>4</td>
<td>--</td>
<td>10</td>
</tr>
</tbody>
</table>

* Subjects 2 and 10 were not videotaped and therefore are not included.
Table 10b. Gestural data summed for all videotaped subjects*: Number of pronominal and nominal full referential forms and deictic terms with point, number of deictic terms without point, and number of occurrences of point with terms other than deictic or full referential forms, at T1 and T2 (excluding subject 3)

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Deictic Term:</td>
</tr>
<tr>
<td></td>
<td>these</td>
</tr>
<tr>
<td></td>
<td>this/that</td>
</tr>
<tr>
<td>point+full referential term</td>
<td>6</td>
</tr>
<tr>
<td>point+other</td>
<td>9</td>
</tr>
<tr>
<td>point+deictic term</td>
<td>2</td>
</tr>
<tr>
<td>no point + deictic term</td>
<td>3</td>
</tr>
<tr>
<td>point+full referential term</td>
<td>16</td>
</tr>
<tr>
<td>point+other</td>
<td>25</td>
</tr>
<tr>
<td>point+deictic term</td>
<td>27</td>
</tr>
<tr>
<td>no point + deictic term</td>
<td>3</td>
</tr>
</tbody>
</table>

* Subjects 2 and 10 were not videotaped and therefore are not included.
Table 11. Comparison between summed number of deictic terms accompanied by point and number of deictic terms unaccompanied by point, at T1 and T2, with and without Subject 3  

<table>
<thead>
<tr>
<th></th>
<th>x/n</th>
<th>test statistic (z)</th>
<th>z_{crit}</th>
<th>reject H₀ if:</th>
<th>reject H₀?</th>
</tr>
</thead>
<tbody>
<tr>
<td>T₁ with S₃</td>
<td>.580</td>
<td>.898</td>
<td>1.64</td>
<td>z &gt; z_{crit}</td>
<td>N</td>
</tr>
<tr>
<td>T₂ with S₃</td>
<td>.713</td>
<td>3.80</td>
<td>&quot;</td>
<td>&quot;</td>
<td>Y</td>
</tr>
<tr>
<td>T₁ without S₃</td>
<td>.353</td>
<td>-1.21</td>
<td>&quot;</td>
<td>&quot;</td>
<td>N</td>
</tr>
<tr>
<td>T₂ without S₃</td>
<td>.500</td>
<td>0</td>
<td>&quot;</td>
<td>&quot;</td>
<td>N</td>
</tr>
</tbody>
</table>

α = 0.05

x = number of pronominal references accompanied by point at a given time
n = summed number of pronominal and nominal references accompanied by point at a given time
x/n = sample proportion (p_{obs})

H₀ : p = .5
H₁ : p > .5

difference in pointing strategy on her part would strongly affect the group data. It was of interest to see whether and how the results would differ with her excluded from the data pool.

The results indicate that when Subject 3 was included in the data pool, at T₁ there was no significant difference in use of point for nominals and pronominals, but there was no evidence at T₂ that point was evenly distributed between nominals and pronominals, and the null hypothesis to that effect was rejected in favour of there being more points
attached to pronouns (see table 11). However, as predicted above, when Subject 3 was eliminated from the data pool, there was no significant difference in the distribution of point with pronouns and full nominals at either telling. In contrast, it was found that at both times, with or without Subject 3, there were significantly more deictic terms accompanied by point than those unaccompanied by point.

These results support the expectation that pronouns are not being treated in the same way as a deictic term (with respect to one indicator of deixis). Furthermore, the results show no difference in the treatment of pronominals and nominals. Therefore, these results dispute Karmiloff-Smith’s conclusion that all children under six years are using pronouns in an exclusively deictic manner. The results do not confirm Hypothesis 3a.

These results also disagree at first look with the findings of Tomasello et al. (1984/85), who found that children between 1;8 and 3;7 pointed with pronouns more frequently than with nouns. However, caution must be exercised in comparing the results of the present study with those of Tomasello et al. Their study was not a narrative task, but a series of elicitation tasks which included such elicitation techniques as feigned adult noncomprehension of a child’s request. The difference between the two outcomes could be taken as support for the proposal central to this study: that the pronouns found within the context of the narrative task are serving functions which are constrained and guided by "global" aspects of the narrative, i.e. creation of coherence within the text.
This would be in keeping with the results of Bennett-Kastor (1983), who showed that even 2-year-olds are capable of certain linguistic aspects of coherence in text, such as sensitivity to new and given information by the use of definite and indefinite articles as well as the use of pronouns to reiterate characters within a narrative task. They were also very sensitive to the function of the grammatical subject to create focus around a character, an aspect of Karmiloff-Smith's thematic subject strategy to be discussed in the following section. Despite this linguistic capability, the 2-year-old children were not advanced enough in other aspects of narrative production (e.g. cognition and semantics) for these linguistic capabilities to function as strategies for creating global coherence such as thematic advancement. Bennett-Kastor found that by five years of age, children were good at using linguistic capabilities to serve global cohesive functions, and were not so tied to the syntactic subject position for mention of a character in focus. The results of this study with 3-year-olds would place their performance somewhere between that of the 2- and 5-year-olds in Bennett-Kastor's study. They showed referential use of pronouns which was sensitive to thematic advancement, but did not tell stories as complete as the 5-year-olds with respect to a story schema. Regardless of exactly where they fit into the developmental time-line of Bennett-Kastor's results, both studies found evidence of pronoun use constrained by global elements of story cohesion before the age of six.

Distribution of Referents to Pronouns in Initial Position

Karmiloff-Smith and Bamberg have in common the proposal of an early thematic advancement strategy which reserves the use of pronouns for the protagonist in
switching reference, although they disagree on the age at which this strategy appears. Karmiloff-Smith adds another element to this strategy. She proposes that, in addition, when a pronoun is initial position, it is reserved for reference to the protagonist, and she provides a number of examples of stories in her study for which this holds true.

In the present study it was found that even when the pronominal references in initial position to the boy alone are summed with the joint pronominal references to the boy and dog, these only constitute 105/204 (51%) of all pronouns in initial position (see table 12). This certainly does not point to a strong preference to reserve initial pronouns for reference to the boy (protagonist). The same calculation for switch reference function alone shows a higher degree of preference for the boy (65% of the initial switch reference pronouns are to the boy, (including joint reference to the boy and dog)). Hypothesis 3b is therefore not confirmed.

At first glance, there does not seem to be anything particularly special about the clause-initial position for reference to the boy. However, an interesting result was found when clauses with initial pronouns serving the maintain reference function were examined. A new category was devised for this particular look at maintain reference, called maintain reference (local). This referred to clauses which contained a pronoun (in these cases clause-initial) which referred to a character previously established or re-established by a full nominal phrase. Either the full nominal occurred either immediately prior to the pronominal reference in question, or intervening utterances contained reference only
to the same character (i.e. no other character was mentioned in these intervening clauses).

Of the clauses with initial pronouns serving to maintain reference, 36% were "local," and within these 36% there were absolutely no examples of maintain reference (local) to the boy (or boy plus dog) (see table 12). A low number of examples of maintain reference (local) was predicted for the boy due to the limited number of full nominals used to refer to the boy at any time for any function. However, the fact that there were no examples of this for the boy seems noteworthy. This can be interpreted not so much as a comment on how children use pronouns to maintain reference (it is expected that they would lean toward use of pronouns for the maintain reference function regardless of referent), but more as a comment on the pattern of introduction and maintenance of reference to characters other than the protagonist when they are brought into the narrative during various episodes. This is just another way in which children appear to be treating the protagonist and other characters differently with respect to pronominal anaphoric reference.

Although the data do not seem to support Karmiloff-Smith’s notion of reserving utterance initial occurrence of pronouns for reference to the protagonist, this difference must be discussed in the context of differences between the design of the two studies. As noted in the introduction, the length of the books (in terms of pictures), the number of episodes and the number of central and less central characters are much greater in this (and Bamberg’s) study than in Karmiloff-Smith’s. To put these differences into
Table 12. Utterance-initial pronouns used by each subject at T2 to refer to the boy and jointly to the boy and dog, shown as total and by switch reference, maintain reference and maintain reference (local)* functions

<table>
<thead>
<tr>
<th>S</th>
<th># Initial Pron's</th>
<th>total # to boy</th>
<th>total# to B+D</th>
<th>#SR to boy</th>
<th>#SR to B+D</th>
<th>#MR (L) (boy)</th>
<th>#MR (L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>36</td>
<td>13</td>
<td>--</td>
<td>11</td>
<td>6</td>
<td>25</td>
<td>15</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>65</td>
<td>22</td>
<td>7</td>
<td>36</td>
<td>13</td>
<td>29</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>11</td>
<td>7</td>
<td>1</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>15</td>
<td>11</td>
<td>--</td>
<td>9</td>
<td>8</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>11</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>9</td>
<td>1</td>
<td>6</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>--</td>
</tr>
<tr>
<td>8</td>
<td>16</td>
<td>6</td>
<td>2</td>
<td>10</td>
<td>4</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>17</td>
<td>8</td>
<td>1</td>
<td>12</td>
<td>7</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>14</td>
<td>7</td>
<td>2</td>
<td>6</td>
<td>3</td>
<td>8</td>
<td>--</td>
</tr>
<tr>
<td>All</td>
<td>204</td>
<td>79</td>
<td>26</td>
<td>104</td>
<td>49</td>
<td>100</td>
<td>36</td>
</tr>
</tbody>
</table>

* Maintain reference (local) indicates utterances which contained a pronoun to refer to a character previously established by a full nominal. Either the full nominal occurred immediately prior to the pronominal reference, or a small number of intervening utterances occurred which contained reference (pronominal) to the same character only.

perspective, the entirety of Karmiloff-Smith's story could be equated to one episode in the search motif in Frog, Where Are You?. It is possible that the children in Karmiloff-Smith's study would have altered their approach to reserving initial position for reference to the protagonist with the increased complexity and length of the story, and the increased number of characters. (Or, of course, the possibility remains that they are not employing this strategy.) Furthermore, it is difficult to compare my data directly with the data from Karmiloff-Smith's study because she did not include any numbers representing the percentage of initial pronouns which referred to the protagonist. It is
impossible to say whether the obtained result that 65% of initial pronouns used to switch reference had the boy as referent is comparable to her results.

To look in a different way at this notion of clause-initial position being important when making reference to the protagonist, the percentage of total pronominal references to the boy which were in clause-initial position was calculated for the switch reference function only, as well as for the summed switch and maintain reference functions. These were calculated to see whether the clause-initial position was preferred for reference to the boy. For the switch reference function alone, 56% of the pronouns were in initial position. For both reference functions summed, 86% of the pronouns were in clause-initial position. This indicates that initial position is preferred when referring to the boy, especially for maintaining reference. This can be explained in the following manner. Although formal counts weren’t made, in most clauses (especially those which contained a maintain reference) the protagonist was the subject of the clause, and therefore reference to the protagonist was found in initial position. In contrast, a higher proportion of clauses containing a switch reference to the protagonist had the protagonist (boy) as the object of the clause, naturally found in a noninitial position within the clause (e.g. "Then the reindeer throws him down into the river").

As Bennett-Kastor (1983) noted in her study of noun phrase coherence in narratives, the character which is chosen to be focused upon in all or part of the narrative is usually the agent of clauses in which it is mentioned, or at least the grammatical subject. It would follow that the utterance-initial position would be nearly exclusive for mention of the
protagonist in a story where focus never moves away from that character (as in Karmiloff-Smith's balloon story). However, because the protagonist of *Frog, Where Are You?* is not the main character of all episodes, focus changes from character to character, and in several episodes the protagonist is the object, not the agent, of actions (as in the example above). Therefore, it is proposed that due to the story's greater length and complexity, in this study more grammatical roles were used for mention of the protagonist, in particular for switching reference. This is supported by Bennett-Kastor (1983), who found that by five years of age (when children are telling longer, more complete stories in a generation task with no visual supports) there is less tendency to mention characters in focus only as grammatical subjects.

The result above indicates that Karmiloff-Smith's decision to only look at pronominal reference in initial position limited her ability to assess use of pronouns to make reference within stories, and also limited her scope with respect to the role thematic constraints play in the use of anaphoric reference. Although it was not a goal of this study to closely examine the distribution of form/function pairings with respect to subject and object positions within a clause, this should not be ignored when assessing the way in which children organize the clauses within their stories to create a cohesive narrative. Certainly, Karmiloff-Smith missed a significant percentage of the total pronominal (and nominal) references made to characters within the stories by excluding noninitial occurrences. Indeed, these are points she raised herself when discussing the scope of her study.
Across-Subject Measures

Because theories of the development of adultlike form/function pairing for anaphoric reference (like those of Bamberg and Karmiloff-Smith) are based on the notion of a developmental time-line, it was of interest to see whether and how different indicators of development (age, mean length of clause, and "goodness" of story) would correlate across subjects. Further, it was desirable to see whether the data would "split" on a measure of pronominal reference development for the younger and older subjects.

As can be seen in table 13, there was no significant correlation between any of the developmental measures listed above. It was not strongly expected that chronological age would correlate with the other two measures, due to the widely accepted normal variability in the developmental rate at which children acquire language (the reason the MLU measure was created in the first place; Brown, 1973). In this group of subjects, with a range in age from 3;2.3 to 3;9.12, a wide range in developmental levels would be expected, not necessarily tied closely to age. It was more expected that MLC and "goodness" of story would correlate, because each measure is independent of chronological constraints. This correlation was not found. However, MLC is often taken as an indicator of children's developmental language level, particularly the complexity of syntactic constructions. There is no reason to assume that their development of story schema should be directly tied to (i.e. correlated with) development of language elements, even though they are developing in parallel and do interact (for example a child who does not have a full range of pronouns could not have a highly developed system of pronominal reference in narratives).
Table 13. Test for positive linear correlation between across subject measures: Mean Length of Clause (MLC), Goodness of Story, Age (months)

<table>
<thead>
<tr>
<th>T</th>
<th>y</th>
<th>x</th>
<th>test statistic (r)</th>
<th>( r_{\text{crit}} )</th>
<th>Reject ( H_0 ) if:</th>
<th>Reject ( H_0 )?</th>
</tr>
</thead>
<tbody>
<tr>
<td>T₁</td>
<td>MLC</td>
<td>age (months)</td>
<td>0.0165</td>
<td>0.549</td>
<td>( r &gt; r_{\text{crit}} )</td>
<td>N</td>
</tr>
<tr>
<td>T₂</td>
<td>MLC</td>
<td>age (months)</td>
<td>0.115</td>
<td>&quot;</td>
<td>&quot;</td>
<td>N</td>
</tr>
<tr>
<td>T₁</td>
<td>MLC</td>
<td>goodness</td>
<td>-0.272</td>
<td>&quot;</td>
<td>&quot;</td>
<td>N</td>
</tr>
<tr>
<td>T₂</td>
<td>MLC</td>
<td>goodness</td>
<td>-0.0461</td>
<td>&quot;</td>
<td>&quot;</td>
<td>N</td>
</tr>
<tr>
<td>T₁</td>
<td>goodness</td>
<td>age (months)</td>
<td>0.429</td>
<td>&quot;</td>
<td>&quot;</td>
<td>N</td>
</tr>
<tr>
<td>T₂</td>
<td>goodness</td>
<td>age (months)</td>
<td>0.106</td>
<td>&quot;</td>
<td>&quot;</td>
<td>N</td>
</tr>
</tbody>
</table>

\( \alpha = 0.05 \)

\( H_0 \) : no significant positive linear correlation
\( H_1 \) : significant positive linear correlation

\( r \) = correlation coefficient (\( r = 1 \) : perfect linear correlation, \( r = 0 \) : no linear correlation)

goodness: "goodness" of story as measured by presence or absence of six basic story elements (See table 9: Berman, 1986)
Table 14. Comparison of proportion of pronominal reference out of total reference made to the boy serving the switch reference function between the oldest four subjects and the youngest four subjects*, summed for T1 and T2 (joint reference to boy and dog included)

<table>
<thead>
<tr>
<th>x₁/n₁</th>
<th>x₂/n₂</th>
<th>test statistic (z)</th>
<th>z_{crit}</th>
<th>reject H₀</th>
<th>reject H₀?</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.803</td>
<td>0.907</td>
<td>-1.72</td>
<td>-1.64</td>
<td>z&lt;z_{crit}</td>
<td>Y</td>
</tr>
</tbody>
</table>

α = 0.05

x₁ = summed number of pronominal reference to the boy serving switch reference function, four youngest subjects, T₁ + T₂

x₂ = summed number of pronominal reference to the boy serving switch reference function, four oldest subjects, T₁ + T₂

n₁ = summed number of reference (all types) to the boy serving switch reference function, four youngest subjects, T₁ + T₂

x₂ = summed number of reference (all types) to the boy serving switch reference function, four oldest subjects, T₁ + T₂

x/n = population proportion (p_{est})

H₀ : p₁ = p₂
H₁ : p₁ < p₂

*Note: Two subjects (S₄, S₆) had identical ages. Their age fell at the mid point, with four subjects higher in age and four subjects lower. Their data were not used for this measure.

Interestingly, however, the proportion of pronouns used to switch reference to the boy was not equal for the young half of the subjects and the old half, and pointed toward the younger subjects using fewer pronouns to fill that function (see table 14).

These results are consistent with the expectation that children of this age range would be in the process of moving away from deictic use of pronouns, and moving toward acquisition of the first proposed stage in the development of pronominal anaphoric reference, namely the favouring of pronouns to switch reference to the protagonist. This
is consistent, too, with the fact that while the narratives of these children contained frequent examples of deictic constructions and often retained the feeling of isolated picture descriptions, there was a significant difference between how the children treated deictic constructions and pronouns with respect to gesture, as well as significant evidence to support Bamberg's early thematic advancement strategy. Further, as will be discussed below, errors the children made and corrected also point toward development of an anaphoric reference strategy guided by attention to thematic advancement.

**Errors and Self-Corrections**

This study also contradicts Karmiloff-Smith's conclusion that children under the age of six demonstrate no intersentential linking related to thematic advancement, partly due to general compatibility with the results of Bamberg's study, but more specifically due to occurrences of "errors" (perceived by the child), which were often followed by spontaneous self-correction. A number of these errors occurred when children were choosing a pronominal or nominal form for a particular reference function, demonstrating a purposeful use of the thematic subject strategy. Other errors and self-corrections were those which reflected nondeictic use of pronouns, as well as those which revealed knowledge of and sensitivity to elements of local cohesion and thematic advancement.

The errors which occurred when choosing the appropriate form to make reference seemed to indicate an apparent struggle on the part of an individual child to choose the
appropriate reference form (nominal or pronominal) to switch reference to the dog. These errors reflect the constraints of thematic advancement on the developing use of pronominal reference and support the proposed preferential use of pronouns to switch reference to the protagonist, and use of nominals to switch reference to other characters. The error examples are shown below. All are examples of clauses in which the function of the reference is to switch reference to the dog.

1. (He p>) The doggy put (the head) him's head in the jar.
2. And (he f>) (the doggy) (the) the bees chased the doggy.
3. And then (it) the doggy looked in the jar.
4. (He) the dog went outside.
5. (And then he I>) And then the dog's put it on his head.
6. (He was looking) the dog was looking up. And he was looking up. (switch reference to boy)

Example 1 shows obvious self-correction from use of a pronoun to switch reference to the dog to use of a full nominal. Interesting in this example is the apparent perseveration of this "rule," whereby the head is used to talk about the dog's own head, but is subject to on-line correction to a possessive pronoun (him's head). Examples 3 through 5 show similar self-corrections to change the pronoun to a full nominal in switching reference to the dog. In example 2, the he in the sentence fragment he f> was actually interpreted as referring back to the boy who had been referred to in the previous utterance. However, the juxtaposition of the maintaining he in reference to the
boy and the switching *the doggy* in reference to the dog shows the contrast of treatment for the two characters. The subsequent self-corrections seem to be a result of the child's attempt to avoid a passive construction.

There are other examples of self-corrections that gave insight into the developmental processes some of these children brought to the story-telling task, although they may not be classified as "errors." One self-correction in particular supported the proposal above that, although there was a significant number of deictic constructions in the stories, and although many strings of utterances appeared to be isolated picture descriptions, there was a developing nondeictic treatment of pronouns. This is supported by the following string of clauses:

7. Then he's dropped in water. (Boy, SR) (*he* accompanied by point)
   And then he sinks. (Boy, MR)

   Researcher: Pardon?
   (Then he) This guy sinks. (*This guy* accompanied by point)

The most important clause in the string is the last clause. This clause follows the researcher's request for repetition of information already given. The child begins by using a pronoun to refer to the character again (no point), but then switches to the deictic construction *this guy* accompanied by a point to the page. This purposeful switch to a deictic construction in order to ensure joint attention of the subject and researcher to the character in question implies that the initial use of the pronoun was not deemed by the subject to be capable of establishing that joint attention. Furthermore, the
pronoun was not accompanied by a point, which also indicates a move toward non-deictic use of the pronoun. One could argue that this is an example of one deictic term being replaced by a "stronger" deictic term, but in the context of other information supporting nondeictic, referential use of pronouns this is not likely the case.

Another self-correction led to the observation that some of the children sometimes seemed to be attempting to use it in reference to the frog and/or the dog as a way to distinguish them from the boy and/or from each other. In the context of this story either he or it would be appropriate to use in reference to the boy and the frog, but some of the children seemed to be struggling in making the decision of which one to use. The self-correction which instigated this observation was as follows:

8.     (Subject 5)

     When the frog creeped out.

     He creeped out.

     And then he said, "Woof!" that he gone. (1.dog, 2.frog)

     Then (it) he got out the window. (frog)

The child in this case (subject 5) was about to use it to refer to the frog in the final clause when he apparently realized that he had already used he to refer to frog in earlier clauses and self-corrected. The child did not seem sure about which pronoun would be most appropriate to use in reference to the frog. He seemed to be his most instinctive choice (and this is true for all subjects) but it is seemingly brought forward when the
possibility exists that the listener might confuse referents. On its own, this self-correction did not seem significant, but in other stories, this apparent strategy to use *it* as a further distinguisher of referent (although it was not consistently attempted) was repeated, as the following examples show:

9. (And the) and the frog is (in his)(in his) in his trap jar.
   
   *It* popped out the window. (frog)
   Then was gone.
   And they’re looking all over for him. (1.boy+dog, 2.frog)

10. *It* broked the glass jar. (SR, dog)
   He broked it. (MR, dog)

In example 9, the child chooses a combination of pronouns chosen to make reference to the frog. In this case, too, it seems as though there is an incompletely formed rule for the child:

*use it when necessary to further specify a referent of a pronoun.*

This also seems to be the case in example 10, where the child chooses to use *it* to switch reference to the dog, but reverts to *he* to maintain reference. There were not enough examples of this use of *it* to refer to the dog and/or frog to make generalizations about a strategy which uses the inanimate pronoun to make unique reference to each character, but these examples provide enough information to propose that at least some of the children in this study were attempting to employ such a strategy.
Two other self-corrections (both from Subject 5’s second narrative) indicate active attention to theme and development of a story-line. These were as follows:

11. And then (the) a squirrel> (first mention of squirrel)

12. They looked at their frog to sleep.
   "I wanna go out and see my family."
   The frog said, "I'm gonna go out and visit my children."
   (And then the f>)
   Then they went and looked everywhere and everywhere and everywhere and everywhere and everywhere and everywhere and everywhere and everywhere and everywhere, everywhere, everywhere.
   (turning pages with episodes from the search motif)
   Then they found frogs.
   Then he brang them back home.
   (third version of the story, T₂)

In example 11 the subject corrected the use of the definite article the to the indefinite article a for first mention of a character, an indication that he was aware of the discourse properties of these two articles. But example 12 is more illuminating with respect to the subject’s understanding of theme. He had already told two versions of the story at T₂ and this was his third. He began the story, but after a few clauses, instead of continuing in detail about all episodes in the search motif, he replaced them with they went and
looked everywhere and everywhere...(etc.). This is clear evidence that at least this subject was not treating the task as a series of isolated picture descriptions.

Interestingly enough, Subject 5 was the oldest subject in the group, and the only subject to condense the story in the manner shown above (but also the only subject to attempt three versions of the story at one telling). However, he was only 3;9.12 at the time of his first telling, so he provided evidence of attention to theme in his stories at an age much younger than that recognized by Karmiloff-Smith. The results of developmental measures (other than pronominal reference) for Subject 5 were not particularly advanced within the group as a whole. He did not have the highest MLC averaged over the two tellings (although it was the highest at T1), he did not show the highest number of story elements at either time, and although the number of deictic constructions in his stories was the lowest, it was not remarkably different from the rest of the group as a whole (it was only one lower than for Subject 6). His use of pronouns to make reference was a near perfect fit for Bamberg's model; all but one switch reference to the boy was pronominal, and all but one switch reference to the dog was nominal (and that reference was marked "appropriate").

The point here is that while Subject 5 showed more direct evidence of attention to theme than other members of the group, he was not the most developmentally advanced on all measures. Therefore, it is proposed that the sensitivity to elements of narrative structure he demonstrated in the above examples is probably not unique to him. It may also be possible that aspects of story structure are independent of each other, as was
shown for MLC and "goodness" above. Although other subjects did not reveal their knowledge so explicitly, they most likely possessed the same knowledge and sensitivity or were in the active process of acquiring such knowledge.

Individual Data

Bamberg noted that although the tendency of the group was to use pronouns to make reference in a bifunctional way, namely to switch reference to the main protagonist (but not other characters) and to maintain reference to all characters, there was still a possibility that individual children were using different strategies to make reference. He noted that in the group data, the number of nominals used to switch reference to the boy and the number of pronominals used to switch reference to the dog were greater than zero. He therefore went back to the stories of individual children and tried to differentiate the strategies they use to make reference. In particular, he recognized the possibility that all children may not follow the same developmental path to reach the adultlike anaphoric use of pronouns and, therefore, "might follow different strategies of thematically working their way through the story" (1987: 79).

In this study, too, the general pattern of pronoun use supported that found by Bamberg, but the number of nominals used to switch reference to the boy and, in particular, the number of pronouns used to switch reference to the dog brought the individual strategies of the children into question. The following section takes a closer look at the results of nominal-pronominal distribution in individual stories and the contexts within which these forms were used in ways that go against expectation.
Use of Nominals to Switch Reference to the Boy

Seven out of ten subjects told stories that had examples of switching reference to the boy with a full nominal expression. Across all subjects and both tellings, there were fourteen examples in all. When these examples were examined for their linguistic construction and the context in which they were used, most fit into one of four different categories: (1) deictic constructions, (2) proper nouns, (3) story conventions and (4) question forms.

Subjects 3, 4 and 7 demonstrated the most frequent use of nominals to switch reference to the boy (three examples each). For many of these, the subjects used truly deictic nominal expressions to serve the switch reference function (*that boy, this guy, this boy*). These deictic constructions were all accompanied by point. Subject 4 (3;6.2) used such constructions frequently throughout her narratives (with respect to all characters), and the number of deictic constructions accompanied by point which referred to the boy and dog was higher for her than for all other subjects. This frequent use of deictic constructions accompanied by point to draw attention to different characters, in combination with the fact that switch reference to the dog was almost evenly distributed between nominal and pronominal forms, seems to indicate a system of reference that is still developing, moving from the deictic use of expressions to distinguish characters toward nondeictic use (influenced by the interconnective aspects of narratives such as thematic advancement). However, there is no indication that Subject 4 is developing a strategy of pronominal reference different from that of the majority of children who will come to use the thematic advancement strategy, especially in light of the fact that she never used pronouns to switch reference to the dog alone, only jointly to the boy and
dog (a point that will be discussed in the next section). She simply seemed to be at an earlier point in development of the first stage of acquisition of pronominal anaphoric reference.

Subject 3 did not use deictic constructions to refer to the boy to the same extent as Subject 4, but showed immaturity in her use of pronouns for making reference in other ways. She accompanied almost all of her clauses with a point, and in particular her use of point with pronouns was more frequent than for any other subject. This is an indication that she too was still in the process of abandoning purely deictic use of pronouns in the development of the thematic advancement strategy. At first glance she seemed more advanced than Subject 4, because she favoured pronouns more often that Subject 4 did for switching reference to the boy. However, when it was observed that she also almost exclusively used pronouns to switch reference to the dog, the presence of even an emergent thematic advancement strategy in her narratives was questioned. There is no difference in how she uses pronouns to refer to the boy and the dog; she favours the use of pronouns to switch reference to both characters. Subject 3 may be the only example in this data set of a child who is not yet using pronouns in a non-deictic fashion.

In two instances, a deictic full nominal switch reference to the boy was the first mention of the boy in the T1 story: Subject 7's only deictic construction and one from Subject 4. While the low number of examples does not allow more than speculation, it may be that at the beginning of the narrative, especially when the child is unfamiliar with the story,
the protagonist is not yet chosen and strategies for thematic advancement are not yet in place. This possibility of the protagonist not being a preselected, unchanging character will be revisited in discussion of reference to the dog below.

Proper nouns were the second interesting use of nominal expressions for switch reference to the dog. Examples of this were found only in the T₂ stories for Subjects 3 and 7. There is little doubt that the names for characters were introduced to the children by their parents’ narratives. Indeed, the children had a difficult time remembering the names which had been assigned to each character, and in both the stories, attempts to keep referring to the boy by name were abandoned for most of the story. Both Subjects 3 and 7 only switched reference to the boy by name once, in the opening episodes of the story. Therefore, this use of proper nouns, while technically a nominal expression, does not seem to strongly violate the strategy of not using nominals to switch reference to the boy.

The third category into which a number of nominals fit was "story convention." For example, the only nominal expression used by Subject 1 to switch reference to the boy is in the very first introduction of the character in her T₂ telling: There was a little boy. This is the opening clause of her narrative, preceded only by a title: Froggy where are you. This is an example of convention in story-telling, probably a direct result of the way in which her caregiver(s) told her the story during the week. This is an entirely appropriate use of a nominal expression for switching reference to the boy, not only reflecting adult reference strategies, but also reflecting story-telling conventions. The
subject's manner while saying the title and this first clause seemed to be an imitation of her caregiver and was soon abandoned in favour of her natural speaking manner. From that point on, her story contained no more examples of nominals for switching reference to the boy (and only one example of a pronoun used to switch reference to the dog). In other words, this story contained strong evidence for use of the thematic advancement strategy. The conventional beginning to the story was complimented by a conventional ending: *He take one of the baby. He tooked him home. That's the end.* This appropriate attention to story-telling convention may provide insight into the child's developing understanding of theme and narrative structure, but it certainly does not detract from the strong application of the thematic advancement strategy throughout her story.

Question forms were the fourth category into which examples of nominals used to switch reference to the boy. In two cases, (found in the stories of Subjects 1 and 7), the clauses which contained such nominals were in the form of questions. Most questions directed to the researcher were coded as narrator comments and not included in the counts for reference. However, if a question was used to divulge information important to development of the story (and that information was not repeated in any other clause) then it was coded. For Subjects 1 and 7 this was apparently a style for creating their narratives. For both of them, questions were frequent and a number were coded (e.g. *Why did that deer push the boy down?*). In this clause, the fact that the deer pushed the boy down is important information for that episode, so the utterance was coded).
However, although the decision to include clauses of this type was made in order to give credit to the children for their knowledge of story content, it created an inconsistency with other clauses included in the coding. By asking these questions, the subjects "stepped out" of the narrative, and directed these utterances at the researcher. Although the questions contained important story information, they were not equivalent in grammatical form or in speech act type to other coded clauses. The way in which children referred to the boy during these questions therefore should not be expected to reflect strategies used in the narrative itself. In this sense, the fact that the children used a full nominal to refer to the boy in these question clauses may have no direct relation to the way they refer to the boy in clauses truly within the narrative.

This leaves only three examples of nominal forms used to switch reference to the boy unaccounted for (out of 24 nominal switch references to the boy). These can be viewed as true violations of the thematic advancement strategy. The contexts in which these examples occur do not provide any certain clues as to the processes by which the children chose to use the nominal at that specific point in their narrative.

**Use of Pronominals to Switch Reference to the Dog**

Similar to the preceding section, there are several points of discussion which can explain most of the cases in which subjects used pronouns to switch reference to the dog, apparently violating the thematic advancement strategy, which predicts exclusive use of nominals to serve that reference function.
First, half of the examples of pronouns used to switch reference to the dog were actually joint references to the boy and the dog. There was only one example in all the data of the use of a full nominal to switch reference to the boy and the dog. As discussed earlier, it is proposed that when the reference is joint to these two characters, the fact that the boy (the protagonist) is part of the referent is the overriding influence and the thematic advancement strategy rule that requires a pronoun to switch reference to the protagonist is followed. Bamberg does not cite any occurrences of joint reference in his data, and does not indicate whether or how he coded joint reference if it did occur. However, by keeping the joint references separate in coding the clauses in this study, this "override" principle became clear.

The second main group of clauses in which pronouns switched reference to the dog were clauses describing episodes in which the dog was the main character, in particular the episodes in which the dog breaks the jar and the scene in which the dog is involved with the bees. The fact that the dog is the "protagonist" of these specific episodes may account for the higher occurrence of pronouns used to switch reference to the dog. The children may be tending to apply the rule:

use pronouns to switch reference to the protagonist

to the dog in these episodes. The occurrence of pronouns used to switch reference to the dog in episodes where the boy and dog are both involved is relatively lower. Further, during these same episodes at least three children used the inanimate pronoun it to fill this switch reference function, even though they used "he" to refer to dog
elsewhere in the story. For example, Subject 2 use the following clauses to talk about the "jar scene":

13. Oops!

   It broked the glass jar. (SR, dog)
   He broked it. (MR, dog)

In the above example, it is used to introduce the dog, but there is an immediate return to he as the pronoun of choice in referring to the dog. Again, while there are few examples of this shift in pronoun choice from he to it in cases where a pronoun is used to switch reference to the dog, it seems to indicate the child's need to keep the dog separate from the boy for the reference functions, and perhaps a lack of "comfort" while choosing pronouns to switch reference to the dog.

Third, several other occurrences of pronouns serving to switch reference to the dog were those deemed "appropriate" (SR\*) in the coding category. The definition of the "appropriate" category was outlined in chapter 2, but to reiterate, the context for an "appropriate" use of pronoun to switch reference to a character other than the boy would be similar to the following:

14. He trying to chase that dog. (deer,SR; dog,SR)

   He trying to chase the dog. (deer,SR\*; dog,SR)
Such contexts for use of the pronoun were often restatements of the content in preceding clauses (e.g. 14 above). Because the second clause contains the same subject and object in identical sentence positions, and repeats the information in the first clause, there is no doubt as to the referent of the pronoun in the second clause. These clauses, although they could be considered to not move the story-line along because they repeated previously stated information, were counted; they often added a small element of new information. Other examples were not restatements, but still maintained referents in subject and/or object position such that no ambiguity was possible (e.g. 15 above).

However, as was the case in the preceding section, the decision to include these clauses in the coding created an inconsistency which resulted in apparent violation of the thematic advancement strategy. Technically this is true, but the clarity of the context (where all opportunities of ambiguity are removed by maintaining sentence positions for referents) seems to be sufficient to allow the children to apply local rules of cohesion. The narrow range of contexts in which this occurred seems to be an exception to, rather than a violation of, the more "global" strategy.

Just as there were a few examples of full nominals used to switch reference to the boy that could not be interpreted as anything but violations of the thematic advancement
strategy, so there were a few such examples of pronouns used to switch reference to the
dog. This is not at all troubling when one considers that in the narratives of these
children, a developing system of reference is being observed. It is a positive point in
this data set that examples of deictic use of language, and "mistakes" in reference
strategies were made. This gives confidence to the interpretation that these children
were "caught" in the process of developing this proposed first stage in the acquisition
of true anaphoric pronominal reference.
CHAPTER FOUR
SUMMARY AND CONCLUSIONS

General Summary

The general purpose of this study was to explore the way in which 3-year-old children use pronouns to refer to characters in a narrative. The use of pronouns was examined from a functionalist perspective, looking at not only the pronoun forms used, but the cohesive reference functions those forms served throughout the narrative to create coherence for the text as a whole.

There were three main goals of this study. First, the stories underwent analysis to discover if they showed use of the thematic advancement strategy, as would be predicted from the theory of pronominal reference development proposed by Bamberg (1987). Second, the performance of the children on measures of pronominal reference was compared for the conditions in which children were unfamiliar and familiar with the story, in order to detect any change in performance as a result of familiarization. Third, the results of this study were compared with the English data of Karmiloff-Smith (1981) in an attempt to resolve differences between her study and Bamberg's regarding the age at which children first evidence referential use of pronouns, and the exact nature
of the thematic advancement strategy which marks the first stage in the development of
pronominal reference.

In addition to the three main goals above, the study also checked for correlation in the
data for various measures of development across subjects. This was done to determine
whether any one of these measures could serve as a specific indicator of development
for any other. Correlation between chronological age, mean length of clause and story
"goodness" was measured. Further to these correlational measures, it was determined
whether the data "split" with respect to performance on a key element of the thematic
advancement strategy for the youngest four and oldest four subjects.

From his data and results, Bamberg proposed a theory of the developmental stages
through which children move in the acquisition of adultlike pronominal reference. The
first of these proposed stages was what he called a "global thematic advancement
strategy," in which children preferentially choose a pronoun to both switch reference to
the protagonist of a story and to maintain reference to the protagonist. Simultaneously,
children choose full nominal expressions to switch reference to other characters and a
pronoun to maintain reference to those characters. He found this strategy to be first
evidenced as early as 3;6.

The design of this study replicated that of Bamberg (1987), with only a few minor
changes in design, to allow direct comparison of results. Bamberg did not collect or
analyze stories which resulted from the first (unfamiliar) condition, but stories from both
conditions were compared with his data in this study, recognizing that only the data from the second (familiar) condition was directly comparable. By replicating Bamberg's study, the data in this experiment were collected in the same elicitation context, and therefore any differences which might have been found in the nature or use of pronominal reference could not be attributed to variations in design and method.

Summary of Results

Comparison with Bamberg's Results

The results showed general similarity between the stories of 3-year-olds Bamberg collected and the stories collected here. The children referred to the boy (the story protagonist) more often than the dog, and preferred the use of pronouns, regardless of function, to refer to the boy. A strong preference to use nominals to refer to the dog was not found. This was different from Bamberg's data, and reflected the greater tendency of children in this study to maintain reference to the dog.

Closer examination of the grouped data indicated evidence of a developing thematic advancement strategy as described by Bamberg. The children chose significantly more pronouns than nouns to both switch and maintain reference to the boy. For reference to the dog, there was a significant preference for pronouns to maintain reference, and a preference for nominals to switch reference at T₁ (unfamiliar condition). These results were consistent with the thematic advancement strategy. However, at T₂ the preference for nominals to switch reference to the dog was not significant, contrary to the thematic
advancement strategy. Despite this, there was still a significant difference at T₂ (as was found at T₁) between the number of pronouns used to switch reference to the boy and the number of pronouns used to switch reference to the dog. There was no significant difference found at either time between the preference to use pronouns to maintain reference to the two characters. Therefore, while the thematic advancement strategy was not as "strongly" in place for the children in this study (as evidenced by lack of significant preference for nominals to switch reference to the dog at T₂), the stories demonstrated trends toward development of the thematic advancement strategy. The boy and the dog were definitely being treated differently with respect to pronominal reference, in a way that recognized the status of "protagonist" for the boy by creating for him a unique system of reference. Therefore the children appeared to be showing sensitivity to aspects of textual coherence in a way similar to the youngest children in Bamberg’s study. This is a confirmation of Hypothesis 1.

Comparison Between T₁ and T₂
No evidence was found in this study for a significantly greater ability of children to apply the thematic advancement strategy when they were familiar with the story as a result of exposure to an adult model, and therefore Hypothesis 2 was not confirmed. This was true even though the nonreferential measures of narrative competence (percentage of clauses contributing to thematic advancement, mean length of clause, and "story goodness") showed a trend toward the children telling shorter stories with a greater proportion of "contributing" clauses and inclusion of more story elements in the familiar condition. This lack of significant change in use of pronominal reference was
most likely due to a gap in competence and performance: the children may not have gained enough in competence from hearing the adult model to result in a change in performance for this particular reference measure. As mentioned in the discussion, a longer and/or more intense period of exposure to the adult model may have resulted in improved application of the thematic advancement strategy.

**Joint Reference**

When analysing the data for evidence of the thematic advancement strategy, a lesser distinction in the treatment of the boy and the dog was observed when joint reference to the boy and the dog was included in the analysis. In particular, for switch reference to the dog, a much stronger preference for pronouns to fill this function was found with inclusion of joint reference. This indicated that when making joint reference to the boy and dog, the children were (as a group) following the strategy for making reference to the boy alone. It was concluded that an operational rule within the thematic subject strategy was:

*when the protagonist is part of a joint referent, treat the joint referent as one would treat the protagonist.*

Presence of such a rule was also supported when closer analysis of individual stories was undertaken. It was found that half of the pronouns used to switch reference to the dog (an apparent violation of the thematic advancement strategy) were joint references with the boy.
Comparison with Karmiloff-Smith (1981)

The results of this study did not show evidence of solely deictic use of pronouns as Karmiloff-Smith (1981) predicted. Using the presence of point as a measure of deixis, the results showed that pronouns were not accompanied by point significantly more than full nominals when Subject 3 was excluded from the data (an interpretation which was justified in the discussion). In contrast, other constructions that were truly deictic (e.g. *There's a X*) were accompanied by point significantly more often than they were not accompanied by point. Therefore, it was concluded that because pronouns and nouns were not being treated differently with respect to the use of accompanying point, and because within the narrative pointing was still a defining feature of clearly deictic terms, then pronouns could not be labelled a purely deictic term. This was taken as indirect support for the referential function of many pronouns in these narratives. Therefore, the first part of Hypothesis was not confirmed.

It is recognized that other measures of deixis could have been applied (e.g. eye gaze, head movements), but for this analysis the results were in conflict with Karmiloff-Smith's claim that pronouns serve only deictic functions before age six. The results also plainly differ from those of Tomasello et al. (1984/85), who found a greater occurrence of point with pronouns than with nouns for three-year-olds in a nonnarrative discourse task. This implies a change in function of pronouns for children of this age group when placed in the narrative context, which would support a linguistic sensitivity to the genre of "narrative" on the part of the children.
The results of this study did not show an exclusive preference to reserve pronouns in clause-initial position for reference to the protagonist as would be predicted from Karmiloff-Smith's description of her thematic subject strategy, and therefore did not confirm the second part of Hypothesis 3. Only 51% of the pronouns in initial position made reference to the boy. Of those pronouns in clause-initial position which served to switch reference, 65% of these were to the boy. While this does not support exclusive reservation of the clause-initial pronoun for reference to the boy, it still shows a tendency to refer by pronoun to the boy in clause-initial position more than for any other character.¹

Furthermore, when clause-initial position for pronouns was looked at from the perspective of reference to the boy, it was found that 86% of all pronominal references to the boy were in clause-initial position. In addition, 56% of the pronouns used to switch reference to the boy were in initial position. This implied that the clause-initial position was in fact special for the protagonist of the story, even if not to the extent predicted by Karmiloff-Smith. This was an expected result, because children will create focus around the protagonist of a story, and therefore often choose him to be the agent of clauses, especially after he has been reintroduced in an episode (Bennett-Kastor, 1981).

The relatively low preference to reserve clause-initial position for the boy (with respect to Karmiloff-Smith), and the lower preference of that position to switch reference to the

¹ As mentioned in the discussion, Karmiloff-Smith did not give actual numbers for the percent of clause-initial pronouns which referred to the boy, but the implication was that the preference was greater in her study than that found here.
boy, was attributed to the number of episodes in which the boy was not the main focus (and therefore another character was chosen as agent of the action) and in which the boy was reintroduced as the recipient of an action (and therefore the grammatical object).

The clause-initial data also revealed that the boy was being treated differently than other characters with respect to the pattern of introducing (or reintroducing) and maintaining reference. Of all cases of clause-initial maintain reference, 36% were "local," meaning that a character was introduced by a full nominal and then maintained by a pronoun with no intervening referents. The fact that there were no cases of maintain reference (local) for the boy indirectly implied that none of the cases in which a full nominal was used to introduce or reintroduce the boy was part of such a localized pattern of introduction and maintenance of a character. This again supports the notion that, in linguistic terms, the protagonist (a feature of the narrative context) is treated differently from other characters in the narrative.

Karmiloff-Smith concluded from her study that children of three years do not have the ability to create the intersentential linguistic links necessary to create narrative coherence. As the discussion above implies, the present study (like Bamberg's) did find evidence of the developing ability to create local cohesion and textual coherence. Further to the conclusion that the children used pronouns in a nondeictic manner, the data were found to "fit" with Bamberg's same-age German data, and supported the use of a thematic advancement strategy by 3-year-olds. In addition, errors and self-corrections made by the children further revealed their sensitivity to the "special" quality of the story.
protagonist. These errors and self-corrections also revealed other forms which filled cohesive functions and the ability of at least one child to generalize the entire search motif through the repetition of one phrase ("they looked everywhere"). Therefore, it was concluded that, although story schemas were not complete and deictic constructions were common in the stories of these children, a sensitivity to aspects of the narrative whole and the initial capability for creating textual coherence did exist.

**Individual Data**

Further investigation of individual stories indicated that many of the apparent "violations" of the thematic advancement strategy were either attributable to individual narrative style of some children, to the use of joint reference (as discussed above) or to inconsistencies created by the coding system. This "second look" at the data indicated that one subject (Subject 3) was generally using pronouns deictically and was still in the early stages of developing referential pronoun use. Two other subjects (Subjects 4 and 7) seemed to be at a more advanced point in this development, as they frequently used pronouns to serve referential functions, but still exhibited the use of deictic expressions to serve these functions elsewhere in their narratives. Other aspects of individual narrative style which affected the use of the thematic advancement strategy included giving names to characters (i.e. proper nouns) and using story conventions. These only occurred early in the second tellings and were most likely the direct result of the adult models children received. They were presented early in the narratives and were quickly abandoned.
The analysis of individual stories also led to the observation that some children applied the thematic advancement rule:

use pronouns to switch reference to the protagonist

when switching reference to the dog in episodes where the dog was the main character (and therefore the "doer" of the actions). It was concluded that these children had not yet completely developed the notion of "protagonist" as enveloping the whole narrative. However, there were indications that this application of reference rules normally reserved for the boy was "uncomfortable" for the children. A substrategy was found in the stories of some children whereby the inanimate pronoun "it" was used to switch reference to the dog in these episodes despite the heavily favoured use of "he" to refer to the dog elsewhere in the story. The number of these examples was few, but it was concluded that the presence of such a substrategy to maintain the distinction between the dog and the boy was further indication of developing sensitivity to "global" aspects of the narrative.

Across Subject Measures

The analysis which investigated correlation between the measures of chronological age, mean length of clause and "goodness" of story showed no significant correlation between any of these measures. Although each is separately considered a measure of linguistic and/or narrative development, these results indicate that, in this narrative context, none may serve as a developmental cue for any other. The second analysis across subjects with respect to chronological age investigated the relationship between chronological age and the preference to choose pronouns to switch reference to the boy (i.e. to apply the
thematic subject strategy). The oldest four subjects did use pronouns to switch reference to the boy significantly more of the time than the youngest four subjects. This "split" in the data confirms the observation that the thematic subject strategy is still developing in 3-year-old children.

Overall Summary of Results
To summarize the results, this study provided evidence that English speaking children between the ages of 3;2 and 3;9 demonstrate the developing ability to create textual coherence through pronominal reference in a manner which supports Bamberg's thematic advancement strategy. It did not provide evidence for purely deictic use of pronouns or the inability of children to create any level of textual coherence found by Karmiloff-Smith (1981) for English-speaking four-year-olds. This study further disputed Karmiloff-Smith's results when exclusive preference for the clause-initial pronouns to be reserved for reference to the protagonist was not found. It is proposed here that the differing results (both in the age at which children first use pronouns as reference devices constrained by the creation of textual coherence, and the range of grammatical roles assigned to the protagonist) can be attributed to variation in the experimental design.

Explanation of Differences Between Studies
Although Karmiloff-Smith also elicited the narratives in her study from a picture book, the book had far fewer picture frames than Frog, Where Are You?, and also had fewer characters and episodes. According to researchers such as Liles (1988, 1993) and
Peterson & McCabe (1983), this will result in shorter and less complex narratives. Indeed, examples of elicited narratives Karmiloff-Smith did provide in her paper were typically of six clauses in length, as opposed to an average length of over fifty clauses for both tellings of *Frog where are you?* in this study. Because "frequency of use [of the unit being investigated] is the typical measure to distinguish one population from another" (Liles, 1993: 877), it may be that developmental patterns in the narratives of children under six were lost due to infrequent (or absent) occurrence. Therefore, the use of pronouns as referential devices which formed patterns in the narratives of this and Bamberg's study may have been perceived as aberrations in the data by Karmiloff-Smith. They may have been there, but not in sufficient numbers to be "noticed."

Further, the protagonist in the story used by Karmiloff-Smith is involved throughout the story and is the focus of all events (even when not the agent). Unlike *Frog, Where Are You?*, there are no episodes within the story in which the protagonist does not take part, and therefore no opportunity for the protagonist to be reintroduced following such an episode. Because there is little opportunity for the "focus" of the narrative to shift between characters (as described by Bennett-Kastor, 1983), it is natural that pronouns which referred to the protagonist were the agents of actions, and therefore grammatical subjects in utterance-initial position. Therefore, it is proposed that Karmiloff-Smith's stories from children under six years of age were limited in data pointing to referential pronoun use and developing strategies for creating textual coherence. They were also limited in the range of characters referred to by utterance-initial pronouns. These limitations were most likely due to the lack of length and complexity in the book used
for elicitation of the narratives. Karmiloff's claims are therefore not warranted, given the limitations due to experimental task and materials.

The importance of method and design in comparing the results of studies which examine the same functional unit (like pronominal anaphora) is further reflected in Orsolini's results (1990). In her study, she found support for aspects of the thematic advancement strategy proposed by both Bamberg and Karmiloff-Smith (i.e. preferential use of pronouns for switching reference to the protagonist of a story). She found evidence of this strategy in the narratives of four-year-old children, but only in 14% of these narratives. She explained this low incidence of the strategy as the result of a still developing episodic structure, an explanation well-supported by the literature. This result is somewhere in between the results of my study (and Bamberg's) and those of Karmiloff-Smith, in terms of "strength" of the thematic advancement strategy. While the thematic advancement strategy was observed, it was not as well-established at four years of age as Bamberg found. However, Orsolini's method used a televised, verbal narrative from which children retold the story later with no visual support. Therefore, the context in which the children gave their stories provided less support for the content and organization of story episodes than in the case of this (and Bamberg's) study. The length of the model narrative, however, was more comparable to Bamberg's story than to Karmiloff-Smith's. The result of Orsolini's analysis, then, seems to be a compromise between greater opportunity for the form/function pairings of the thematic strategy to be evident (due to story length), and more effort on the part of the child being directed at remembering and organizing the story (due to elicitation context).
The Scope of the Present Study

This study did not confirm or dispute the developmental sequence in the acquisition of pronominal reference proposed by either Bamberg or Karmiloff-Smith. Rather, this study confirmed Bamberg's finding that children as young as three years of age can use pronouns referentially in functions which reflect attention to the advancement of theme within a narrative, and in doing so aid in the creation of textual coherence. This study also showed that the first stage of referential pronoun use by English-speaking children comes at approximately the same chronological age and in the same form - the thematic advancement strategy - as by German-speaking children (Hypothesis 1). This is also a confirmation of Karmiloff-Smith's proposed first stage (despite differing in the age of first appearance) although exclusive reservation of clause-initial pronouns for reference to the protagonist was not found.

Future Research

In order to confirm Bamberg's model of the developmental stages and the timing of their appearance in acquisition of adultlike anaphoric pronominal reference, the most convincing method would be a longitudinal study of these same children. By asking them to tell a story of comparable length and complexity to Frog, Where Are You? at intervals over their development, using the same methods of elicitation and analysis used in this study, a valuable pool of data would be collected. By doing so, even the subject variability found in cross-sectional studies would be removed. The difficulties of maintaining such a study over time are recognized; however, due to the sensitivity
of narrative production to elicitation context, a longitudinal study of this type would be ideal.

Further, this study did not take into account the influence of adult models on the narratives produced by children. The presence of proper nouns and story conventions as a result of exposure to the adult model were mentioned, but not formally assessed. Further study into the effects of the "quality" of adult stories (in terms of completeness, length, complexity of language used) on the story retellings of children would be valuable information. It would be possible to do such an analysis for this data set, as tapes of the adult models were collected for most subjects, but such analysis was beyond the scope of this study.

As mentioned before, it would also be interesting to determine under what conditions (if any) manipulation of the length and/or intensity of exposure of children to a variety of controlled adult models would result in a significant improvement in their application of the thematic subject strategy. This would provide valuable information not only about the "cognitive effort" children are distributing between aspects of narrative production, but also more about the contexts in which story retellings are elicited.

Finally, because children as young as 3;2 were able to apply the thematic advancement strategy to their (incomplete) narratives in, it would be of interest to repeat this study with a group of children of a younger age range. More narrative data would be collected in which children were not using pronouns referentially, and were truly unable
to manage the continuity of characters and events throughout the narrative either conceptually or linguistically. More data which showed that children were "caught in the middle" of transition to the first stage of pronominal reference would also be collected. Close analysis of this data would further elucidate processes and strategies children are employing in the earliest stages of referential pronoun use.

Concluding Remarks

This study gives credit to these young children for their developing abilities to manage the narrative production task from a variety of perspectives. In particular, it provided evidence that 3-year-old children do pay attention to aspects of local cohesion and textual coherence in their narratives, as was shown here for the use of pronouns as reference devices. What is more, these children were able to demonstrate their knowledge of narratives and linguistic structure and function while telling a story, a task that is far from simple.

This study demonstrates the importance of form/function approaches in examining the development of the referential system, and indeed language development in general. By investigating the functions served by referential forms in the narratives of this study, the presence of a relatively sophisticated strategy for creating both local cohesion and textual coherence was demonstrated. This strategy was present despite the apparent inability of these children to tell complete, complex stories. The potential ability of such a form/function approach to demonstrate developing linguistic and discourse capabilities which might otherwise be overlooked must be kept in mind when examining
the narratives of young children, in addition to the importance of the experimental context from which the narrative data are drawn.
BIBLIOGRAPHY


APPENDIX A

*FROG, WHERE ARE YOU? (MAYER, 1969): PICTURE BY PICTURE DESCRIPTION*

1. Boy, dog and frog are in bedroom; boy and dog are watching frog who is in a jar.

2. Boy and dog are asleep in bed; frog is stepping out of the jar.

3. Boy and dog are awake and look at the empty jar from the end of the bed.

4. Boy looks in one of his boots; dog sticks his head in the jar.

5. Boy and dog are at window; boy is calling and dog has his head stuck in the jar.

6. Dog is falling from window ledge; boy is watching him fall.

7. Boy is down on ground below window holding dog; dog is licking boy's face and there is broken glass on the ground.

8. Boy is calling towards forest; dog is sniffing at a line of bees coming from a hive at the edge of the forest.

9. Boy is calling into hole in ground; dog is barking at bee hive.

10. Boy is holding his nose as if in pain; a little animal is at hole entrance; dog is leaning against bee hive tree.

11. Bee hive is on the ground and the bees are exiting en masse; boy is up a tree looking in a hole.

12. Boy is on his back on the ground; an owl is at the entrance to the hole in the tree; the bees are chasing the dog, who has run past boy.

13. Boy is holding his hand above his head as if to fend off owl, who is flying above him; boy is at the bottom of a large rock.

14. Boy is calling from the top of the rock; he is leaning on some things behind the rock that look like branches.
15. Boy is on top of a deer's head between its antlers (the "things" of the previous picture turn out to be these antlers); dog is almost entirely behind the rock where the deer is.

16. Deer is running towards a cliff with boy on his head; dog is running beside deer watching boy.

17. Deer stops at edge of cliff; boy and dog are falling over cliff towards a body of water.

18. Boy and dog splash into water.

19. Boy is sitting in the water with dog on his head; boy has hand to his ear as if listening to something.

20. Boy is leaning against a log and saying "Sh" to dog who is now in the water beside boy.

21. Boy and dog look over to the other side of the log.

22. Boy and dog are on top of the log; two adult frogs are on the other side.

23. Nine baby frogs have joined the adult frogs (who are looking like proud parents).

24. The frogs are on top of the log facing towards the water; boy and dog are walking through the water away from the log; boy, who has one of the baby frogs, is looking back towards the family of frogs and waving.

(Copied with permission from Brighouse, 1990.)
APPENDIX B

Sample Transcript

N: Researcher
S: Subject 4

First Telling, Subject 4

N  What's happening?
S  (Um um) (the) The dog looked at the frog.
N  Mmhmm.
S  (And then the) And then this boy sit down.
S  and watched.
S  He didn't know that.
N  [laughs] OK.
    Then what happened?
S  Mmm, (Then he) (And then he) And then he cried.
S  {taking off boots} I'm taking my boots off.
N  Are ya?
    OK.
All right.

What’s happening?

S (Um) (um) The frog is getting out and going.
S and then he’s putting the (Um) the boy’s (sh>) slippers on.
N Oh is he?
And then what?

S (um) Then the boy cried.
N Mmm.
S And he didn’t know that happened.
N Oh.
Do you wanna help turn the pages?

S Yah.
S And then he says, "Hmm? Where’s that frog?" .
N [laughs]
N Yah!
S (pointing to painting in room) Who’s is that picture?
N I don’t know, it looks like it says Ellen.
So then what happened?
What’s going on?

S He didn’t know that.
N Hmmm?
S He didn’t know that.
N What?

S He didn't know that.

N Oh, you help turn the pages.

S Nope.

N Yah.

S I don't want to.

N OK you tell me when to turn the page then OK.

S No.

N OK what's happening?

S And now he went out.

N Mmhmm.

S And then what happened is someone came out of (the) the bush.

N Really?

S Let's see.

N OK.

S Now.

(1s)

N What's going on?

S (Um) The wind is blowing.

S and then the trees are breaking.

S and getting like a monster.

N And what?

S (Um) the trees are blowing.
and they are getting like a monster.

Oh.

And it's night, right?

You think so?

What's going on?

(um) It's night!

Mhmm.

And the dog is angry.

(And h>) He's calling (is) for that boy.

I see.

Then what happened he said, "Huh?"

(Is the) (Is that boy) (Now the) Now that boy says, "Is there an animal here?"

(S goes under the table; negotiate S finishing the story: 21 s)

Now turn the page.

OK what's happening?

{changing position) I'm going to (st) (st) (n) stand up.

OK how about you kneel.

OK.

OK there we go.

All right.

(mm) And then he climbed up the trees

and went in a hole.
N  Really!
S  And now turn it.
S  Let’s look. (whispered)
S  There’s a owl!
N  Oh!
   And what else?
S  The end (?)
S  And there’s baby owls he has.
N  Mmhmm.
S  And the Mommy owl.
N  Really, and what else is going on?
S  (Um) The dog is running away.
N  Mmhmm.
S  (And th>) And then (s>) (um um) crocodiles get him.
S  Let’s see what happened.
S  Mmm!
N  Oops.
N  Mmhmm, what happened?
S  (um um um) (um) The snow (gr>) grewed up (to the) (he) (to the) to the cloud.
N  Oh wow.
   Then what?
S  Then he would get scared
S  and run back home.
N  Now what's happening?
S  (Um) The dog grew up like a deer.
     (1s)
S  (Uh) I mean there was a mean bad guy deer.
N  Whoa; what happened?
S  And the dog ran away.
S  (And that) And the boy caught on the deer.
N  I see.
     Then what?
S  He fell off.
S  and the dog (1s) on a cliff. [kllft]
N  Oh my goodness.
S  And it's a cliff.
N  Mmhmm.
S  And they are gonna fall in the water.
S  Yah I'm right!
N  {S is restless} Here come on over here.
     (laughs)
     Then what?
S  Aah! He thought it called.
S  Turn the page.
S  Look what happened. {whispered}
N  What's happening here?
S  (Um) He went in a wood.
S  And he cried and cried into a wood.
S  And (didn’t) (d>) didn’t know where he was.
N    And what?
S  And the dog and the boy went into this wood.
N    Oh, the wood?
S    Yah.
S    In to hide.
N    I see.
S    That’s where they wanted to go.
S    (Now the) And then they said, "Shoof!".
N    They said>
S    "Shoof!"
N    Oh.

What’s happening here?

(1s)
S    Frogs came.
N    I see.
S    They were happy.
S    (And then this) There (w>) was other babies.
S    What is this? (Pointing to FM equipment)
N    Let’s finish the story; it’s almost done.

(1s)
S And then (um) the frogs jump.
S Still stayed in the home.
S And then they went back home.
N I see.
S And turn the page.
S That's all!
Second Telling, Subject 4

S It's night now.
N You're right.

S And then this guy watched him.
N Mmhmm.

S And then one morning he said, "The Froggy is gone!"
N Yah.

S (He) The doggy looked in the frog jar.
N Mmhmm.

S And this guy looked in the boot.

S And no froggy.
N No? Oh no!
    OK.

S Turn the page.
N Turn the page.

S And now that guy look this guy.
N Mmhmm.

S And then this guy broke the glass.
N Mmm.
N Right.

S And then he said, "Froggy where are you?"
N Right, and what else?

S And then he looked in this other hole.
And then he looked in this hole.
And then there was an owl.
And a beehive.
Or a squirrel hive.

Oh.

Look what I (f>) saw!

And he bit his nose.
Oh! Ouch!
The beehive.

And then (this) the tree fell down.
And then all the bees chasing the dog.
Oh, look.

They said, "Froggy, where are you?" again.
Uh huh.

And it fell down.
And then the thing fell.

and it went Boom!

(laughs) Boom.

And (the) this guy said, "Froggy, where are you?"

Yah?

And then a owl came

and snapped he.
N   And what?
S   And some owls snap people.
N   Oh I see.
S   And then this guy ran away so fast.
N   Uh huh.
S   (And th>) And he holded on to the branches.
N   Uh huh.
S   and they weren’t
S   And it wasn’t a branch!
N   Oh! Oh goodness!
S   Oh no.
S   And then this guy threwed him down on the cliff.
N   Oh! Oh my goodness.
S   And then (this um) this guy laughed.
N   Hmm! Ha ha ha!
S   And this guy said, "Whoaaa!"
N   (laughs)
S   This guy said, "Woof woof!"
N   (laughs)
S   That’s what they said.
N   Oh!
S   And then this guy said, "Shhh!"
S   And then (the froggy) the froggy said, "Ribbit, ribbit"
S  XXXX
N  Mmhmm.
S  He said, 'Shhh!'
S  And he found him!
N  Ohh!
(2s)
Then what?
S  One, two, three, four, five, six, seven, eight, nine, ten, eleven.
N  And what's happening?
S  One (1s) jumped on this guy's hand.
N  Mmhmm.
S  And now they went away.
N  Oh I see.
### APPENDIX C
Subcategorized Form/Function Coding Pairs

Table C1. Numbers and percentages of reference to the boy and to the dog according to specified form and function, T₁ and T₂ (joint reference to boy and dog included)

<table>
<thead>
<tr>
<th></th>
<th>SWITC</th>
<th>MAINTAIN</th>
<th>SUM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T₁ (%)</td>
<td>T₂ (%)</td>
<td>T₁ (%)</td>
</tr>
<tr>
<td><strong>To the boy:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal</td>
<td>10 (13)</td>
<td>2 (6)</td>
<td>-- (0)</td>
</tr>
<tr>
<td>3$</td>
<td>2p</td>
<td>6$</td>
<td>26 (31)</td>
</tr>
<tr>
<td>Pronominal</td>
<td>43 (50)</td>
<td>65 (57)</td>
<td>9#</td>
</tr>
<tr>
<td>3a</td>
<td>2a</td>
<td>10#</td>
<td>3 (2)</td>
</tr>
<tr>
<td>Ellipsis</td>
<td>3 (2)</td>
<td>4 (2)</td>
<td>4 (4)</td>
</tr>
<tr>
<td><strong>Sum</strong></td>
<td>73 (65)</td>
<td>102 (65)</td>
<td>39 (35)</td>
</tr>
<tr>
<td><strong>To the dog:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal</td>
<td>35 (42)</td>
<td>20 (21)</td>
<td>-- (0)</td>
</tr>
<tr>
<td>4$</td>
<td>4$</td>
<td>1#</td>
<td>17 (28)</td>
</tr>
<tr>
<td>Pronominal</td>
<td>12 (27)</td>
<td>18 (36)</td>
<td>9#</td>
</tr>
<tr>
<td>3a</td>
<td>1a</td>
<td>10#</td>
<td>3 (3)</td>
</tr>
<tr>
<td>Ellipsis</td>
<td>-- (0)</td>
<td>-- (0)</td>
<td>3 (3)</td>
</tr>
<tr>
<td><strong>Sum</strong></td>
<td>65 (69)</td>
<td>64 (58)</td>
<td>29 (20)</td>
</tr>
</tbody>
</table>

# Joint reference to boy and dog (e.g. they, them etc.)
* Nominal reference to last mentioned character at beginning of new event or page
  a Appropriate use of pronominal reference in switch reference position
  p Proper noun
$ Deictic term (e.g. this/that X, a(n) X <after character previously established>)
Table C2. Numbers and percentages of reference to the boy and to the dog according to specified form and function, $T_1$ and $T_2$ (joint reference to boy and dog excluded)

<table>
<thead>
<tr>
<th></th>
<th>SWITCH</th>
<th></th>
<th>MAINTAIN</th>
<th></th>
<th>SUM</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$T_1$ (%)</td>
<td>$T_2$ (%)</td>
<td>$T_1$ (%)</td>
<td>$T_2$ (%)</td>
<td>$T_1$ (%)</td>
<td>$T_2$ (%)</td>
</tr>
<tr>
<td><strong>To the boy:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal</td>
<td>10</td>
<td>2</td>
<td>$- (0)$</td>
<td><em>1</em> (1)</td>
<td>13 (14)</td>
<td>11 (9)</td>
</tr>
<tr>
<td></td>
<td>3$(14)$</td>
<td>2p (8)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pronominal</td>
<td>43</td>
<td>65</td>
<td>26 (28)</td>
<td>36 (29)</td>
<td>72 (78)</td>
<td>103 (82)</td>
</tr>
<tr>
<td></td>
<td>3a (50)</td>
<td>2a (53)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ellipsis</td>
<td>3 (3)</td>
<td>4 (3)</td>
<td>4 (5)</td>
<td>8 (6)</td>
<td>7 (8)</td>
<td>12 (9)</td>
</tr>
<tr>
<td>Sum</td>
<td>62 (67)</td>
<td>81 (64)</td>
<td>30 (33)</td>
<td>45 (36)</td>
<td>92</td>
<td>126</td>
</tr>
<tr>
<td><strong>To the dog:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal</td>
<td>35</td>
<td>20</td>
<td>$- (0)$</td>
<td>1</td>
<td>39 (53)</td>
<td>27 (33)</td>
</tr>
<tr>
<td></td>
<td>4$ (53)$</td>
<td>4$ (30)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pronominal</td>
<td>12</td>
<td>18</td>
<td>17 (23)</td>
<td>33 (41)</td>
<td>32 (43)</td>
<td>52 (64)</td>
</tr>
<tr>
<td></td>
<td>3a (20)</td>
<td>1a (23)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ellipsis</td>
<td>$- (0)$</td>
<td>$- (0)$</td>
<td>3 (4)</td>
<td>2 (3)</td>
<td>3 (4)</td>
<td>2 (3)</td>
</tr>
<tr>
<td>Sum</td>
<td>54 (73)</td>
<td>43 (53)</td>
<td>20 (27)</td>
<td>38 (47)</td>
<td>74</td>
<td>81</td>
</tr>
</tbody>
</table>

* nominal reference to last mentioned character at beginning of new event or page
a appropriate use of pronominal reference in switch reference position
P proper noun
$ deictic term (e.g. this/that X, a(n) X <after character previously established>)