THE EFFICACY OF PARENT-FOCUSED LANGUAGE INTERVENTION:

A CASE STUDY

by

KAREN LIANE HOFF

B.A., The University of Western Ontario, 1993

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF

THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE

in

THE FACULTY OF GRADUATE STUDIES

The School of Audiology and Speech Sciences

We accept this thesis as conforming

to the required standard

THE UNIVERSITY OF BRITISH COLUMBIA

April 1995

© Karen Liane Hoff, 1995
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.

Department of Audiology and Speech Sciences

The University of British Columbia
Vancouver, Canada

Date April 27, 1995
ABSTRACT

The present study examined the influence of an individualized parent training program on parent behaviours presumed to facilitate language acquisition and the language development of a child with a language production disorder. A 10-week parent-focused intervention program based on the Hanen Early Language Parent Program (Manolson, 1985) was conducted. The results of the present study indicate that the parents were able to increase their use of techniques that are presumed to facilitate reciprocal interaction and language development. Changes in the parents’ communicative behaviours co-occurred with improvements in the social-communicative abilities and at least some of the linguistic abilities of the child. Findings from the present study have identified the need to clarify the impact of parent training programs on children’s communicative and linguistic development. A review of the literature indicates that individual responses to intervention may be masked by the presentation of group results. While this study makes no claims for general program efficacy, it does offer a method to evaluate program efficacy in single dyads.
TABLE OF CONTENTS

Abstract.........................................................ii
Table of Contents............................................... iii
List of Tables................................................... vii
Acknowledgement............................................... ix

CHAPTER

I. INTRODUCTION AND LITERATURE REVIEW................. 1

I. Introduction.................................................. 1

II. Developmental Language Disorders......................... 3

A. Definition.................................................... 3

B. Different uses of terminology.............................. 4

C. General vs. specific language impairment................. 5

D. The Issue of pathology vs. genetic endowment............. 6

E. Summary....................................................... 7

III. Early Identification of Language Disordered Children... 8

A. The relationship between prelinguistic cognitive skills and language................................................. 9

B. Expected vocabulary, syntax and phonology milestones by age two....................................................... 10

C. The development of discourse skills.......................... 13
V. Intervention Plan 53
   A. Goals of the program 53
   B. Program Design 58

III. RESULTS 60
   I. Cognitive Antecedents to Word Meaning 60
   II. Parent Indices 63
      A. Topic control 63
      B. Contingent responsiveness 64
      C. Mean length of longest utterance 64
      D. Sentence type 67
      E. Wait time 67
   III. Child Indices 69
      A. Semantic Development 70
      B. Phonological Development 74
      C. Morpho-syntactic development 78
      D. Response time 78
   IV. Parent and Child Indices 79
      A. Topic control 79
      B. Contingent responsiveness 80
      C. Mode of child turns 80
IV. DISCUSSION

I. Does an individual parent training program result in some modification of parental behaviours?

II. Is there measurable improvement in the language abilities of the child?
   A. Semantic development
   B. Phonological development
   C. Morpho-syntactic development
   D. Summary

III. If parental behaviours are modified, do they co-occur with an improvement in the child’s communication skills?
   A. Topic control
   B. Contingent responsiveness

IV. Significance of the Findings of the Present Study

V. Clinical implications

VI. Directions for future research

VII. Conclusions

V. BIBLIOGRAPHY

VI. APPENDICES

APPENDIX A: SEMANTIC RELATIONS CATEGORIES

Table A.1: Semantic Relations-Time 1

Table A.2: Semantic Relations-Time 2
<table>
<thead>
<tr>
<th>TABLE</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pre-intervention subject characteristics</td>
<td>37</td>
</tr>
<tr>
<td>2</td>
<td>Previous assessment information</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>Assessing linguistic behaviours (1987): CAWM</td>
<td>62</td>
</tr>
<tr>
<td>4</td>
<td>Parent responsiveness and topic control</td>
<td>65</td>
</tr>
<tr>
<td>5</td>
<td>Parent use of language facilitating behaviours</td>
<td>65</td>
</tr>
<tr>
<td>6</td>
<td>Mean length of longest utterance for parents</td>
<td>66</td>
</tr>
<tr>
<td>7</td>
<td>Parent sentence types</td>
<td>68</td>
</tr>
<tr>
<td>8</td>
<td>Wait time for parents</td>
<td>68</td>
</tr>
<tr>
<td>9</td>
<td>MacArthur-CDI (1991), Time 1</td>
<td>71</td>
</tr>
<tr>
<td>10</td>
<td>MacArthur-CDI (1991), Time 2</td>
<td>72</td>
</tr>
<tr>
<td>11</td>
<td>Semantic relations analysis</td>
<td>73</td>
</tr>
<tr>
<td>12</td>
<td>Consonantal inventory, Time 1</td>
<td>76</td>
</tr>
<tr>
<td>13</td>
<td>Consonantal inventory, Time 2</td>
<td>77</td>
</tr>
<tr>
<td>14</td>
<td>Response time for child</td>
<td>78</td>
</tr>
<tr>
<td>15</td>
<td>Responsiveness and topic control for parent and child</td>
<td>80</td>
</tr>
<tr>
<td>16</td>
<td>Mode of child turns</td>
<td>81</td>
</tr>
</tbody>
</table>
ACKNOWLEDGEMENTS

I wish to offer my sincere thanks to the following people:

The parents and child who participated in the intervention program. Their enthusiasm and interest were the motivation for this study.

My supervisor, Barbara Bernhardt. Your encouragement and generous support throughout the study and the past two years have been greatly appreciated.

Myrna MacKenzie at the West Main Health Unit, for her time and interest in the project.

Carolyn Johnson, my second reader, for her input and advice.

My friends and classmates, whose unfailing optimism and humour have been a tremendous support throughout the past year.

Finally, I would like to thank my family, especially my Mom and Dad, for their constant support, love, and patience. I wish to extend special thanks to my brother, David, whose strength has been an inspiration.
CHAPTER ONE
INTRODUCTION AND LITERATURE REVIEW

I Introduction

The acquisition of communication skills represents one of the most important developmental tasks that children must accomplish. Failure to acquire effective and appropriate communication skills may have life-long consequences for a child. Of considerable importance is the identification of behaviours or lack of behaviours observable in a 2-year-old child that allow us to predict later language learning difficulties. Fey (1986) notes that it is not difficult to predict that a child of two-and-a-half or three years of age who is not using any words will continue to show some language learning difficulties. However, when the child's problems are less marked, these predictions become increasingly difficult to make.

An important issue that arises for clinicians is deciding which 2-year-olds with slow speech development can confidently be left alone to "outgrow" the problem, and which should be monitored or provided with intervention. Paul (1991) states that "very little is known about the prognosis for 2-year-olds with delayed onset of language" (p.1). She notes that although spontaneous improvement does occur for some children, there are other 2-year-olds for whom early delays in language production presage long-term difficulty in language and school achievement.

Several researchers have noted that a language disorder identified in the preschool years has a strong predictive relationship to later learning disabilities (Rescorla, 1991; Scarborough & Dobrich, 1990; Paul, 1991). Thus, early
identification and remediation are essential for children who encounter difficulties in the acquisition of communication skills.

The field of speech-language pathology has long recognized the importance of involving parents in language intervention with young children (Parsons, 1991). In recent years, numerous language-based early intervention programs have emerged. A majority of these programs have involved some form of specific training for parents or caregivers. This is based on the premise that families can and should function as behavioural change agents for their own children (Trabue Fitzgerald, & Karnes, 1987). The primary goal of these programs has been to train significant others to facilitate language acquisition, through the use of adult-child interaction strategies utilized in functional exchanges in the home and preschool contexts.

Whether or not changes observed following such intervention programs are greater than might be expected by chance is frequently difficult to ascertain (Howlin, 1984). Simply demonstrating improvement between initial and final assessments is not sufficient, in itself, to demonstrate the effectiveness of therapy. A program must also demonstrate that improvements in the child's language skills co-occur with modifications in parental behaviour. This issue will be examined further in the following study. The present study examines the effectiveness of an individualized parent training program with the family of a child demonstrating slow productive language development. The issues surrounding developmental language disorders, early intervention, and the efficacy of parent training programs, will be discussed.
II Developmental Language Disorders

A. Definition

The term most frequently applied to infants when a question arises relative to skill learning is 'developmentally delayed' (Rossetti, 1986). This broad term may be used to describe infants with a delayed rate of acquisition in particular skill areas. The developmental delay may be global or may be related to a specific area. The term developmental disorder has also been applied when a developing skill is currently operating inefficiently or maladaptively.

When the skill in question is language acquisition the term 'language disorder' is often applied. This descriptor refers to a disruption in the learning or use of one's native language indicated by language behaviours inferior to that expected, given one's chronological age (Lahey, 1988). The key symptom of a language disorder is a developmental gap between language knowledge and achievement in other areas of learning (i.e. conceptual, social, motor-perceptual).

Lahey (1988) considers a language impairment to be a significant deficit in the child's level of development of the 'form,' 'content,' or 'use' of language, or in the interaction among these components. Children with a language disorder may demonstrate difficulties in the following areas:

a) formulating ideas or conceptualizing information about the world (content),
b) learning a code for representing what they know about the world (form),
c) using the code in speaking or understanding in certain contexts or for certain purposes (use).

These children may develop language later than their peers, or they may have
dysfunctions in one or more of the components (i.e. the content, form and use of language).

B. Different Uses of Terminology

There is no clear consensus on the definition of the terms used to describe the language of the child who is not learning language normally (Lahey, 1988). In addition to the term `language disorder,’ the current terminology also includes: `deviant language,’ `delayed language,’ `language disability,’ and `language impairment.’ When these terms are used as a diagnostic entity, professionals are generally referring to a child who is having difficulty learning language in the apparent absence of intellectual, sensory, or emotional problems. The etiology is either unknown or is presumed to be neurological (Lahey, 1988). These terms are also used as descriptive terms referring to language development unlike that of normal development in terms of onset and rate of development, behaviours learned, the sequence in which they are learned, and possibly relationships within and among the various subsystems of language.

1 The Issue of Deviance vs. Delay:

Language delay has been described as language development that is normal in all ways except that it begins later than expected or proceeds more slowly than expected (Lahey, 1988). The child uses the same forms to talk about the same ideas, in the same contexts, and for the same purposes as the child with normal language development.

Deviant speech, on the other hand, does not fit into a normal developmental sequence. Deviant phonological or syntactical constructions can occur in the absence of pathology, suggesting that the child is having difficulty making deductions from the sounds he hears or he is not able to make use of his deductions to build up his language system in a conventional manner (Byers Brown & Edwards, 1989). There does not appear to be any clear consensus as to clear definitions which might distinguish the two labels.

Leonard (1991) notes that the commonly used term `language delay’ is often interpreted as meaning that these children eventually catch up to their peers; that their language behaviour mirrors that of younger, normal children; and that with the exception of language ability, these children resemble same-age peers. However, Leonard notes that these children are not simply late in reaching early language milestones, but have limitations that may be long-standing, at least in the absence of intervention.
For the purpose of this discussion, I will be using the following definition when applying the term 'language disorder' (Lahey, 1988): "any disruption in the learning or use of the conventional system of arbitrary signals used by persons in the environment as a code for representing ideas about the world for communication" (p.21). In general, a language disorder will be considered to be a significant deficit in the child's level of development of the form, content, or use of language (Fey, 1986).

C. General Language Disorder vs. Specific Language Impairment

As previously discussed, language disorders can occur in children with mental retardation, autism or hearing impairment and are presumed secondary to the neurological states which underlie these syndromes. Yet, language delays may also occur in the "virtual absence" of other symptoms of disorder (Johnston, 1990, p.2). This latter condition is known as developmental dysphasia or specific language impairment (SLI). This group consists of children whose diagnostic label is selected principally on the basis of exclusion (Leonard, 1991). That is, they exhibit significant deficits in language ability but show no evidence of direct neurological involvement. Their hearing is within normal limits and they perform at age level on nonverbal tests of intelligence (Leonard, 1991).

Children with a specific language impairment demonstrate a primary deficit in language acquisition as compared to other aspects of development. They are not children who are generally low functioning, such as developmentally delayed children. Rather, these are children performing one standard deviation below the mean on standardized tests of language development, or are functioning at least six months
below their chronological age in language production and/or comprehension on
criterion-referenced tests or developmental scales (Olswang & Bain, 1991).

Children with a specific language impairment (SLI) exhibit considerable variation
in levels of proficiency in production and comprehension language abilities. Children
with SLI have been identified as a subgroup of language-disordered children due to the
absence of known etiological factors (Ellis-Weismer, 1990-1991). While a child with
cognitive deficits is characterized by delay in most, if not all, areas of development
(Lahey, 1988), the child with SLI appears to be developmentally delayed primarily in
language.

D. The Issue of Pathology vs. Genetic Endowment

Leonard (1991) notes that children diagnosed as specifically language impaired
(SLI) are generally assumed to have a disruption or defect in some peripheral or central
mechanism involved in language learning. However, Leonard claims that this is not
necessarily the case. Instead, he suggests that these children may simply be limited
in language ability in the same way that others may be poor in musical, spatial, or
bodily kinaesthetic ability. That is, these children merely fall at the low end of the
normal distribution in ability. Leonard proposes that the notion of a disorder or
disruption in the system need not be invoked to explain the existence of limited
language ability in some children. Rather, children may show the same range of
abilities in language as they do in other areas that do not customarily have a threshold
beyond which a defect is assumed.
Johnston (1991) agrees with Leonard that the notion of SLI need not include any reference to pathology, and that many children identified as SLI represent the low extreme of normally distributed language learning abilities. It is important to note that Leonard (1991) does not deny the potential effect of neuropathology on language acquisition, but instead argues that pathological malfunction is not the necessary nor only explanation for developmental language impairment. Similarly, Dale (1991) claims that language delay may be more accurately viewed as the product of predictable variation in child language development, rather than the result of a diseased or disrupted language-learning mechanism.

By way of contrast, Aram (1991) claims that although one subgroup of children with SLI may well constitute the lower end of the normal distribution of skills, this category is not unitary. That is, children with SLI may not represent a single clinical entity, but rather a cluster of subgroups whose overlapping and defining feature is that of a language impairment. The language impairment, which may or may not represent "disordered" language, is considered to be a problem either because language is the area of greatest relative deficit in comparison with other cognitive skills, or because of the value that society places upon communicative competence. Aram doubts that any single cause will explain more than a subset of the overall group of children with SLI.

E. Summary: Implications for Clinical Practice

Johnston (1991) states that clinical practice will not change drastically with the view that a specific language impairment may constitute the low end of the normal
distribution of skills. Children who have difficulty extracting the regularities of speech will need therapeutic language input that highlights these regularities, regardless of whether their difficulties stem from neuropathology or from limitations in normal genetic endowment.

Thus, it may be irrelevant in terms of language intervention whether or not children with global developmental delay and children with specific language impairment have different etiologies, in that they may show similar responses to language intervention. It may be necessary, however, to modify tasks for children with cognitive deficits, depending on other impairments.

III Early Identification of Language Disordered Children:

Tomblin (1983) claims that a child may be viewed as language impaired when the observed pattern of communicative performance exhibited enables a clinician to predict continued deficits in language development, and in the social, cognitive, educational or emotional developments that rely on language skills. In order to derive these predictions, the clinician must determine how the child is dealing with his everyday environment and then determine the extent to which problems in language may be contributing to the child's overall level of functioning. This view of language disorder makes it possible to identify children at very early ages, on the basis of nonlinguistic factors that are frequently associated with difficulties in language learning. At present there is little information concerning those prelinguistic and early
linguistic factors that reliably signal an increased risk for later language learning difficulties. This literature will be reviewed in the following section.

A. The Relationship between Prelinguistic Cognitive Skills and Language

The relationship between prelinguistic cognitive skills and later emerging linguistic behaviours is far from clear. However, there is agreement that children's first words and word combinations reflect knowledge of the world which has been acquired during the first two years of life (Olswang et al., 1987).

The presumed relationship between nonlinguistic cognitive development and language development becomes important when predicting later language learning difficulties in a 2-year-old child. Specific cognitive developments, such as the attainment of object permanence, are not necessary for the development of specific levels of linguistic performance. However, a child's performance on linguistic tasks is not likely to diverge greatly from development on related cognitive tasks (Fey, 1986).

Wetherby et al. (1988) observed that the frequency and type of communicative intentions may serve as an indicator of later linguistic difficulties. Thus, communicative intentions, even prior to the emergence of speech, have become an essential component of clinical assessment for children who do not use language or children at-risk for language delays (Coggins, 1991). Paul and Shiffer (1991) observed that children with Slow Expressive Language Delay produced significantly fewer communicative initiations, including nonverbal gestures and vocalizations, than did normal language learning children. However, the difference between the groups in
terms of expression of communicative intentions was a quantitative one, and limited to the intention primarily concerned with interaction for its own sake, rather than for the attainment of environmental ends.

B. Expected Vocabulary, Syntax and Phonology Milestones by Age Two

'Normal' language learning children exhibit communicative intentions by using gestures and nonconventional vocalizations. They express requests and protests and call attention to themselves and their actions before they say their first words at about 12 months (Chapman, 1981). First words are acquired slowly in production from 12 to 18 months, and although there is individual variation in the amount of overlap between the babbling stage and the speech stage, it seems that most children continue to babble for at least three to four months after the appearance of their first words (Paul, 1991). Throughout this early period, comprehension vocabulary size exceeds the number of words the child can produce (Paul, 1991).

Bloom (1973) notes that children often present evidence in their earliest use of words, of a simple awareness of objects. She described an observation made by Leopold (1949) of his daughter Hildegard’s speech, during the development from these ‘protowords’ to words. Leopold observed the use of a demonstrative interjection occurring at 8 months. This was later replaced by the demonstrative [d8] at 10 months, which was in turn replaced by [da] at 12 months. This form eventually became this at 18 months. Similarly, Bloom (1973) notes that her daughter Allison used a deictic form (i.e. protoword), often accompanied by a point, from 13 to 14
months, to denote existence. The word *there* was first recorded at 15 months to comment on the existence of objects.

Lahey (1988) notes that the point when children use single-word utterances has long been recognized as the first of the linguistic `developmental milestones.' She discusses the coding of object and relational knowledge with single-word utterances, as phase 1. Lahey states that for many children in phase 1, the words that are used most often and most consistently are words that code relations (e.g. *no*, *gone*). For example, some words (e.g. *this*, *that*) are used by children to refer to objects that exist, while others can be used to reject or deny (e.g. *no*); or to refer to locating objects (e.g. *up*). She notes that relational words are often produced more frequently than object names. In addition, the child also learns substantive words (i.e. words that name things of substance). The first nouns are often about things that move, and often make reference to one instance of an object rather than to a class of objects. During early phase 1, names of actions (i.e. verbs) are rare. Verbs tend to appear late in phase 1 or at the emergence of word combinations in phase 2. At this point, although a child may have a vocabulary of 20 to 50 words, a small core of these will be produced frequently, while others will appear infrequently. Towards the end of phase 1 an increase in vocabulary occurs as children seem to realize that everything has a name or label (Lahey, 1988).

When the child's productive vocabulary reaches about fifty words, at about 18 months on the average, two important things happen. Spoken vocabulary increases, rapidly or gradually, to an average of over one hundred and fifty words at 20 months (Dale et al. 1989) and to over two hundred words by about age 2 (Reich, 1986). By
30 months of age, this figure has risen to over 500 words (Stoel-Gammon, 1991). Second, children begin to combine words into two-word "telegraphic" utterances (Brown, 1973). These utterances encode a small range of semantic relations related to the child's developing cognitive notions, such as object permanence (allgone milk) and possession (my cookie). With respect to language production, children who fail to produce fifty words and two-word combinations at 24 months of age can be considered delayed in productive language development (Rescorla, 1991). The predicted Mean Length of Utterance (Miller, 1981) for normal language learning children ages 18 to 36 months, are as follows:

a) 18 mo. = 1.31
b) 21 mo. = 1.61
c) 24 mo. = 1.92
d) 30 mo. = 2.54
e) 33 mo. = 2.85
f) 36 mo. = 3.16

With respect to phonological development, Stoel-Gammon (1991) notes that by the age of two, children produce about 70% of their target consonants correctly. Children with normal language development produce about 14 different consonants between 18 to 24 months. This increases to 18 different consonants by 24 to 34 months (Stoel-Gammon, 1991). Paul and Jennings (1992) observed that 2-year-olds with slow development in language production had significantly fewer consonants in their phonetic inventories than normal toddlers. Toddlers with delayed language production skills showed less maturity in phonological production than their peers with
normal productive vocabulary size. This delay in phonological acquisition presages a substantial risk for phonological delay during the preschool period.

C. The Development of Discourse Skills

Foster (1986), notes that from a very early age, children make use of communication devices to initiate topics of conversation. She found that children initially attract attention to themselves as the topic of conversation. For example, they use simple attention getting strategies such as distress cries and eye gaze. Early in the first year, children begin initiating topics about items in the environment. Towards the end of the second year, "intangible" topics, such as requests for a future action, are initiated.

Foster also examined topic maintenance in children, ages 1 to 2;6. She found that children are initially capable of extended sequences only in the context of routines. Routines are situations in which adult interpretations are highly contextually relevant, and in which topic continuity is facilitated. By the time the children in her study reached 2;6, they were able to maintain coherent topics independently.

Fey (1986) notes that in normal development, contingent responding tends to occur earliest following questions. He found that high levels of responsivity were associated with high proportions of conversational acts that serve to maintain and extend the topic. Relatively large proportions of maintaining and extending utterances would indicate the child's willingness to attend to details of her partner's conversational acts and to consider those details in formulating her own responses.

With respect to turn-taking, Ervin-Tripp (1979) notes that by age two children
are capable of replying to adjacency pairs, such as greetings, yes-no questions, confirmation questions, control questions, or commands and offers. However, they have not yet developed acknowledgement markers like "I know," or many tying devices; they permit long gaps between turns, and their relevance constraints are often weak.

D. Summary of Communication Milestones

There is great variability in speech and language development in the first two years of life. A crucial question regarding rate of acquisition is: what is the minimum rate at which a child must be progressing to be considered "normal"? According to normal language acquisition research (Paul, 1991), by the age of two a child should:

a) frequently produce intentionally communicative acts,

b) have a productive vocabulary of at least fifty words and a substantially larger comprehension vocabulary,

c) have begun to put together multi-word utterances, and

d) be generally intelligible to those who know them well.

The research suggests that at 24 months, a child with a vocabulary smaller than fifty words or a phonetic inventory with only four to five consonants and limited variety of vowels is at least a "late talker" (Stoel-Gammon, 1991). By about 30 months, the decrease in intersubject variability provides a firmer database for clinical decisions regarding normalcy.
E. How to Identify Children with a Language Disorder

The first step in identifying a language disorder is to decide whether or not a child’s language performance is in accord with the child’s chronological age (Johnston, 1990). If the child is considered delayed, the second goal is to describe the child’s current language knowledge and the resources she will bring to the language learning task. Such a description is seen as the key to effective language intervention (Johnston, 1990). A third goal is to determine causes and correlates of the delay, if possible (e.g. hearing loss, general developmental delay, visual impairment). These causes or correlates may require specific management strategies other than language intervention.

Standardized assessment procedures may be necessary to establish language and/or cognitive delays; however, informal measures such as the systematic observation of spontaneous communication are the preferred tools for description (Fletcher, 1991). Standardized measures frequently underestimate the knowledge implicit in a child’s language usage. These measures often require metalinguistic and metacognitive skill and demand close adherence to established task procedures. Children are not able to pursue their own interests or demonstrate their own communicative intentions during standardized procedures. This is the type of knowledge that is crucial to intervention planning. Informal observation, on the other hand, can reveal more about a child’s real-life conceptual repertoire, attention span, problem solving abilities and social relatedness (Johnston, 1990). Once a young child has been identified as having a language disorder, various treatment approaches are available. Several early intervention approaches will be addressed in the next section.
The purpose of early intervention is to prevent, or at least to lessen, the biological or developmental problems that can result from various risk factors or conditions that predispose a child to a disability or handicap (Donahue-Kilburg, 1992). Positive outcomes of early intervention have been cited for both children and families. Several of these studies will be discussed later in this chapter, but first I will consider general approaches to language intervention, family-centred service and parent training programs.

A. General Approaches to Language Intervention

Various treatment approaches are available to provide services to young children with language disorders and their families. Fey (1986) describes three general approaches to intervention, referred to as: trainer-oriented approaches, child-oriented approaches, and hybrid approaches. Similarly, Johnston (1985) describes the concepts of 'Fit, Focus and Functionality' with respect to early language intervention in general. These approaches to language intervention will be discussed in the following section.

1. Trainer-oriented, Child-oriented, and Hybrid Approaches

Fey (1986) states that a trainer-oriented approach is one in which the clinician determines the goals of intervention and is in control of the language learning situation.
For example, the clinician determines the type and rate of presentation of stimuli, how the child must respond, and the specific contingencies that follow correct and incorrect responses. Trainer-oriented methods attempt to make direct and specific changes in the child's language abilities. Fey (1986) maintains that trainer-oriented approaches fall lower on the naturalness continuum than either child-oriented or hybrid approaches because of their inherent structure.

Child-oriented approaches, on the other hand, adopt the stance that what is learned, when it is learned, and how it is learned, is left to the child. The focus is on adjusting the relationships between the child and significant members of her environment, thereby increasing the frequency of positive, reciprocal communicative interactions. These positive interactions are assumed to increase the number of opportunities for communication and provide the framework through which language development can proceed at an optimal pace (Hart & Risley, 1980).

Hybrid approaches are attempts by clinicians to develop intervention activities that are highly natural yet still provide the clinician with opportunities to use procedures that will facilitate language learning (Fey, 1986). There is emphasis on the presentation of target forms in meaningful, naturally occurring contexts. Hybrid procedures are similar to child-oriented approaches in that parents are shown how to reach the selected specific goals by using nondirective forms of interaction and highly responsive patterns of verbalization.
2. **Fit, Focus, and Functionality**

A general approach to language intervention which addresses the needs of preschool-aged language disordered children is characterized by Johnston (1985). Johnston (1985) argues that the concepts of `Fit, Focus, and Functionality` are the key to successful language intervention with the preschool-aged child. Johnston states that children will learn language more readily when clinicians select language goals that target the appropriate language forms (Fit), facilitate active discovery of general patterns by simplifying the language input (Focus), and use naturally reinforced communication events (Functionality). Johnston notes that learning is more likely to occur when instructional experiences are designed to advance the child's knowledge one step beyond its current level, and when new information is pertinent to the child's "plan-of-the-moment" (1985, p.128).

Language intervention must also utilize focused linguistic input to narrow the child's search for order and simplify her rule formulation task (Johnston, 1985). By manipulating the frequency, salience and context of forms, the interventionist can draw the child's attention to relevant language input. By increasing the concentration and salience of a target in contexts that clarify meaning, demands on the child's attention and memory are reduced and, therefore, the likelihood that a child will discover the targeted pattern increases.

In general, Johnston notes that children learn language more readily when they see it function in the moment, when specific utterances spring directly from specific communicative intents, and when these intents are drawn from the world of the child. Given Johnston's view of language learning, a language interventionist `teaches` by
creating physical, communicative and linguistic environments in which a child can easily learn. The occasions for learning will be diverse in surface form and they may involve any number of people in the child's environment.

B. Family-Centred Service

Traditional language therapy has often been what Fey (1986) terms 'trainer-centred.' That is, the clinician interacts directly with the child in order to effect change. Currently, in the field of early intervention, there is movement away from an expert-driven, segregated service delivery model to a collaborative, integrated and functional model (Lewis et al., 1994). Parents, formerly "dependent passive participants," are now seen as the centre of the treatment team (Lewis et al., 1994, p.1). Family-centred service focuses on effecting change indirectly, not through the child, but through the family.

The Association for the Care of Children's Health (undated; in Donahue-Kilburg, 1992) defines family-centred care as:

"a philosophy that strives to support families in their natural caregiving roles by building upon their unique strengths as individuals and as families. It is a philosophy that promotes normal patterns of living at home and in the community. It is a philosophy that views parents and professionals as equals in a partnership committed to excellence at all levels of health care"(p. 85).

This perspective takes into account the mutual influencing factors that surround individuals and families and recognizes that change in one part of the system can affect the entire system. Proponents of this perspective suggest that intervention
should be aimed at changes in the broader-based social "system" rather than focused solely on the child.

This shift in focus stems from social interactionist theory which stresses the role of the child's environment throughout development (Bohannon & Warren-Leubecker, 1985). According to social interactionist theory, the child is assumed to bring innate predispositions to the language learning situation; however, social interactionists argue that innate mechanisms alone cannot explain children's mastery of language. Many social interactionists point to the nature of the speech directed to children as important in facilitating language development (Bohannon & Warren-Leubecker, 1985). Patterns of social interaction between mothers and infants are believed to be the basis of later conversational patterns (i.e. conversational turntaking).

Similarly, Girolametto et al., (1986) notes that language acquisition requires joint problem solving by parent and child. Children are viewed as learning and acquiring language through early dialogue skills such as turn taking, joint reference, topic initiation, and responsiveness. These social-conversational skills are seen to provide a structure that permits the child to extract meaning and linguistic rules from the adult's speech (Girolametto et al., 1986).

Several effects of dialogue skills emerge from studies of mother-child interaction (Girolametto et al., 1986). First, the dialogue nature of early social interaction has been found to facilitate the development of meaning and intentionality. That is, the shared joint focus and the temporal proximity of parental feedback help children make cognitive and linguistic comparisons between their acts and their parents' responses.
Second, the redundancy of turn-taking allows children to express or hear a meaning expressed in a variety of different ways.

It follows that children with well-developed dialogue skills elicit more linguistic input than do children with less developed skills. This increased quantity of conversational experience increases the rate of acquisition of both semantics and syntax. Therefore, the language learning child with well-developed dialogue skills appears better equipped to learn language at a fast rate, as well as receive qualitatively and quantitatively more language input, than a less interactive child.

In keeping with the social interactionist view of language acquisition, children having less well-developed dialogue skills are less able to profit from the linguistic environment. Both developmentally delayed and language delayed children have been found to demonstrate reduced ability to alternate turns and to initiate interaction (Girolametto, 1988). Parents, thus, may have fewer opportunities to provide contingent feedback on child-initiated topics. Girolametto (1988) observed mothers of language impaired children using faster-paced interactions, less contingent responsiveness to their child's nonverbal behaviour, and more topic control.

Of interest is a study conducted by Wellen and Broen (1982). The researchers observed that the older siblings of language impaired children were more likely to answer questions that were addressed to their siblings than were the older siblings of two groups of "language normal" children. These adaptations reduce the language impaired child's need to process language and to generate meaningful responses, which in turn may inhibit linguistic growth. The perceived importance of communicative interactions has led to intervention focusing on the communicative
strengths and needs of family members as they relate to their child’s communication disorder. The following principles underlie a family-centred approach (Crais, 1992):

1. Families are the constants in their children’s lives, while service systems and professionals may only be sporadic.

2. Services should be ecologically based and therefore focus on the mutual influence of the contexts surrounding the child and family.

3. Families should be equal partners with professionals in the assessment and intervention process.

4. Services should foster families’ decision-making skills and their existing and developing skills, while protecting their rights and wishes.

5. Professionals need to recognize the individuality of children and their families and to modify their own services to meet those needs.

Fey (1986) maintains that the most productive learning occurs when the child is highly motivated to communicate. The child’s needs to use language arise much more frequently at home and at school than in any clinical setting. Therefore, intervention that takes place in the home and involves the child’s parents and family members may be crucial in reaching the child’s basic goals. Numerous parent-focused programs have been developed to modify the interaction style of parents of children with language difficulties. These will be discussed in the following section.

C. Parent Training Programs

Clinicians and researchers have developed numerous parent-focused language intervention programs to modify the interaction style of parents of children with
language difficulties. These programs share the common goal of encouraging parents to become more responsive and less directive. Increased parental responsiveness to the child’s activity and reduced topic control is presumed to facilitate conversational participation and language development (Girolametto, 1988; Tannock, Girolametto & Siegel, 1992). For example, attending to an adult’s topic of choice may impose a heavy cognitive burden on a young child. However, if the adult continually monitors the child’s attention and uses the child’s focus as a source of topics, then fewer of the child’s cognitive resources need to be used decoding the adult’s message (Cross, 1977).

Parent-focused intervention programs assume that enhanced levels of parent responsiveness and decreased directiveness will provide increased opportunities for the child to interact (Girolametto, 1988; Tannock et al., 1992). In turn, these increased opportunities facilitate the child’s development of socio-interactional skills and accelerate language development.

There are numerous advantages to a child-centred, parent training approach (Girolametto et al., 1986). First, training parents to follow the child’s lead avoids task refusal, which in turn can reduce behaviour problems that often interfere with the learning process. Second, the approach guarantees joint reference, in that the parent shifts to whatever action or object the child is attending. Third, it enhances semantic contingency, thereby reducing the number of topic shifts. According to Cross, "there are consistent findings that parental semantic contingency is positively associated with progress in a number of aspects of children's language development" (1984, p.6).
Fey (1986) notes that child-oriented procedures free the child from adult constraints on the child’s learning and allow the child to direct available resources toward features of the adult linguistic input that she may be ready to learn. Because the adult’s language is closely matched to the child’s self-selected actions, objects of attention, and conversational topics, the relevant content-form-use interactions presented in the adult input should be learnable for the language-learning child.

The underlying premise of early language parent training programs is that the parents can best assist in analysing the behaviour from a functional perspective and best manage the contingencies that serve to reinforce behaviours (Coufal, 1993). Parents can maximize language learning opportunities that arise in everyday situations. Therefore, the primary goal of early language parent programs is to alter the parents’ interactive behaviour to facilitate communication in the home.

The trainer-oriented approach, where the clinician chooses specific language goals and controls the teaching process, may be suitable for children who have well-developed dialogue skills. However, a child-centred or hybrid approach is more effective for children with emerging and early language skills (Girolametto et al., 1986).

D. The Hanen Early Language Parent Program

The Hanen program (Manolson, 1985) is one well-known early language parent training program. It is a hybrid approach that begins with training on general facilitative play and incidental teaching techniques and proceeds to more specific goal-related activities (Fey, 1986). The Hanen approach is based on the premise that
children learn to communicate during the naturally occurring conversations of daily life. Children whose communication is not developing normally also need to learn language in this context, although the parents' input may have to be adapted and intensified. The program reflects a conversational model of language intervention that accepts dialogue skills as a prerequisite to language development (Rossetti, 1992).

The principles espoused by the Hanen parent training program were the basis of the intervention program in the present study (see chapter two, section V). This study attempted to promote the understanding and application of techniques presumed to facilitate language acquisition with the family of a child with a language disorder.

V The Efficacy of Parent-Centred Intervention

For parent-centred intervention to be worthwhile, a program must result in some modification of parental behaviour. In turn, modified parental behaviour must result in measurable improvement in the language skills of the child (Parsons, 1991). Fey (1986) notes that when taken at face value, the research literature paints a very positive picture of parent language intervention programs. However, the extent to which the two criteria noted above are met is not always well documented. Fey also cautions that many of the studies contain methodological weaknesses. Several studies documenting a range of effects and benefits of parent-centred programs will be examined in the following section.
A. How Well are Parents Able to Learn and Apply Techniques?

Most evidence supports the notion that parents function well as intervention agents (Rees, 1984; Donahue-Kilburg, 1992; Fey, 1986; Fey et al., 1993). For example, Girolametto (1986) examined the effectiveness of the Hanen Program with regard to the conversations of parents and their children. The mothers who participated in the 11-week Hanen Program adopted a conversational style that facilitated high levels of responsiveness, topic initiation, and turn-taking by their children. The trained mothers were more contingently responsive to their children's behaviour and reduced their topic control to a greater extent than did the control group of mothers, who received no training.

A similar study conducted by Girolametto (1988), found that mothers who received training exhibited greater responsiveness than the control group on measures of both verbal and silent contingent responsiveness. Maternal verbal responsiveness included semantically contingent responses to a child's verbal turn, and responsive comments to the child's nonverbal activity. Again, Girolametto (1988) observed a reduction in maternal topic control in the group of mothers who received training.

Cheseldine and McConkey (1979) demonstrated that lengthy parent training programs may not always be necessary to modify parental behaviour. They found that parents became successful facilitators after only a 30-minute discussion and videotape analysis with the clinician. The clinician then provided the parent with written and oral instructions on how to use the target forms in a stimulating but nondemanding manner.
In a recent study conducted by Tannock & Girolametto (1992) the researchers conclude that immediately following training, mothers tend to be:

1. More "in tune" with their child's abilities
2. More responsive to the child's focus and communicative attempts
3. Less controlling of the child's behaviour and focus of the interactional activities or conversational topics.

Although the reported changes in parental behaviour following training are impressive, parents' ability to implement intervention procedures at home and their ability to maintain the behaviours over the long term remain a concern. Hubbell (1981) cited an example of two families that had completed highly successful interventions in the home. Two months after the completion of the program, it was found that neither parents were still using the procedures. On a more positive note, it has been reported that when adequate professional support and follow-up is provided, parents are more likely to demonstrate continued use of new methods after formal training has been completed (Fey, 1986). Similarly, Rees states that sustaining home based teaching over many years, requires "a cohesive face-to-face support service" (1984, p.48).

Many studies have not carefully reported how well parents generalize the procedures to everyday situations. When monitoring has been done, some results have indicated that parents do not administer the procedures as trained (Fey, 1986). Cheseldine and McConkey (1979) demonstrated that contacts with the parents should be frequent and regular during the parent training period to ensure that the teaching strategies are being carried out appropriately. They suggest audio- or video-taping
several home sessions to assist in the transfer of parents' use of procedures to everyday situations. Concrete examples by means of video-tape are important to ensure that the information presented in any session is individualized according to the needs of the family and is as practical as possible.

Fey et al. (1993) conducted a study to determine whether children with language impairment make gains in the use of grammar when focused stimulation procedures are the primary technique used. They measured the extent to which parents mastered the use of one aspect of the training program, specifically, sentence recasts (i.e. expansions of the child's utterance). Although no significant differences were found in the parent-trainer subgroups, examination of individual scores revealed an important finding. The researchers found that children who made the most gains had parents who changed the least following treatment (i.e. they produced the fewest recasts). The researchers note that it may be that these parents learned and applied recasts early on but found them less appropriate to use as their children's language became increasingly complex. Therefore, parents tended to use fewer recasts with children who produced more grammatically complex utterances. They conclude that when parents take a large role in the intervention process, the child's progress must be carefully monitored and program adjustments be made where necessary as is typical in clinician-administered programs.

Finally, Tannock & Girolametto (1992) claim that their data "cast a shadow" (p. 65) over the positive findings based on group data, because they suggest that some parents adopt only one or two or the recommended strategies, and that many parents undergo appropriate changes in their interaction style without undertaking intensive
training. In other words, treatment effects may be obscured by considerable individual variability of group members.

B. Changes in a Child's Communication Abilities

As discussed previously, for a parent training program to be considered effective, a modification of parental behaviour must be accompanied by an improvement in the child's language skills.

Girolametto (1986) found that children whose parents had participated in the Hanen Program became more contingently responsive, initiated more topics, and ignored their mothers less often than a control group of children. They also used more verbal turns and a more diverse vocabulary than the control group of children. For these reasons, Girolametto suggests that several of the Hanen program objectives were met. First, mothers learned to follow their children's lead in the choice of topic and let their children initiate. Second, by providing more contingent feedback, their children became more actively involved in the interaction and more responsive themselves. Lastly, the mother-child dyads achieved a more balanced turn-taking ratio. This mutual responsiveness resulted in longer conversational exchanges that shared one topic.

Similar findings emerged in Girolametto (1988). He concluded that the parent-focused intervention programs fostered a facilitative maternal conversational style. In turn, this led to an increased amount of turn-taking, responsiveness, and topic control in the experimental group of children. Overall, the children in the experimental group
were found to have become more competent negotiators of dialogue. That is, they were more effective in maintaining a topic than the children in the control group.

However, several limitations of these studies have become apparent. For example, Girolametto (1988) employed a single sample methodology to assess pre- and post- changes in maternal and child behaviour. Video-taped samples taken in the home over several successive days may provide a more representative sample upon which to base conclusions about program effectiveness. Second, it is apparent from Girolametto’s data that mothers who improved did not necessarily have children who made gains. For example, looking at one individual mother-child dyad, it can be seen that while the experimental mother made dramatic decreases in topic control, her child’s communication and language abilities remained stable. In comparison, two experimental mothers who appeared relatively stable in their scores, had children with the highest levels of silent measures of contingent responsiveness. Therefore, it is misleading to conclude that the intervention program was responsible for gains in the child’s communication abilities. In spite of program claims, it can be difficult to discern a true treatment effect upon children’s language development.

Tannock, Girolametto & Siegel (1992) evaluated an interactive model of language intervention (i.e. the Hanen program) which instructed parents to use techniques that promote reciprocal social interactions and facilitate the development of communication and language abilities. The focus of their research was on children with overall developmental delays. Consistent with the interactive model, mothers in the treatment group became more responsive and less directive, and provided clearer linguistic models. These changes were accompanied by concomitant increases in
children's use of vocal turns. However, the researchers claim that while an interactive model may be a useful adjunct to other intervention approaches by instructing parents on how to promote children's use of existing abilities, it may have no effect on language acquisition by at least some children with overall developmental delays. In other words, many of the reported changes reflect aspects of communication rather than the acquisition of new linguistic structures.

It is important to note, however, that the claims made by Tannock et al. (1992) were based on children with overall developmental delays. The researchers admit that in two controlled studies performed by Weistuch & Lewis (1985, 1986), changes in language acquisition were observed. These results may have been due to the inclusion of children without any cognitive impairment (i.e. children with specific language impairment). The researchers state that it remains to be seen whether the interactive model of language intervention can enhance the development of new socio-interactional and linguistic abilities in children with global developmental delays.

Tannock & Girolametto (1992) state that many of the studies that have found positive child outcomes are flawed by the small number and limited range of dependent variables. For example, they note that Mean Length of Utterance (MLU) was used as the sole measure of child outcome in three out of six studies that assessed treatment effects in children's communicative and language abilities. Consequently, changes observed may have been attributable primarily to factors other than the parent training program.

Although alterations in parents' style of communication may be associated with increases in children's speech, conclusions about causality are highly tentative (Howlin,
In most cases the relationship may be complex. For example, linguistic training by parents may be responsible for some initial increases in the children’s use of speech. However, as the child’s communication grows, this may in turn influence parents’ responsiveness — leading to greater communication by their children. Casto and Mastropieri (1986) propose that while continuing to advocate for early intervention programs, researchers and practitioners should assume responsibility for improving the quality of efficacy research.

VI Summary

Children with specific language impairments have been identified as a subgroup of language-disordered children characterized by the absence of any known etiologic factors (Ellis-Weismer, 1990). For some reason, children with specific language impairment have not been successful at learning language. Therefore, an intervention program must focus on enhancing opportunities for language learning through modification of language input and structuring of communicative contexts to evoke specific language use. The results of most studies suggest that, if properly trained and if appropriate precautions are taken, parents can serve as powerful and effective intervention agents. Numerous parent training programs are evident in the literature. However, there is a need for more carefully controlled research on the effectiveness of parent intervention programs (Fey, 1986).
VII  Research Questions

The changes in parental behaviour reported across studies have been assigned a causal role in explaining concomitant improvements in the children’s communicative development from pre-test to post-test. However, improvements in child communicative measures relative to pre-test scores are subject to the effects of maturation, sampling, and other variables. It has become evident that simply demonstrating improvements in pre- and post-treatment assessments is not sufficient to demonstrate the effectiveness of therapy. For a program to be considered effective it must result in some modification of parental behaviour. This change must co-occur with measurable improvement in the communicative skills of the child. In clinical practice and in research paradigms, there is a need to measure objectively the effectiveness of a parent training program on each child’s communication abilities, for a given dyad, and eventually across dyads. Therefore, the present study was designed to investigate the following questions:

a) Does an individualized parent training program result in some modification of parental behaviour?

b) Is there measurable improvement in the communicative abilities of the child, beyond that expected due to maturation?

c) If parental behaviours are modified, do these behaviours co-occur with an improvement in the child’s communication skills?
A single case study was designed to examine one parent-child dyad, in order to determine whether or not the techniques trained co-occurred with increases in the child's communication skills.
CHAPTER TWO

METHOD

I Overview

This study investigated effects of an individualized parent training program on parental language facilitation behaviours and the language development of a child with a language production disorder. A parent-focused intervention program based on the Hanen Early Language Parent Program (Manolson, 1985) was conducted. The 10-week treatment program consisted of sessions solely with the parents in addition to sessions involving the parents and the child. The intervention focus was on parent education, promoting a facilitative interaction style. For purposes of clarity, both the initial and final data are presented together in chapter three.

The following research questions were examined:

a) Does an individual parent training program result in some modification of parent behaviours?

b) Is there measurable improvement in the communicative abilities of the child, beyond that expected due to maturation?

c) If parent behaviours are modified, do these behaviours co-occur with an improvement in the child’s communication skills?

II Study Design

The present study was conducted as a single case experimental design. This design provides a more intense study of individual subjects, specifically, single dyads. A series of baseline observations of the natural frequency of the behaviours under
study were collected. The baseline data served as a basis for determining the pre-
intervention level of behaviour, and for predicting what behaviour would be without
intervention (refer to chapter one for expected communication development in
children). The methodology of the present study determined the effect of parent-
focused intervention in one parent-child dyad.

III Participants
A. Family Constellation and General Problem

Participants included a preschool-aged child with a severe language production
delay and her parents. The child (whom we shall call Tina) had undergone speech and
language assessment prior to involvement in this study, although she had not received
specific speech-language remediation, nor had the parents received any training in
principles of language intervention (refer to Table 1 for details of subject information).

Tina (age 32 months at the time of initial contact), lives with her mother, father,
older sister (age 4) and younger sister (age 10 months). Both parents are university
graduates and are employed outside the home. English is the only language spoken
in the home. Recent audiological testing, when Tina was 23 months of age, indicated
normal hearing in a sound field.

The parents noted that Tina’s older sister was early to develop language (first
words at 10 months) and developed language rapidly. They reported that her older
sister tends to speak and do things for Tina. Finally, the investigator noted that a fast
rate of speech and complex utterances were characteristic of the family’s interaction
with Tina.
Table 1 -- Pre-intervention subject characteristics (32 months)

CA: 32 months

GENDER: Female

BIRTH ORDER: Second of three girls

FAMILY HISTORY: English-speaking
Father and mother employed outside the home

HEARING: Normal hearing in a sound field (9 months prior to study)

OTHER DEVELOPMENTAL HISTORY:
Unremarkable pregnancy
Delayed motor skills (4-to-5 month delay)
Low grade illness from 21 to 24 months of age

LANGUAGE:

Production (video transcript, ALB assessment and communication sample):
1. 10 word approximations
2. MLU of 1 morpheme per utterance for those utterances that were intelligible
3. Language production ability severely delayed

Comprehension (video transcript, MacArthur CDI and communication sample):
1. At least at a 24-month age level
2. Clinical impressions suggest comprehension is within age limits

PREVIOUS THERAPY

Some consultation about general language stimulation techniques with another speech-language pathologist
B. Child Description

Prior Assessment Information

1. General History and Motor Development

Previous reports and case history indicate an unremarkable pregnancy. At age 10 months Tina appeared to be developing slowly and her motor milestones were somewhat delayed. Tina sat alone at 7 to 8 months, crawled at 13 to 14 months, and walked alone at 16 months. Physiotherapy reports, when Tina was 19 months of age, indicate a motor delay of four or five months. Tina was followed by an Infant Development Program until her entry into preschool, the month before this study began.

An occupational therapy assessment when Tina was 28 months of age, requested a comprehensive neurological review because of the following symptoms:

a) mild tremor noted during fine motor activity

b) tic-like movement

c) continued developmental delay

d) difficulty developing accurate reach and release of objects

e) delay in language development

The neurological review had not been completed at the time of initial assessment.

In terms of general health, Tina's mother reports that Tina was ill from 21 months to 24 months of age, when she was eventually hospitalized. Reports indicated that Tina may have had a low grade illness such as infectious mononucleosis. Tina's overall health was good at the time of the investigator's involvement.
2. Communication Development

The parents reported that at age 15 months Tina could produce a few words, although nothing consistently. Tina was observed using a new word approximation a few times but did not continue to use it. She was referred for a speech and language assessment at age 23 months due to concern about her lack of speech. The Sequenced Inventory of Communication Development (SICD) (Hedrick, Prather & Tobin, 1975) was administered at this time. Tina's language comprehension was found to be age appropriate while her language production was severely delayed (refer to Table 2). Tina was reassessed prior to her entry into preschool and similar results were obtained (refer to Table 2).

Tina began preschool in an integrated classroom one month prior to the onset of this study and was followed by the preschool speech-language pathologist. Tina's parents were placed on a waiting list for the Hanen Parent Training Program, which was to begin at the end of this study.
Table 2 -- Previous Assessment Information

<table>
<thead>
<tr>
<th>CA</th>
<th>Test</th>
<th>Comprehension (RCA)</th>
<th>Production (ECA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>23 months</td>
<td>SICD*</td>
<td>24 months</td>
<td>12 months</td>
</tr>
<tr>
<td>27 months</td>
<td>SICD*</td>
<td>27 months</td>
<td>16 months</td>
</tr>
</tbody>
</table>

* The Sequenced Inventory of Communication Development (SICD) (Hedrick, Prather & Tobin, 1975)

---

Results of normative data indicate that one age interval (4 months) between the scores is not clinically significant. However, in the normative sample, only 17% of the subjects earned a Receptive Communication Age (RCA) and Expressive Communication Age (ECA) which differed from one another by two age intervals. Tina's RCA and ECA differ by two to three age intervals at both testing periods. Therefore, the difference between her language comprehension and production scores can be considered significant.
IV Procedures

A. Data Collection & Analysis

1. Communication Assessment

a. Standardized Testing

The Cognitive Antecedents to Word Meaning (CAWM) scale of the Assessing Linguistic Behaviours (ALB) (Olswang et al., 1987) was administered at Time 1 (32 months) and Time 2 (35 months) (data for Time 1 and Time 2 are reported in Table 3 of chapter three). Administration of the CAWM served as a control measure for change through maturation only.

The ALB was developed to assess children functioning at or below a 2-year level, and suspected of having problems related to language acquisition. These children are often difficult to test using conventional assessment instruments because of their limited verbal repertoire. The ALB recognizes the importance of assessing cognitive-social prerequisites for language and early developing linguistic forms in this population, and provides normative data for children up to the age of 24 months. Although Tina was 32 months at the time of the initial data collection, the ALB was chosen because she presented with a severe delay in language production. Specifically, the CAWM scale was chosen to determine whether or not Tina demonstrated the prerequisite verbal and nonverbal cognitive behaviours for commonly produced first words and word combinations. The CAWM scale examines the cognitive skills for three particular early emerging semantic notions and their related
pragmatic functions (i.e. Nomination, Agent & Location).

b. Communication Sample

Communication samples, approximately 20 minutes in length, were collected at Time 1 and Time 2, as additional data. The samples were collected informally during play interaction between the child and investigator, with occasional interaction between Tina, her mother, and her siblings.

Administration of the ALB and the communication sample took place in the home, using toys provided by the examiner and the parents. Both were video-taped using a JVC-GRAI videorecorder and Sony T-120ESD VHS videotapes.

c. Data Collected from Parents

The MacArthur Communicative Development Inventory (CDI)- Infant Form (Fenson et al., 1991) was chosen in order to involve the parents actively in the assessment process. The inclusion of parents in assessment is valuable in obtaining information about the child’s current level of functioning in everyday situations.

This instrument assesses a child’s vocabulary comprehension and production. The CDI-Infant Form provides normative data for children 8 to 16 months of age. This form was chosen despite Tina’s chronological age due to her severe delay in language production.

The CDI was completed over a two-week span. It was then collected, scored as a baseline measure, and returned to the parents, who continued to record changes over the span of the investigator’s involvement. Information about the child’s use of
communicative and symbolic gesture was also obtained. The parents were instructed to include signs and consistent word approximations as part of Tina’s productive vocabulary.

The parents also provided video-taped samples of communicative interactions during various routines within the home. To increase the likelihood that the video-taped samples were representative of the parent-child interaction style, a variety of different routines were taped, and the investigator was not present for the taping. The pre-intervention video-tape served as a baseline measure of the interaction style between Tina and her parents and as a teaching tool throughout the intervention program. Three scenes from the pre-intervention video-tape were transcribed and coded. These included: book reading, painting and an activity involving food. Three scenes of similar routines were transcribed and coded upon completion of the intervention program. The system used to code parent and child behaviours will be discussed later in this chapter.

d. Semantic Relations Analysis

To assess Tina’s communication abilities at Time 1 and Time 2, a semantic relations analysis was performed. The semantic relations categories used in this study were adapted from Retherford, Schwartz & Chapman (1981) and Olswang et al. (1987). The semantic codes described by Olswang et al. (1987) were designed to analyse multi-word utterances. Because Tina’s mean length of utterance (MLU) was 1 morpheme, their semantic coding system was supplemented with the analysis of one-word utterances described by Retherford, Schwartz & Chapman (1981).
semantic relations categories and their definitions are found in Appendix A.

The analysis of semantic content was based on semantic coding of all utterances produced in the following data:

i) ALB assessment

ii) communication sample

iii) three transcribed scenes from the video-tapes provided by the parents

The investigator examined the frequency of occurrence of semantic roles and the change in the acquisition of new semantic roles (i.e. vocabulary diversity). Table 11 of the chapter three summarizes the frequency of occurrence of each semantic role as a percentage of total roles used by the child.

e. Mean Length of Utterance

Tina’s Mean Length of Utterance (MLU) was calculated at Time 1 and Time 2. MLU was calculated as an indication of the rate at which language development occurred. At the early stages of development, increases in the grammatical mastery tend to result in utterances of increasing length (Wells, 1990).

f. Phonological Analysis

A nonlinear phonological analysis was performed to assess phonological development at Time 1 and Time 2. A nonlinear framework is one in which phonological units are organized hierarchically (Goldsmith, 1990; Bernhardt & Stoel-Gammon, 1994). This hierarchical representation organizes both prosodic
(suprasegmental) and segmental features onto their respective tiers. The prosodic tier concerns the syllable and word structure, whereas the segmental tier comprises the phonological features which make up the segments of the word. A nonlinear approach to phonological development provides a deep analysis of the child’s phonological system, in that it includes information about suprasegmental and segmental features of the child’s sound system. A nonlinear analysis also presents a graphic description of a child’s phonological system at a given time, in comparison with the adult target (Bernhardt, 1992). Refer to Tables 12 and 13 in chapter three, for Tina’s phonological inventory at Time 1 and Time 2. Refer to Appendix B for details of the phonological analysis.

g. Response Time

The length of time between an adult prompt and a child response was measured to determine change in response time at Time 1 and Time 2. Specifically, response time served to measure the child’s responsiveness.

h. Mean Length of Longest Utterance (Parents)

The Mean Length of Longest Utterance (MLUL) was calculated over five utterances for both parents independently, at Time 1 and Time 2. An average of both parents’ scores was also calculated. The MLUL was calculated as a rough indicator of length and complexity of parent utterances directed to the child.
i. Wait Time (Parent)

The amount of time between an adult question and an adjacent adult prompt (i.e. immediately following the previous utterance) was measured to determine change in wait time pre- and post- intervention. Specifically, wait time served as a measure of the parents' ability to wait for their child to respond.

j. Data Collected from Other Sources

Assessment of basic language concepts by the preschool speech-language pathologist, when Tina was 33 months of age, indicated that Tina's comprehension was in the low normal range. Based on reports of Tina from home and observation at the preschool, the preschool speech-language pathologist noted that this may be a conservative estimate of Tina's comprehension abilities. Her language production ability was found to be severely delayed relative to her age.

The preschool speech-language pathologist reported that Tina communicates using facial expression, gesture, sign, and some word approximations. Her voice is low in volume and she is tentative about verbalizing. However, she has been observed squealing loudly when excited or to attract attention. Tina also demonstrates appropriate pragmatic skills in a variety of social settings. She smiles, greets people and uses gesture to initiate social routines.
2. Coding Methods

a. The Coding System

Three scenes of the parent-child video-tape sample were selected for transcription and coding. Similar scenes were transcribed from Time 1 and Time 2. Intertranscriber reliability over two transcribers was conducted on 30% of the total transcript. The point to point agreement was 98% for transcription of verbal and nonverbal behaviours. With respect to coding, intercoder reliability was conducted on 26% of the total transcript. Initial agreement was 96% with disagreement relating to the categories of modelling and labelling. These categories were redefined and full agreement was reached. The transcripts were segmented into dialogue units (i.e. adjacency sets). Three consecutive communicative acts were considered a dialogue unit. For example, a dialogue unit may consist of: a parent initiated behaviour, a child response, and the parents' response to their own, or the child's previous turn (refer to Appendix C, D, and E for examples of the coding method). A communicative act included all words, word approximations, conventional gestures (pointing, nodding, showing, head shaking), actions, signs or vocalizations.

b. Parent Behaviours

Parental utterances were coded for sentence type (declarative, command etc), and use of behaviours presumed to facilitate language growth (e.g. modelling, labelling, expanding, etc.). Parental utterances were coded for sentence type in order to determine change, from pre- to post-intervention, in the proportion of sentence types used. Specifically, contingent responses (i.e. in Hanen, the notion of “Following the
child's lead") were examined by calculating the proportion of commands and yes/no questions relative to the proportion of open-ended questions and declaratives. Language facilitation behaviours, their rationale for inclusion, and the coding criteria are described below:

Imitation

Rationale for inclusion: Snow (1989) observed that interactive situations are created by imitation in the following way: when a parent imitates a child's sounds first, this initiates a chain of interaction with the parent imitating the child and the child imitating the parent. When the child begins to respond to these imitative interchanges, the parent can then try to initiate the exchange. However, there has not been a consensus in the literature as to whether imitation is important, or in what ways it could contribute to learning (Bloom & Lahey, 1978). Snow (1981) notes that imitation has been shown to support the acquisition of new vocabulary items and contribute to the acquisition of new syntactic and morphological forms. However, Nelson (1973) cautions that the facilitative role of imitation may be limited to specific stages of communicative development, and that there are individual differences with respect to imitative tendencies.

Coding Criteria: Imitation has been coded as E for echoic. Any utterance that repeats the other person's utterance of a preceding turn, exactly, is considered an imitation.
Example: (T = Tina; M = mother)

T: [hi]
M: [hi] (E)
T: (vocalizes)
M: (imitates vocalization) (E)

**Labelling**

Rationale for inclusion: Labelling and increased input have been found by some researchers to stimulate language growth (Hovell, Schumaker and Sherman, 1978). Although positive outcomes have been cited, it remains unclear as to how labelling facilitates language acquisition. For example, the facilitative effect of labelling may not be due to specific techniques of labelling but rather to the decrease in constraining behaviours such as questioning, commands, and directing the child’s activities (McConkey, 1979).

Coding Criteria: The use of words or statements to describe the environment or some current activity, without encouraging the child to utter the word, has been coded as L for label.

Example:
T: (makes kissing noises)
M: Oh, kisses! (L)

**Modelling**

Rationale for inclusion: Researchers have also observed that modelling works to stimulate language growth (Hovell, Schumaker and Sherman, 1978). Specifically, Whitehurst, Novak, & Zorn (1972) relate modelling to an increased use of the language element targeted. For example, modelling served as a form of indirect correction or
teaching by allowing the child to see the possibility for change, but not commanding change to take place. Again, it must be cautioned that not all children develop language in the same manner, and therefore this ‘teaching’ method may not suit the individual learning styles of all children.

Coding Criteria: Any utterance that repeats the semantic content of the child’s preceding utterance, but utilizes a more appropriate or advanced linguistic form (Parsons, 1991), and/or any utterance that carries the expectation of ‘teaching’ (i.e. encourages the child to say the word), has been coded as M for model.

Example:
T: [o] (pointing to cupboard)
M: Open (M)

Expansion

Rationale for inclusion: Expansions can be viewed as responding to the child just above her communication level (Manolson, 1985). Expansions serve as well formed models that a child is attending to at a particular moment. Expansions also serve to continue the topic initiated by the child. Cross (1978) reports that the level of expansions in parental input is positively correlated with child language acquisition. However, there are discrepancies in the literature regarding the facilitative nature of expansions. Other researchers have suggested that expansions of child utterances are unlikely to facilitate language acquisition unless they are simple enough for the child to recognize them as an interpretation of her own intention (Cross, 1978).

Coding Criteria: Any utterance that incorporates additional semantic material with an imitation (or model) of the child’s preceding utterance (Cross, 1977), has been
coded as Ex for Expansion. An expansion can be considered a contingent response to the child’s preceding utterance.

Example:
T: [o:] open
M: open cupboard mommy (Ex)

Prompting

Rationale for inclusion: The use of open ended questions and choice questions were encouraged to improve the quality of the child’s turn (i.e. yes/no questions often only elicited a head nod or shake). Wells (1990) notes that although there is little information about parents’ use of prompts, prompting to elicit information from children appears feasible.

Coding Criteria: Prompts are considered attempts to elicit information from the child in the form of open-ended questions (e.g. Wh-) or choice questions (e.g. Do you want juice or milk?). Prompts have been coded as P.

Example:
T: (points)
M: What’s there? (P)
T: [kʌ] candy

The interactive status of these behaviours was coded as Initiation (I), Response (R), Echoic (E), or Self Echoic (SE). The parent-initiated behaviours (i.e. topic control) were then measured as a proportion of the total number of dialogue units. Contingent responsiveness by the parents was measured by coding parent responses as one of the following:
i) contingent to the parents’ own previous utterance (Cs), for example (T = Tina, M = mother):

M: Oh that’s your favourite?
T: [ɓa] bus
M: Is that the best book? (Cs)

ii) contingent to the child’s previous utterance (Co), for example:

M: Close the fridge
T: (bangs door against stool)
M = Uh oh! stool! (Co)

The proportion of parent communicative acts that were contingent to the child’s previous response provided an objective measure of the parent’s contingent responses (i.e. ability to “Follow the child’s lead” and “Respond so the child learns”).

c. Child Behaviours

Child behaviours were coded as spoken word (SW), signed (S), vocalized (V), gestural (G), or action (A). The mode of turns (e.g. spoken word vs. gestural) was measured to determine change in the quality of turns, from Time 1 to Time 2.

The interactive status of child behaviours was coded as either Initiation (I), Response (R), Echoic (E), or Self Echoic (SE). These codes were chosen to determine the proportion of dialogue units consisting of child initiations relative to parent initiations, from Time 1 to Time 2.

Child responses were further coded as one of the following:

i) contingent to their own previous behaviour (Cs), for example:
T: [bʌ] bus
M: Is that your favourite book?
T: [bʌ] bus (Cs)

ii) contingent to the previous parent behaviour (Co), for example:

T: points in fridge
M: What do you see?
T: [kʌ] candy (Co)

The proportion of dialogue units that were contingent to the adult’s previous response (Co) provided an objective measure of the child’s responsiveness and ability to continue the conversation.

V Intervention Plan

A. Goals of the Program

The aim of the program was to provide the parents with practical suggestions about techniques for facilitating language growth in their child. The general goals of this program were:

1. To assist the parents in identifying strategies for developing a nondirective interaction style with their child. This involved increasing parental responsiveness and decreasing parental topic control to facilitate conversational participation and language development of the child.

2. To promote use of language facilitation techniques during daily routines and activities.
Parents were provided with the following incidental language teaching guidelines throughout the intervention period (adapted from McCormick & Schiefelbusch, 1984; Fey, 1986):

1. "Load" the communicative environment to model the target behaviours and respond to the child's communicative behaviours with language facilitating behaviours.
2. Expand vocabulary and concept activities to many different settings.
3. Arrange the environment to increase the probability that the child will initiate communicative interaction using the target behaviours.
4. Use language elicitation techniques to promote spontaneous language in ongoing activities and interactions.

The goals, specific objectives and general procedures are stated below (details of the sessions are included in Appendix F):

**Goal #1: To increase parental awareness of Tina's ability to communicate**

The underlying assumption of this goal is that increasing parental awareness of a child's attempts to communicate enables parents to fine-tune their responses to the child's level (Girolametto et al., 1986). When adults match their input to the child's language level, greater interaction and learning occurs (Mahoney, 1988). It is an important initial goal because language delayed children often offer nonlinguistic acts that are infrequently and inappropriately responded to by adults (Girolametto et al., 1986).

The specific objectives were:
1. For the parents to observe and record how and what their child communicates
2. For the parents to observe and record why their child communicates

General procedures involve completing communication observation reports and checklists (Manolson, 1985), and video-tape analysis and discussion. These procedures were designed to help the parents realize the variety of vocal, nonverbal and verbal behaviours that are communicative utterances.

Goal # 2: To increase parent responsiveness to the child's vocal, nonverbal, and verbal behaviours - "Follow the child's lead"

The underlying assumption of this goal is that contingent responses confirm the child's interest and provide relevant communication models (Girolametto et al., 1986). If the parent uses the child's focus as a source for topics, fewer of the child's cognitive resources are needed to decipher the adult's topic (Cross, 1977). Therefore, more of the child's resources are left over for language learning.

The specific objectives of this goal were for the parents to:

1. To develop dialogue skills
2. To interpret sounds and gestures
3. To organize the environment to prompt initiations

The procedures involved encouraging the parents to develop dialogue skills by being at Tina's physical level, waiting, observing and listening, thereby giving her an opportunity to initiate a topic. The parents were encouraged to organize the environment to prompt initiations, and to interpret sounds and gestures. Strategies such as imitating the child's action and sounds, and interpreting random sounds and
gestures were introduced. The parents were advised to respond to both communicative and potentially communicative topic initiations.

**Goal #3: For the parents to respond to the child's initiations so that the child learns**

The rationale for this goal is that reducing the parents' use of directive language behaviours such as limiting questions, demands and imperatives will facilitate conversational participation and language development by the child (Girolametto, 1988). Nondirective language behaviours and information presented at the child's level have been found to enhance language development by both normal and high-risk children (Girolametto, 1988). This goal comprised the major portion of the intervention program. Additional goals, summarized in the following sections, were covered to a lesser extent.

Specific objectives involved the development of nondirective parent behaviours such as labelling, modelling, and expansion (refer to Coding Methods for a definition of these terms).

General procedures involved encouraging the parents to use these techniques to promote reciprocal social interactions and facilitate the development of communication and language abilities of their child. The video-tape samples of the parents interacting with Tina were used to teach program strategies and provide individual feedback and suggestions to the parents.
Goal # 4: To improve parents' ability to engage their child in joint activities for a longer period of time, and thereby to take more turns on a given topic

The rationale for this goal is that by remaining involved in an interaction, a child has more opportunities to learn dialogue skill; take vocal, nonverbal, and verbal turns; and hear language related to her topic (Girolametto et al., 1986). The redundancy of the back and forth cycle of turn-taking allows a child to hear a meaning expressed in a variety of ways.

Specific objectives were:

1. For the parents to wait with expectation,
2. For the parents to cue Tina verbally to take a turn, and
3. For the parents to use questions appropriately (e.g. the concept of "open" vs. "limiting" questions was discussed).

The general procedures involved encouraging the parents to use these techniques to promote reciprocal social interactions. Video-tape viewing and analysis served to provide feedback and suggestions to the parents.

Goal # 5: To encourage the parents to preplan activities that incorporate the conversational strategies learned

The rationale for this goal is that language delayed children often require more opportunities for dialogue and learning than are available through the natural "give and take" of everyday interactions (Girolametto et al., 1986).
Specifically, child initiations were encouraged by creating a need for the child to communicate (e.g. "creative sabotage," such as putting the lid tightly on the bubbles or placing a desired object out of reach).

The general procedures involved the investigator and the family incorporating language stimulation techniques into routine activities (e.g. reading, singing, swimming, play). Practice of these techniques during familiar routines increases the likelihood that the newly acquired skills will be maintained in these situations.

B. Program Design

The intervention program lasted 10 weeks and consisted of three phases:

1. "Parent only" sessions:

   Initial evening visits took place at the family's home, for a period of three weeks (1 to 1.5 hours in length). Both parents attended these sessions. A typical session involved:
   a) session overview and introduction
   b) review of previous material
   c) new information
   d) analysis and discussion of video-tape

2. Parent and child sessions:

   Home visits with the parents and Tina took place immediately following the "parent only" sessions. The parents alternated weekly in terms of who interacted with
Tina. Two sessions involved the entire family. With the exception of one session, which took place at Tina's swimming lesson, all of the sessions took place within the home.

These sessions served to supplement and reinforce information provided in the initial visits, as well as to introduce new strategies. They were intended to provide additional support and feedback to the parents in the setting where they would be applied. The focus of these visits was on the practice of language intervention principles in daily routines. The investigator provided assistance by observing parent-child interactions, offering feedback and suggestions, and demonstrating specific techniques. Viewing the pre-intervention video-tape served to encourage the parents' self evaluation of their use of facilitative language strategies.

3. "Parent only" sessions:

Two concluding "parent only" sessions served to review language facilitation techniques and discuss strategies to be employed as Tina's language develops. A parent attitudes survey was also conducted (refer to chapter four, section VI).
CHAPTER THREE
RESULTS

The purpose of this study was to determine the impact, if any, of an individualized parent training program on one parent-child dyad. This study serves as a preliminary investigation, proposing a methodology to measure the effectiveness of a parent training program for single dyads. Program efficacy was measured in terms of the progress shown by the parents and the child, from Time 1 (32 months) to Time 2 (35 months). The parents' facilitative behaviours were not measured separately, with respect to program variables. However, this methodology is still assessing change within one "system" (i.e. one parent-child dyad).

I. Cognitive Antecedents to Word Meaning: Initial and Final Assessment Results

Nomination

At Time 1, Tina demonstrated the prerequisites for nomination with respect to giving, manipulating and vocalizing. She still "showed" objects, which should decrease after 21 months. She did not label objects which is considered a deficit performance at age 24 months\(^1\). At Time 2, Tina demonstrated all of the prerequisite nonverbal behaviours for commonly produced first words and word combinations.

\(^1\) Normative data is based on children functioning below two years of age. The cutoff age of 24 months has been used to determine whether or not the subject has the prerequisite nonverbal behaviours for commonly produced first words and word combinations.
behaviours for the nomination concept, including labelling. Results are summarized in Table 3.

**Agent**

At Time 1, Tina demonstrated behaviours expected between 9 to 15 months of age. A mature concept of agent (a directive recipient act with persistent or clear requesting behaviour) was not observed at this time. This concept is expected at age 21 months. At Time 2, Tina had at least one occurrence of a mature concept of agent. Therefore, she demonstrated the prerequisite behaviours for the Agent concept at this time. Results are summarized in Table 3.

**Location**

Tina demonstrated age appropriate prerequisite behaviours for the location concept at both Time 1 and Time 2. Results are summarized below in Table 3.
Table 3 -- Assessing Linguistic Behaviours: CAWM (Olswang et al., 1987)

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nomination</strong></td>
<td>- manipulating</td>
<td>- manipulating</td>
</tr>
<tr>
<td></td>
<td>- showing</td>
<td>- pointing</td>
</tr>
<tr>
<td></td>
<td>- giving</td>
<td>- giving</td>
</tr>
<tr>
<td></td>
<td>vocalizing</td>
<td>- vocalizing/verbalizing</td>
</tr>
<tr>
<td></td>
<td>vocalizing</td>
<td>- labelling</td>
</tr>
<tr>
<td><strong>Agent</strong></td>
<td>- single recipient acts</td>
<td>- directive multiple recipient acts</td>
</tr>
<tr>
<td></td>
<td>nondirective multiple recipient acts</td>
<td>mature agent concept</td>
</tr>
<tr>
<td></td>
<td>directive multiple recipient acts</td>
<td></td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td>- in</td>
<td>- in</td>
</tr>
<tr>
<td></td>
<td>- on</td>
<td>- on</td>
</tr>
<tr>
<td></td>
<td>- behind</td>
<td>- behind</td>
</tr>
<tr>
<td></td>
<td>- under</td>
<td>- under</td>
</tr>
</tbody>
</table>
II. Parent Indices

To answer the research question, "Does an individualized parent training program result in some modification of parental behaviour?", the examiner calculated pre- and post-intervention measures of topic control, contingent responses, Mean Length of Longest Utterance (MLUL), sentence type (e.g. commands, declaratives, questions), and wait time. To demonstrate a positive change in parent behaviour, we would expect:

a) a decrease in topic control
b) an increase in contingent responses
c) a decrease in MLUL
d) a decrease in commands and yes/no questions, and a concomitant increase in declaratives and wh-questions
e) an increase in wait time

To measure change in parent behaviour, the proportion of dialogue units consisting of parent initiations (topic control) and parent responses that continued the child's turn (contingent responses) was calculated. The MLUL for both parents, and the proportion of sentence types as a total of all parent utterances, was also calculated.

A. Topic Control

As shown in Table 4, the parents differed from Time 1 to Time 2 in the proportion of dialogue units that were initiations. The proportion of dialogue units
initiated by the parents decreased from Time 1 to Time 2. That is, the parents demonstrated decreased topic control from Time 1 to Time 2.

B. Contingent Responsiveness

As shown in Table 4, the parents differed from Time 1 to Time 2 in the proportion of dialogue units that continued the preceding child behaviour. The use of contingent responses increased from 33% at Time 1 to 83% at Time 2.

The parents also differed from Time 1 to Time 2 in the proportion of total parental utterances that consisted of specific language facilitating behaviours (e.g. model, label, echoic, expand, prompt). Refer to Table 5 for a summary of the results. The proportion of all specific language facilitating behaviours, used by the parents, increased from Time 1 to Time 2.

C. Mean Length of Longest Utterance (MLUL)

As shown in Table 6, the mean length of the longest parental utterances, differed from Time 1 to Time 2. The MLUL decreased for both parents from Time 1 to Time 2.
Table 4 -- Parent responsiveness and topic control (% of total dialogue units)

<table>
<thead>
<tr>
<th></th>
<th>Time 1 (n = 165)</th>
<th>Time 2 (n = 138)</th>
</tr>
</thead>
<tbody>
<tr>
<td>% initiations (topic control)</td>
<td>73</td>
<td>27</td>
</tr>
<tr>
<td>% continue (contingent responsiveness)</td>
<td>33</td>
<td>83</td>
</tr>
</tbody>
</table>

Table 5 -- Parent use of language facilitating behaviours (% of total parent utterances)

<table>
<thead>
<tr>
<th></th>
<th>Time 1 (n = 172)</th>
<th>Time 2 (n = 142)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>6</td>
<td>27</td>
</tr>
<tr>
<td>Label</td>
<td>21</td>
<td>27</td>
</tr>
<tr>
<td>Echoic</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>Expand</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Prompt</td>
<td>2</td>
<td>14</td>
</tr>
</tbody>
</table>
Table 6 -- Mean Length of Longest Utterance for Parents

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother</td>
<td>9*</td>
<td>7</td>
</tr>
<tr>
<td>Father</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Average</td>
<td>9</td>
<td>6</td>
</tr>
</tbody>
</table>

* number of words
D. Sentence Type

As shown in Table 7, the proportion of the parents use of commands, declaratives, yes/no questions, and Wh-questions, differed from Time 1 to Time 2. At Time 1, the proportion of commands and yes/no questions was higher than the proportion of declaratives, Wh-questions, and Other (e.g. stock phrase). At Time 2, the proportion of declaratives was greater than the proportion of other sentence types. The proportion of Wh-questions increased, while the proportion of commands decreased. The proportion of yes/no questions remained relatively the same, from Time 1 to Time 2.

E. Wait Time

The length of time between two consecutive adult turns (e.g. a question followed by a further prompt) at Time 1 and Time 2, is summarized as a percentage in Table 8. The use of wait times less than one second decreased at Time 2. The use of wait times between 1 to 3 seconds is about the same for Time 1 and Time 2.
Table 7 -- Parent Sentence Type (% of total parent utterances)

<table>
<thead>
<tr>
<th>Sentence Type</th>
<th>Commands</th>
<th>Declarative</th>
<th>Y/N</th>
<th>Wh</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1 (n = 172)</td>
<td>30</td>
<td>24</td>
<td>27</td>
<td>3</td>
<td>16</td>
</tr>
<tr>
<td>Time 2 (n = 142)</td>
<td>3</td>
<td>42</td>
<td>34</td>
<td>18</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 8 -- Wait Time for Parents

<table>
<thead>
<tr>
<th>Time in seconds</th>
<th>&lt;1</th>
<th>1-3</th>
<th>4+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1</td>
<td>38</td>
<td>62</td>
<td>0</td>
</tr>
<tr>
<td>Time 2</td>
<td>21</td>
<td>68</td>
<td>10</td>
</tr>
</tbody>
</table>
III. Child Indices

To answer the research question, "Is there measurable improvement in the language abilities of the child?", the experimenter calculated pre- and post-intervention measures of semantic development, phonological development, and morpho-syntactic development. To demonstrate a positive change we would expect:

a) an increase in the number of words and semantic categories produced
b) an improvement of the phonological inventory
c) an increase in MLU
d) an improvement in response time

To measure changes in productive and comprehension vocabulary development, the total words produced and understood was determined using the MacArthur CDI-Infant Form (1991). To measure vocabulary diversity, the total number of words produced, and the diversity of semantic categories produced, was analysed. A nonlinear phonological analysis was performed to assess phonological development, and Mean Length of Utterance (MLU) was calculated to assess the child’s morpho-syntactic development. The length of time between an adult prompt and a child response was calculated to determine the child’s responsiveness.
A. Semantic Development

1. Vocabulary Production and Comprehension

As shown in Table 9 and 10, productive vocabulary development as measured by the MacArthur CDI (1991), increased from 26 words (language age of 15 months) at Time 1, to 80 words (language age above 16 months) at Time 2. Vocabulary comprehension remained relatively the same from Time 1 to Time 2 (above the ceiling both times.)

2. Semantic Relations

As shown in Table 11, the total number of words produced at Time 1 was 28, and at Time 2, was 138. With respect to the type of semantic categories produced, the child demonstrated the use of seven different semantic categories, at Time 1. This increased to eleven different semantic categories at Time 2. The majority of words produced at Time 1 were in the demonstrative category (54%), while at Time 2, the majority of words were nominals (28%). Refer to Appendix A for details of the semantic relations analysis.
Table 9 -- MacArthur-CDI (1991), Time 1

<table>
<thead>
<tr>
<th>Child's name</th>
<th>Tina</th>
<th>Test date</th>
<th>95-11-03</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of birth</td>
<td>92-02-25</td>
<td>Age in Months</td>
<td>32</td>
</tr>
</tbody>
</table>

**Part I / Early Words**

A. First signs of understanding
   1. Responds when name is called: Yes
   2. Responds to "no no": Yes
   3. Reacts to "there's mommy/daddy": Yes

B. Phrases Understood: Number 28 Score above ceiling*

C. Starting to talk
   1. Imitation: Yes
   2. Labeling: No

D. Vocabulary Checklist
   1. Words understood: Number 387 Score above ceiling*
   2. Words produced: Number 26 Score language age = 15 months

**Part II / Actions and Gestures**

A-B. Early Gestures: Number 16 Score above ceiling*

C-E. Later Gestures: Number 37 Score above ceiling*

* Use of the CDI for developmentally delayed children is only recommended when the child's scores do not exceed the median scores for 16-month-olds. Scores reported as "above ceiling" indicate that the child's scores are above an average 16-month level.
Table 10 -- MacArthur-CDI (1991), Time 2

<table>
<thead>
<tr>
<th>Child's name</th>
<th>Tina</th>
<th>Test date</th>
<th>95-01-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of birth</td>
<td>92-02-25</td>
<td>Age in Months</td>
<td>34</td>
</tr>
</tbody>
</table>

Part I / Early Words

A. First signs of understanding
   1. Responds when name is called: Yes
   2. Responds to "no no": Yes
   3. Reacts to "there's mommy/daddy": Yes

B. Phrases Understood: Number _28_ Score _above ceiling*_

C. Starting to talk
   1. Imitation: Yes
   2. Labeling: No

D. Vocabulary Checklist
   1. Words understood: Number _392_ Score _above ceiling*_
   2. Words produced: Number _80_ Score _above ceiling*_

Part II / Actions and Gestures

A-B. Early Gestures: Number _18_ Score _above ceiling*_

C-E. Later Gestures: Number _43_ Score _above ceiling*_

* Use of the CDI for developmentally delayed children is only recommended when the child's scores do not exceed the median scores for 16-month-olds. Scores reported as "above ceiling" indicate that the child's scores are above an average 16-month level.
Table 11 -- Semantic Relations Analysis

<table>
<thead>
<tr>
<th>Semantic Relations Category</th>
<th>Time 1</th>
<th></th>
<th>Time 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of occurrences</td>
<td>%</td>
<td># of occurrences</td>
<td>%</td>
</tr>
<tr>
<td>Nomination</td>
<td>3</td>
<td>11</td>
<td>38</td>
<td>28</td>
</tr>
<tr>
<td>Action</td>
<td>1</td>
<td>4</td>
<td>21</td>
<td>15</td>
</tr>
<tr>
<td>Agent</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Demonstrative</td>
<td>15</td>
<td>54</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Modifier</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Recurrence</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Possession</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Stative</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Location</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Negation</td>
<td>4</td>
<td>14</td>
<td>26</td>
<td>19</td>
</tr>
<tr>
<td>Affirmation</td>
<td>2</td>
<td>7</td>
<td>20</td>
<td>14</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>7</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>28</td>
<td></td>
<td>138</td>
<td></td>
</tr>
</tbody>
</table>
B. Phonological Development

1. Prosodic Level

At Time 1, the maximum word shape produced was CVCV, while the typical word shape was CV. With the exception of one occurrence of CVC ("yum"), only open syllables were produced. There were no changes in syllable shape from Time 1 to Time 2. At Time 2, the maximum word shape was CVCV, while the typical word shape was CV. All words had open syllables. Refer to Appendix B for details of the word shape analysis.

2. Segmental Level:

The consonantal inventory at Time 1 is summarized in Table 12 (refer to Appendix B for details of the phonological analysis). At Time 1, segments included: [m,n,p,d,k,g,j]. The following features were established:

Root Node: [ + cons], [ + nasal], [ + sonorant]
Laryngeal Node: [ + voice]
Place Node: Labial, Coronal, Dorsal

At Time 1, there was an overriding [ + voice], Coronal default. The proportion of spontaneous to imitated utterances is as follows: 66% spontaneous, 33% imitated.

The consonantal inventory at Time 2, is summarized in Table 13 (refer to Appendix B for details of the phonological analysis). Segments at Time 2 included: [m,n,p,b,t,d,k,g,j,ts,w,j,?].
The following features were present:

Root Node: [+ cons], [+ nasal], [+ sonorant], [+ cont] (with and without branching)

Laryngeal Node: [+ voice], [+ constricted glottis]

Place Node: Labial, Coronal, Dorsal

The proportion of spontaneous utterances to imitated utterances is as follows: 83% spontaneous, 17% imitated.
Table 12 -- Phonological Analysis: Consonantal Inventory, Time 1

<table>
<thead>
<tr>
<th></th>
<th>WI</th>
<th>IW</th>
<th>FW</th>
<th>WF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nasals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lab</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cor</td>
<td></td>
<td>n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>StOPS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lab (-, + vc)</td>
<td></td>
<td>p</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cor (-, + vc)</td>
<td></td>
<td>d</td>
<td>d</td>
<td></td>
</tr>
<tr>
<td>Dors (-, + vc)</td>
<td></td>
<td>k</td>
<td>g</td>
<td></td>
</tr>
<tr>
<td>Fric/Affric</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lab (-, + vc)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cor (-, + vc)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liquids</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>/l/</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>/r/</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glides</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lab</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cor</td>
<td></td>
<td></td>
<td></td>
<td>j</td>
</tr>
</tbody>
</table>

Notes:
underlined - both phoneme and substitution
WI - word initial
IW - syllable initial-within-word
FW - syllable final-within-word
WF - word final
Table 13 -- Phonological Analysis: Consonantal Inventory, Time 2

<table>
<thead>
<tr>
<th></th>
<th>WI</th>
<th>IW</th>
<th>FW</th>
<th>WF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nasals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lab</td>
<td>m</td>
<td>m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cor</td>
<td>n</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stops</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lab (-, + vc)</td>
<td>p</td>
<td>b</td>
<td>b</td>
<td></td>
</tr>
<tr>
<td>Cor (-, + vc)</td>
<td>t</td>
<td>d</td>
<td>d</td>
<td></td>
</tr>
<tr>
<td>Dors (-, + vc)</td>
<td>k</td>
<td>g</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fric / Affric</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lab (-, + vc)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cor (-, + vc)</td>
<td></td>
<td>sh, ts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dors (-, + vc)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liquids</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>/l/</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>/r/</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glides</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lab</td>
<td>w</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cor</td>
<td>j</td>
<td>l</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glottals</td>
<td></td>
<td>?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
- underlined - both phoneme and substitution
- double underlined - substitution only
- WI - word initial
- IW - syllable initial-within-word
- FW - syllable final-within-word
- WF - word final
C. Morpho-Syntactic Development

There was no change in Mean Length of Utterance (MLU) from Time 1 to Time 2. The MLU is 1.0, at both Time 1 and Time 2. Word approximations are the only productions, and no word combinations are present at either time.

D. Response Time

The length of time between an adult prompt and a child response, is summarized as a percentage, at Time 1 and Time 2, in Table 14.

Table 14 -- Response Time for Child

<table>
<thead>
<tr>
<th>Time in seconds</th>
<th>&lt;1</th>
<th>1-3</th>
<th>4+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1</td>
<td>21</td>
<td>79</td>
<td>0</td>
</tr>
<tr>
<td>Time 2</td>
<td>19</td>
<td>79</td>
<td>2</td>
</tr>
</tbody>
</table>
To answer the question, "If the parental behaviours are modified, do these behaviours co-occur with an improvement in the child’s communication skills?", it must be established that a decrease in topic control by the parents co-occurs with an increase in child initiations. An increase in contingent responses by the parents must also co-occur with increased responsiveness by the child. Parental topic control was measured by calculating the proportion of total dialogue units of which the parents initiated the topic. This was then compared to the proportion of dialogue units in which the child initiated a topic. Parental contingent responsiveness was calculated by determining the proportion of dialogue units which continued the child’s preceding turn. This was then compared to the responsiveness of the child (i.e. the proportion of dialogue units that continued the previous adult turn).

A. Topic Control

As shown in Table 15, the child differed from Time 1 to Time 2, in the proportion of dialogue units that were initiations. At Time 1, a high proportion of parent initiations (73%) co-occurred with low proportion of child initiations (27%). At Time 2, fewer parent initiations (37%) (i.e. decreased topic control), co-occurred with a high proportion of child initiations (63%).
B. Contingent Responsiveness

As shown in Table 15, a low proportion of contingent parental responses, at Time 1, co-occurred with a low proportion of contingent child responses. At Time 2, an increased proportion of contingent responses by the parents co-occurred with an increased responsiveness by the child. That is, there was an overall increase in the proportion of contingent responses to the other person’s previous turn.

Table 15 -- Responsiveness and Topic Control for Parent and Child (% of total dialogue units)

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents</td>
<td>73</td>
<td>37</td>
<td>Parents</td>
<td>42</td>
<td>63</td>
</tr>
<tr>
<td>Child</td>
<td>27</td>
<td>60</td>
<td>Child</td>
<td>83</td>
<td>60</td>
</tr>
</tbody>
</table>

C. Mode of Child Turns

The mode of turns at Time 1 and Time 2, as a proportion of the total number of child’s turns (responses and initiations), is summarized in Table 16. The total proportion of spoken words, and spoken words combined with gestures or actions, increased from Time 1 to Time 2. The proportion of gestures, vocalizations or, action responses, or a combination of these, decreased from Time 1 to Time 2.
Table 16 -- Mode of Child Turns (proportion of the total number of child turns)

<table>
<thead>
<tr>
<th>Mode of Turn</th>
<th>Time 1</th>
<th>Time 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spoken word</td>
<td>6</td>
<td>37</td>
</tr>
<tr>
<td>Spoken word - unintelligible</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Spoken word + Gesture</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Spoken word + Action</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Gesture</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Vocalize</td>
<td>16</td>
<td>12</td>
</tr>
<tr>
<td>Gesture + Vocalize</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Action</td>
<td>53</td>
<td>26</td>
</tr>
<tr>
<td>Action + Vocalize</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>
CHAPTER FOUR
DISCUSSION

The present study examined the influence of an individualized parent training program on parental language facilitation behaviours, and the language development of a child with a language production disorder. A methodology to measure the effectiveness of a parent training program for single dyads was designed. The results of the present study indicate that the parents were able to increase their use of techniques that are presumed to promote reciprocal interaction and facilitate language development. With respect to child outcomes, results indicate change in both phonology and semantics following intervention. Positive outcomes were also found in the child's social-communicative ability and in the mode of turns. However, treatment effects for the morpho-syntactic ability of the child were not found. The following discussion will address the research questions proposed in chapter one, in terms of the results of the present study.

I Does an individual parent training program result in some modification of parental behaviours?

The results indicate that the parents improved on all measures of the behaviours targeted. With respect to topic control, following the intervention program the parents demonstrated a reduction in the proportion of dialogue units that were parent-initiated. In keeping with the program goals, the parents showed an increased ability to "Follow
the child's lead," by observing, waiting, and listening to their child, thereby giving her
a chance to initiate. With respect to parental contingent responsiveness, following the
intervention program, the parents demonstrated an increased ability to respond to the
child's preceding behaviour, thereby continuing the 'conversation' initiated by the
child. For example,
a) Time 1 (D = father; T = Tina):

D: (reading a story)
T: (drops book onto floor, looks down, vocalizes)
D: (continues reading story)

b) Time 2 (D = father; T = Tina):

T: (puts brush in paint)
D: Paint
T: (painting)
D: Painting with blue paint
T: (picks up cloth, wipes picture)
D: Want to clean?

The parents demonstrated an increased awareness of the child's communication
abilities. Post-intervention, the parents showed increased ability to respond to both
communicative and potentially communicative acts. For example, the parents' use of
imitation (echoic), increased from 1% to 11%, following intervention. Interactive
situations were created where the parent imitated the child's sound or action, and the
child in turn imitated the parent. For example,

Time 2 (M = mother; T = Tina):

T: [hi]
M: [hi]
T: (vocalizes)
M: (imitates vocalization)
T: (points to bus)
M: bus
Redirecting behaviour, on the other hand, was less common following the intervention program.

A reduction of the parents’ use of directive language behaviours, such as limiting questions (e.g. yes/no questions) and commands, was also observed. In contrast, there was a dramatic increase in the parents’ use of nondirective behaviours such as labelling, modelling, expansion, and prompting. For example,

Time 2 (M = mother; T = Tina):

T: (points to cupboard, vocalizes)
M: Open the cupboard?
T: [o]
M: Open (M)
T: [o:]
M: Open cupboard mommy (Ex)

The decrease in mean length of longest utterance, from 9 to 6 morphemes, following intervention, indicates that the parents were able to modify their language to match the language level of their child. Finally, the parents’ wait time increased slightly before further prompting the child, thus giving the child more time to respond.

In summary, the parents became more responsive, less directive, and matched their language more closely to the language level of their child. It appears then, that the results of an individualized parent training program (with respect to modified parental behaviours) confirmed this method for this particular family. However, it must be cautioned that any one type of intervention program may not be appropriate for all families. There is a high degree of individual variation with respect to parents’ ability to adopt program principles (Howlin, 1984). For example, Rees (1984) notes that
parents show considerable variability in their needs for professional assistance and support. Similarly, Tannock & Girolametto (1992) report that in the studies reviewed, not all mothers change their interactive style following training. Considerable variability has been observed in parent-child interaction style prior to training, as well as in the implementation of the recommended strategies during training. Positive outcomes based on group data may therefore be misleading. The researchers observe that some parents in groups adopt only one or two of the recommended strategies, while many undergo change in their interaction style without intensive training.

In the present study, the parents appeared to adopt the strategies that were trained. The individual component of this program may have contributed to this success, as it provided the parents with advice regarding the specific needs of the child and parent, and offered practical suggestions. The program was tailored to suit the needs of this particular family. Tannock & Girolametto (1992) note that some programs, particularly those using group-training formats, may be overloading parents with information. Thus, greater individualization of parent training might result in more success with respect to modification of parental behaviour, as well as greater second-order changes (i.e. indirect changes) for the child.

II Is there measurable improvement in the language abilities of the child, beyond that expected due to maturation?

A. Semantic Development

The results indicate that the total number of words produced by the child, and
the number of semantic categories produced, increased following the intervention program. Whether or not these changes resulted from the treatment program, or whether they were merely the result of maturation, or other variables, is difficult to ascertain. The results demonstrate that vocabulary production (i.e. lexicon size) increased from 26 words, to 80 words on the MacArthur-CDI (Fenson, et al., 1991). According to the normative data discussed previously in chapter one, when a child’s productive vocabulary reaches about 50 words, this is often accompanied by a spurt of vocabulary growth. Within two months, vocabulary size can increase from 50 to approximately 150 words. Typically, two-word combinations also begin to emerge at this time. Although the child in the present study improved with respect to semantic development, a ‘spurt’ of vocabulary growth is not evident. Nor have any word combinations been observed. Therefore, the results in this area may simply reflect the positive and cumulative effects of maturation, education, and general stimulation. Furthermore, administration of the Cognitive Antecedents to Word Meaning (Olswang et al., 1987) revealed change from Time 1 to Time 2 in the concept of agent. A mature concept of agent (a directive recipient act with persistent or clear requesting behaviour) was not observed at Time 1. However, the child demonstrated at least one occurrence of a mature concept of agent at Time 2. Because of this change, we cannot be sure that linguistic changes are also not simply maturational.

Despite these results, an important finding emerged. Pre-intervention, 54% of the child’s semantic repertoire consisted of demonstratives. Specifically, she consistently applied the utterance [dA] as a demonstrative interjection, similar to that noted by Bloom (1973) and Leopold (1949) (refer to chapter one, section III). This
demonstrative served as a vocal 'point.' Its social function served to secure joint attention and was often accompanied by a pointing gesture. This form had little semantic content and can be considered a protoword or deictic form prior to the emergence of words. Post intervention, this had decreased dramatically to 6% of all her utterances, while the use of specific nominals (labels) had increased from 11% to 28% (e.g. [bA] bird, [dA] duck, [kA] candy, [o] open, [bo] blue). This represents a major linguistic developmental milestone. That is, the child moved from a protoword stage, whereby she presented evidence in the earliest use of words of a simple awareness of objects, to the use of real word labels.

B. Phonological Development

1. Prosodic Level

Results indicate an absence of treatment or maturational effects with respect to word shape development. No change in word shape was demonstrated from Time 1 to Time 2 (i.e. open syllables were still the only syllable type).

2. Segmental Level

It was noted in chapter one that normal language learning children produce about 14 different consonants between 18-24 months. This typically increases to 18 consonants by 24-34 months (Stoel-Gammon, 1991). The child in the present study, increased from 7 consonants, at Time 1, to 12 consonants following intervention. This increase is slightly better than that expected due to maturation in normal language
learning children. However, the effects are not great enough to draw firm conclusions about program efficacy. A summary of the segments and features present in the child’s inventory at Time 1 and Time 2 follows. Segments at Time 1 included: [m,n,p,d,k,g,j]. Features at Time 1 included:
Root Node: [+ cons], [+ nasal], [+ sonorant], [- continuant]
Laryngeal Node: [+ voice], [- voice]
Place Node: Labial, Coronal, Dorsal

Segments at Time 2 included: [m,n,p,b,t,d,k,g,J,ts,w,j,?]. Features added at Time 2 included:
Root Node: [+ cont] (with and without branching)
Laryngeal Node: [+ constricted glottis]
Place Node: Labial, Coronal, Dorsal

It is important to note that the increase in features, at Time 2, co-occurs with the increase in semantic development. As discussed previously, 54% of the child’s semantic categories at Time 1, consisted of demonstratives (i.e. the protoword [dA]). As the child progressed to the single word stage, her utterances developed increased semantic content and phonological form. This, resulted in an increased number of features added to her existing phonological system. For example, at Time 2, unvoiced segments were produced, resulting in a greater distinction between voiced and unvoiced segments. Such changes indicate the development of a more complex, balanced phonological system. At Time 2, the Root node feature, [+ continuant] was also evident for fricatives (e.g. [J]) as well as the branching aspect of [continuant] for affricates (e.g. [ts]).
C. Morpho-Syntactic Development

There was no change in morpho-syntactic development following intervention, as measured by the child's mean length of utterance (MLU). Prior to intervention, the child had an MLU of 1. According to MLU normative data (Miller, 1981), the predicted MLU between 33 and 35 months, should be within the range of 2.85 to 3.16. Thus, this area of language development remained severely delayed (i.e. MLU of 1, post-intervention). However, the shift seen from protowords, such as [dA], to identifiable nominals is a necessary precursor to the development of syntactic structures. In this case, the child made gains in her productive output (i.e. from protowords to words), that were not registered by MLU (i.e. words to word combinations).

D. Summary

Tannock & Girolametto (1992), note that they have found little evidence to support that increasing parental responsiveness enhances acquisition of new communication and language abilities. Similarly, Fey et al. (1993) claim that there is little evidence that these programs are as effective as clinician-administered treatment models, in the case of children who are beyond the beginning stages of language development. Specifically, the researchers state that there is little evidence that these procedures foster the development of complex language forms, among children at higher level stages of language development.

In the present study, if we had looked at a small number of dependent variables for child outcome (e.g. MLU), it would have been concluded that there was no
acquisition of new linguistic competencies. However, when looking at the child’s whole linguistic system (i.e. phonology, semantics, morpho-syntax) it is clear that she did acquire some new structures, such as phonological features, and semantic categories. Most notably, a major developmental linguistic milestone was obtained, in the development from protowords to words. This improvement co-occurred with the increased use of parental behaviours presumed to facilitate language development.

Second, the present study involved a parent-administered language intervention program with a child at early stages of language development. Fey (1986) reports that parents have less difficulty employing program techniques with children who are at earlier stages of development (e.g. vocabulary development, early word combinations, etc.). He postulates that the language goals appropriate for children at this stage of development may be relatively easy for parents to understand and target, while more advanced goals may be more challenging. Similarly, Parsons (1991) reports that parents in her study had particular difficulty providing a facilitative context for teaching of structural goals, such as inflectional and syntactic markers, both of which are later-developing abilities. Parsons concludes that communicative targets for less advanced children (i.e. at earlier stages of development) were somehow inherently ‘easier’ for parents than many of the more advanced targets. The families who benefited the most were those whose children were functioning at the earliest stages of language acquisition (e.g. less than 50 words produced). She notes that for families of linguistically ‘older’ children it may be that some language goals are more efficiently identified and targeted in the clinic, with supplementary parental input and support.
III If parental behaviours are modified, do these behaviours co-occur with an improvement in the child's communication skills?

A. Topic Control

The results indicate that a decreased proportion of adult initiations (i.e. decreased topic control) following intervention, co-occurred with an increased proportion of child initiations. Furthermore, results of the mode of child turns indicate that the child did not simply take more turns by doing more of the same thing, but rather used a higher proportion of spoken words, or spoken words combined with an action or gesture. In contrast, the use of actions only, as a mode of turn, decreased dramatically following intervention. It is interesting to note that the child’s response time did not change following intervention. The child responded at both times, on average, between one to three seconds after the adult turn. The child does not appear to change in the amount of time she took to respond; however the change is more evident in the mode of her response. It is concluded that an increase in the quantity and quality of the child’s turns co-occurred with a modification of parental behaviour.

B. Contingent Responsiveness

The results indicate that the parents’ contingent responses to the child’s preceding turns, increased following intervention. This co-occurred with the finding that the child demonstrated increased responsiveness to the adults’ previous utterance, following intervention. Dunst et al. (1990) note that responsiveness
functions as a reinforcer to maintain or evoke further behaviour from the child. Upon reviewing the literature, they conclude that parental contingent responsiveness is a more efficient and effective determinant of a child's communicative competence compared to attempts to elicit behaviours using a directive style of interaction.

In general, social interactionist theories propose that a child's engagement in frequent reciprocal social interactions is critical for language acquisition (Tannock and Girolametto, 1992). Contingent interactions are believed to be particularly facilitative for language development. Optimal interactions are seen to occur when the caregiver interacts with the child in a style that is congruent with and responsive to the child's current focus of attention, interests, and developmental abilities (Tannock & Girolametto, 1992). Whether or not the assumptions underlying the social interaction theory of language acquisition are supported, is not within the scope of this study. It is merely noted that with respect to the specific social-interactive communication skills examined in the present study (i.e. initiations, responsiveness), and the mode of turns, it appears as if the modified behaviours of the parents did co-occur with improvements in these communication abilities of the child.

IV The Significance of the Findings of the Present Study in terms of Efficacy Research

Tannock and Girolametto (1992) report that interactive parent training models may enable parents to motivate and enhance children's use of existing communicative and linguistic abilities. However, they note that it remains unclear as to whether this
type of interaction enhances a child's acquisition of new linguistic structures. The researchers also report that many of the studies are flawed by the small number and limited range of dependent variables used to assess language change. Global measures of language development (i.e. MLU) may not be sensitive enough to some of the linguistic changes occurring in more severely delayed children, or children functioning at early stages of language development. In the present study, child measures included phonology, semantics, morpho-syntax, and social-communicative abilities. It became evident that the child achieved major linguistic developmental milestones (e.g. protowords to words) that may have been overlooked had global measures of morpho-syntactic development been the sole measure of child outcome.

It has also become evident that simply demonstrating improvements in pre- and post- intervention assessments is not sufficient to demonstrate the effectiveness of treatment. For a program to be considered effective, a modification of parental behaviour must co-occur with measurable improvement in the communication skills of the child. The present study demonstrated that modification of parental behaviour did co-occur with social-communication abilities and at least some language changes of the child. It has been discussed previously that treatment effects of parent training programs may be obscured by considerable individual variability within the group. Therefore, it is necessary to measure the effect of parent-focused intervention on each individual parent-child dyad.

It has also been reported that methodological weaknesses can stem from the reliance on a single brief sample of parent-child interaction, before and after intervention, as the sole source of data for estimating treatment effects (Tannock &
Girolametto, 1992). The present study was designed to collect multiple samples of parent-child interaction across a span of several days, without the presence of the investigator. The video-tapes provided samples of parent-child interaction during routine activities within the home. This provided a more reliable sampling of behaviour over time.

The positive outcomes obtained in this study may in part be related to the high degree of individualization of the program. As Tannock & Girolametto (1992) note, better individualization of parent-training programs, may result in greater second-order change (i.e. indirect change) for the child. The program goals of this study were tailored to meet the needs of this particular family. Frequent, regular contact, careful monitoring, and individual feedback were important to ensure the information presented was highly relevant and practical. Consistent with the findings of Parsons (1991), the high degree of individualization seemed to help the parents in two ways. First, it assisted in the development of parental confidence and self-assurance1. Second, individual intervention helped parents learn to apply the techniques presumed to facilitate language development.

V Clinical Implications

The present study proposes a methodology to measure the effectiveness of

1 A parent attitudes questionnaire was completed post-intervention in the present study, to evaluate the parents' judgements of program outcomes. Positive ratings were given to the program, and both parents reported change in their interaction with their child. However, we did not report the details because initial data was not collected. In future a carefully designed parent attitudes inventory conducted prior to and following intervention would be a useful adjunct to program outcomes.
parent training programs for single dyads. The coding methods are designed so that little interpretation is required. The coding of child behaviours requires only a surface analysis of the mode of turn (e.g. spoken word, gestural etc.), and a further distinction of contingency. Parental behaviours are coded more specifically for type of sentence and behaviours presumed to facilitate language development. Potential difficulties may arise in the interpretation of the specific behaviours of Modelling and Labelling. These two behaviours are coded separately to distinguish between general comments (labelling) and utterances that carry the expectation of teaching, in that they encourage the child to attempt the word (modelling). In these cases, the context must be relied on to evaluate which of the above strategies the parents are intending.

While the results for each single dyad are important to determine overall program efficacy, it is recognized that the amount of time involved may not always be practical in a clinical setting. In a clinical setting it may be more appropriate to measure the extent to which parents master the use of at least one important treatment procedure. For example, in their study of parents as primary intervention agents in grammar facilitation, Fey et al. (1993), measured the extent to which parent grasped the use of sentence recasting. For the parent-child dyad of the present study, the following measures proved to be the most useful indicators of intervention outcome:

a) child vs. adult initiations as a measure of topic control
b) parental sentence types (e.g. commands & yes/no questions vs. declaratives & open questions) as a measure of directiveness
c) the change from deictic forms to labels as a measure of child outcome (for a child
producing less than 50 words, this may be a sensitive indicator of linguistic change.)

As Tannock & Girolametto (1992) report, some group training programs may be overloading parents with information. Greater individualization of programs might result in greater changes for a particular child. For the family in the present study, changes in parent and child performance occurred following individual support. In a clinical setting it is important to maintain a balance between group and individual programming.

VI Directions for Future Research

Demonstrations of treatment outcomes were not based on statistically significant changes. However, the method used allowed us to estimate the effects of intervention techniques for a given parent-child dyad. Further research is needed to determine the effects of parent-focused intervention across parent-child dyads.

Parents' judgements of clinical outcomes in terms of treatment effects is another area in need of further research. Parents' judgements of clinical outcomes in terms of treatment effects provide a useful adjunct to the evidence from empirical studies (Tannock & Girolametto, 1992). A carefully designed parent attitudes inventory administered as a baseline and final measure would provide valuable information regarding program outcomes.

A limitation of the present study included the lack of a follow-up component. It would be of interest to study the parents' style of interaction and the child's communicative abilities at certain intervals after the training program. In the present
study, immediately following the intervention program, an increase in parents’ ability to use the techniques trained co-occurred with an improvement of the child’s language and social-communicative abilities. However, measures of long-term impact remain a concern (Fey, 1986). These particular parents began a group Hanen program upon completion of the study. When professional support and follow-up is provided, parents are more likely to continue using the new techniques (Fey, 1986).

VII Conclusions

Findings from the present study have identified the need to clarify the impact of parent training programs, (i.e. parental responsiveness and topic control), on children’s communicative and linguistic development. To date, analysis of the research indicates that individual responses to intervention may be masked by the presentation of group results predominant in the literature. This study has proposed a methodology to assess program efficacy in single dyads. Changes in the parents’ communicative behaviours co-occurred with improvements in the social-communicative abilities and at least some of the linguistic abilities of the child. It is concluded that parent training programs can be efficacious. While this study makes no claims for general program efficacy, it does offer a method to evaluate intervention effects for single dyads, as a basis for clinical practice and future research.
BIBLIOGRAPHY


APPENDIX A

SEMANTIC RELATIONS CATEGORIES
APPENDIX A

SEMANTIC RELATIONS CATEGORIES

Nomination: Words used to refer to instances of objects, substances, animals, people, abstractions, letters and numbers.

Action: A perceivable movement or activity engaged in by an agent (animate or inanimate).

Agent: The performer (animate or inanimate) of an action.

Demonstrative: The use of demonstrative pronouns or adjectives, this, that, these, those, and the words there, right there, here, and see, when stated for the purpose of pointing out a particular referent.

Modifier: Utterances referring to an inherent state or specification of the object or quantity of the object.

Recurrence: Utterances referring to the desire for an object, person, or action to reappear or recur.

Possession: Referring to objects within the domain of different persons or animals.

Stative: Utterances attributing a certain transitory state or condition to objects/persons such as internal states; and state of ownership.

Location: The place where an object or action was located or toward which it moved.

Negation: Utterances encompassing denial, rejection, and nonexistence.

Affirmation: Terms asserting that a previous utterance or behaviour is correct or indicating compliance with request from previous utterance.

Other: Utterances exhibiting semantic relations which do not fall into the above categories.

(adapted from Retherford, Schwartz, & Chapman, 1981 & Olswang et al., 1987)
<table>
<thead>
<tr>
<th>Context</th>
<th>Utterance*</th>
<th>Semantic relation</th>
</tr>
</thead>
<tbody>
<tr>
<td>T. finds a pack of gum in her halloween candy</td>
<td>gum [gʌ]</td>
<td>Nomination</td>
</tr>
<tr>
<td>T. points to dad</td>
<td>daddy [dædæ]</td>
<td>Nomination</td>
</tr>
<tr>
<td>T. pulls lego apart</td>
<td>pull [pʌ]</td>
<td>Action</td>
</tr>
<tr>
<td>T. points to an object</td>
<td>that [dʌ]</td>
<td>Demonstrative</td>
</tr>
<tr>
<td>T. finishes an activity</td>
<td>done [dʌ]</td>
<td>Modifier</td>
</tr>
<tr>
<td>T. responds to a yes/no question</td>
<td>okay [keɪ]</td>
<td>Affirmation</td>
</tr>
<tr>
<td>T. responds to a question</td>
<td>yes [dʌ]</td>
<td>Affirmation</td>
</tr>
<tr>
<td>T. protests or responds to a question</td>
<td>no [dʌ]</td>
<td>Negation</td>
</tr>
<tr>
<td>M. says &quot;say ta!&quot;</td>
<td>ta [dæ]</td>
<td>Other (say X)</td>
</tr>
<tr>
<td>T. feeds baby</td>
<td>yum [jɪʌm]</td>
<td>Other (sounds accompanying)</td>
</tr>
</tbody>
</table>

* represents the entire corpus
Table A.2 -- Semantic Relations, Time 2

<table>
<thead>
<tr>
<th>Context</th>
<th>Utterance</th>
<th>Semantic relations</th>
</tr>
</thead>
<tbody>
<tr>
<td>T. finds a toy baby</td>
<td>baby [bʌ]</td>
<td>Nomination (18)*</td>
</tr>
<tr>
<td>T. wants mom to open fridge</td>
<td>open [o]</td>
<td>Action (5)</td>
</tr>
<tr>
<td>T. wants mom to open the fridge</td>
<td>mommy! [mʌmʌ]</td>
<td>Agent (1)</td>
</tr>
<tr>
<td>Mom asks &quot;Where's the baby?&quot;</td>
<td>here [iə]</td>
<td>Demonstrative (2)</td>
</tr>
<tr>
<td>T. chooses a colour</td>
<td>blue [bo]</td>
<td>Modifier (1)</td>
</tr>
<tr>
<td>T. asks for more toys</td>
<td>more [mo]</td>
<td>Recurrence (1)</td>
</tr>
<tr>
<td>T. tells sister she is sorry</td>
<td>sorry (sign)</td>
<td>Stative (1)</td>
</tr>
<tr>
<td>T. points to a cupboard</td>
<td>up [ʌ]</td>
<td>Location (2)</td>
</tr>
<tr>
<td>T. protests</td>
<td>no [no]</td>
<td>Negation (1)</td>
</tr>
<tr>
<td>T. answers y/n questions</td>
<td>yes [jʌ]</td>
<td>Affirmation (1)</td>
</tr>
<tr>
<td>Mom and T. play peek a boo</td>
<td>boo [bu]</td>
<td>Other (5)</td>
</tr>
</tbody>
</table>

* ( ) - number of different types of words in the category
APPENDIX B

PHONOLOGICAL ANALYSIS
Table B.1 -- Phonological Sample, Time 1

<table>
<thead>
<tr>
<th>Adult Target</th>
<th>Adult UR</th>
<th>Child Production</th>
<th>Match Wordshape</th>
<th>Nonmatch Wordshape</th>
<th>Wordshape</th>
</tr>
</thead>
<tbody>
<tr>
<td>daddy</td>
<td>dædɪ</td>
<td>dædæ</td>
<td>✓</td>
<td></td>
<td>CVCV</td>
</tr>
<tr>
<td>done</td>
<td>dʌn</td>
<td>dʌ</td>
<td></td>
<td>CV</td>
<td>CVC</td>
</tr>
<tr>
<td>gum</td>
<td>gʌm</td>
<td>gʌ</td>
<td></td>
<td>CV</td>
<td>CVC</td>
</tr>
<tr>
<td>no</td>
<td>no</td>
<td>dʌ</td>
<td>✓</td>
<td></td>
<td>CV</td>
</tr>
<tr>
<td>okay</td>
<td>okeɪ</td>
<td>ekeɪ</td>
<td></td>
<td>CVv</td>
<td>VCVv</td>
</tr>
<tr>
<td>pull</td>
<td>pʌl</td>
<td>pʌ</td>
<td></td>
<td>CV</td>
<td>CVC</td>
</tr>
<tr>
<td>“ta”</td>
<td>ta</td>
<td>dææ</td>
<td>✓</td>
<td></td>
<td>CV</td>
</tr>
<tr>
<td>yes</td>
<td>yɛs</td>
<td>dʌ</td>
<td></td>
<td>CV</td>
<td>CVC</td>
</tr>
<tr>
<td>yum</td>
<td>jʌm</td>
<td>jiam</td>
<td></td>
<td>CVvC</td>
<td>CVC</td>
</tr>
</tbody>
</table>
Table B.2 -- Phonological Sample, Time 2

<table>
<thead>
<tr>
<th>Adult Target</th>
<th>Adult UR</th>
<th>Child Production</th>
<th>Match Wordshape</th>
<th>Nonmatch Wordshape</th>
<th>Wordshape</th>
</tr>
</thead>
<tbody>
<tr>
<td>baby</td>
<td>beibi</td>
<td>b(\Lambda)</td>
<td>CV</td>
<td>CVvCV</td>
<td></td>
</tr>
<tr>
<td>bag</td>
<td>baeg</td>
<td>b(\Lambda)</td>
<td>CV</td>
<td>CVC</td>
<td></td>
</tr>
<tr>
<td>banana</td>
<td>bønænø</td>
<td>b(\Lambda)</td>
<td>CV</td>
<td>CVCVCV</td>
<td></td>
</tr>
<tr>
<td>bird</td>
<td>bæd</td>
<td>b(\Lambda)</td>
<td>CV</td>
<td>CVrC</td>
<td></td>
</tr>
<tr>
<td>blue</td>
<td>blu</td>
<td>bo</td>
<td>CV</td>
<td>CCV</td>
<td></td>
</tr>
<tr>
<td>boo</td>
<td>bu</td>
<td>bu</td>
<td>✓</td>
<td>CV</td>
<td></td>
</tr>
<tr>
<td>bus</td>
<td>bæs</td>
<td>b(\Lambda)</td>
<td>CV</td>
<td>CVC</td>
<td></td>
</tr>
<tr>
<td>bye bye</td>
<td>bæi bæi</td>
<td>bæbæe</td>
<td>✓</td>
<td>CVCV</td>
<td></td>
</tr>
<tr>
<td>candy</td>
<td>kændi</td>
<td>k(\Lambda)</td>
<td>CV</td>
<td>CVCCV</td>
<td></td>
</tr>
<tr>
<td>cheese</td>
<td>tfiz</td>
<td>ts</td>
<td>C</td>
<td>CVC</td>
<td></td>
</tr>
<tr>
<td>cup</td>
<td>k(\Lambda)</td>
<td>g(\Lambda)</td>
<td>CV</td>
<td>CVC</td>
<td></td>
</tr>
<tr>
<td>daddy</td>
<td>dæedi</td>
<td>dædæe</td>
<td>✓</td>
<td>CVCV</td>
<td></td>
</tr>
<tr>
<td>duck</td>
<td>dæk</td>
<td>d(\Lambda)</td>
<td>CV</td>
<td>CVC</td>
<td></td>
</tr>
<tr>
<td>here</td>
<td>hiø-</td>
<td>øij(\Lambda)</td>
<td>V(C)V</td>
<td>CVVr</td>
<td></td>
</tr>
<tr>
<td>horse</td>
<td>hors</td>
<td>o</td>
<td>V</td>
<td>CVrC</td>
<td></td>
</tr>
<tr>
<td>kiss</td>
<td>kis</td>
<td>gi</td>
<td>CV</td>
<td>CVC</td>
<td></td>
</tr>
<tr>
<td>kitty</td>
<td>kitti</td>
<td>t(\Lambda)</td>
<td>CV</td>
<td>CVCV</td>
<td></td>
</tr>
<tr>
<td>leg</td>
<td>læg</td>
<td>gi</td>
<td>CV</td>
<td>CVC</td>
<td></td>
</tr>
<tr>
<td>McGee</td>
<td>magi</td>
<td>gi</td>
<td>CV</td>
<td>CVCV</td>
<td></td>
</tr>
<tr>
<td>mommy</td>
<td>mæmi</td>
<td>mæmæ</td>
<td>✓</td>
<td>CVCV</td>
<td></td>
</tr>
<tr>
<td>more</td>
<td>mør</td>
<td>mo</td>
<td>CV</td>
<td>CVr</td>
<td></td>
</tr>
<tr>
<td>move</td>
<td>mув</td>
<td>mu</td>
<td>CV</td>
<td>CVC</td>
<td></td>
</tr>
<tr>
<td>moo</td>
<td>mu</td>
<td>mu</td>
<td>✓</td>
<td>CV</td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>no</td>
<td>no</td>
<td>✓</td>
<td>CV</td>
<td></td>
</tr>
</tbody>
</table>
Table B.2 -- Continued: Time 2

<table>
<thead>
<tr>
<th>on</th>
<th>on</th>
<th>o</th>
<th>V</th>
<th>VC</th>
</tr>
</thead>
<tbody>
<tr>
<td>open</td>
<td>open</td>
<td>o</td>
<td>V</td>
<td>VCVC</td>
</tr>
<tr>
<td>pen</td>
<td>pen</td>
<td>bλ</td>
<td>CV</td>
<td>CVC</td>
</tr>
<tr>
<td>pig</td>
<td>pig</td>
<td>bλ</td>
<td>CV</td>
<td>CVC</td>
</tr>
<tr>
<td>pull</td>
<td>pull</td>
<td>pλ</td>
<td>CV</td>
<td>CVC</td>
</tr>
<tr>
<td>push</td>
<td>pull</td>
<td>pλ</td>
<td>CV</td>
<td>CVC</td>
</tr>
<tr>
<td>sh</td>
<td>j</td>
<td>j</td>
<td>✓</td>
<td>C</td>
</tr>
<tr>
<td>uh oh</td>
<td>? o</td>
<td>? o</td>
<td>✓</td>
<td>CV</td>
</tr>
<tr>
<td>up</td>
<td>ʌ p</td>
<td>pλ</td>
<td>CV</td>
<td>VC</td>
</tr>
<tr>
<td>water</td>
<td>watə</td>
<td>wə</td>
<td>CV</td>
<td>CVCVr</td>
</tr>
<tr>
<td>yes</td>
<td>j̃s</td>
<td>jə</td>
<td>CV</td>
<td>CVC</td>
</tr>
</tbody>
</table>
APPENDIX C

CODING METHODS
APPENDIX C
CODING METHODS

PARENT BEHAVIOURS

a) Sentence Type and Form of Behaviour

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q-Wh</td>
<td>Wh - Question</td>
</tr>
<tr>
<td>Q-Y/N</td>
<td>Yes/No Question</td>
</tr>
<tr>
<td>C</td>
<td>Command</td>
</tr>
<tr>
<td>D</td>
<td>Declarative</td>
</tr>
<tr>
<td>SI/R</td>
<td>Signed Initiation/Response</td>
</tr>
<tr>
<td>AI/R</td>
<td>Action Initiation/Response</td>
</tr>
<tr>
<td>VI/R</td>
<td>Vocalized Initiation/Response</td>
</tr>
<tr>
<td>O</td>
<td>Other:(O-b: book reading)</td>
</tr>
<tr>
<td></td>
<td>(O-sp: stock phrase)</td>
</tr>
<tr>
<td></td>
<td>(O-sa: self answer)</td>
</tr>
<tr>
<td></td>
<td>(O-ad: addressing)</td>
</tr>
</tbody>
</table>

b) Language Facilitation Behaviours

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>Model</td>
</tr>
<tr>
<td>Ex</td>
<td>Expand</td>
</tr>
<tr>
<td>L</td>
<td>Label (includes interpreting, commenting)</td>
</tr>
<tr>
<td>P</td>
<td>Prompt</td>
</tr>
<tr>
<td>E</td>
<td>Echoic (imitate previous child utterance)</td>
</tr>
<tr>
<td>SE</td>
<td>Self Echoic (repeat previous maternal utterance)</td>
</tr>
<tr>
<td>Rd</td>
<td>Redirect (switch focus of the preceding activity to a new topic, or persist in the presentation of a previous topic)</td>
</tr>
<tr>
<td>Ig</td>
<td>Ignore (ignores partners’ previous focus)</td>
</tr>
</tbody>
</table>
CHILD BEHAVIOURS

a) Form of behaviour

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWI/R</td>
<td>Spoken Word Initiation/Response</td>
</tr>
<tr>
<td>SWI/R-U</td>
<td>Spoken Word Initiation/Response - unidentifiable</td>
</tr>
<tr>
<td>VI/R</td>
<td>Vocalized Initiation/Response</td>
</tr>
<tr>
<td>GI/R</td>
<td>Gestural Initiation/Response</td>
</tr>
<tr>
<td>AI/R</td>
<td>Action Initiation/Response</td>
</tr>
<tr>
<td>SI/R</td>
<td>Signed Initiation/Response</td>
</tr>
<tr>
<td>SE</td>
<td>Self Echoic</td>
</tr>
<tr>
<td>E</td>
<td>Echoic (imitate previous parental utterance)</td>
</tr>
<tr>
<td>Rd</td>
<td>Redirect</td>
</tr>
<tr>
<td>Ig</td>
<td>Ignore</td>
</tr>
<tr>
<td>Co</td>
<td>Contingent to Other (contingent to other person’s previous behaviour)</td>
</tr>
<tr>
<td>Cs</td>
<td>Contingent to Self (contingent to their own previous behaviour)</td>
</tr>
<tr>
<td>✓</td>
<td>Presence of contingent behaviour (absence of check mark implies a noncontingent behaviour)</td>
</tr>
<tr>
<td>✗</td>
<td>End of an activity/scene</td>
</tr>
</tbody>
</table>

Notes:

AR, SWR = consecutive events

(AR, SWR) = simultaneous events

M (D) = To avoid double coding one utterance, the behaviour is coded and the sentence type is specified in brackets.

➔ = go to utterance number X
APPENDIX D

CODING METHODS: TIME 1
<table>
<thead>
<tr>
<th>#</th>
<th>Parent Initiated Behaviours</th>
<th>Code</th>
<th>Child Response</th>
<th>Parent Response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Co</td>
<td>Cs</td>
<td>Code</td>
</tr>
<tr>
<td>1</td>
<td>P (Q-Wh)</td>
<td></td>
<td></td>
<td>Ig</td>
</tr>
<tr>
<td>2</td>
<td>Rd (Q-Y/N)</td>
<td></td>
<td>✓</td>
<td>Ig</td>
</tr>
<tr>
<td>6</td>
<td>(C, Al)</td>
<td>✓</td>
<td></td>
<td>AR</td>
</tr>
<tr>
<td>9</td>
<td>C</td>
<td></td>
<td></td>
<td>Ig</td>
</tr>
<tr>
<td>10</td>
<td>C</td>
<td>✓</td>
<td></td>
<td>AR</td>
</tr>
<tr>
<td>11</td>
<td>C</td>
<td>✓</td>
<td></td>
<td>AR</td>
</tr>
<tr>
<td>12</td>
<td>Q-Y/N</td>
<td>✓</td>
<td></td>
<td>AR</td>
</tr>
<tr>
<td>17</td>
<td>Q-Y/N, Al</td>
<td>✓</td>
<td></td>
<td>AR</td>
</tr>
<tr>
<td>24</td>
<td>C</td>
<td>✓</td>
<td></td>
<td>AR</td>
</tr>
<tr>
<td>29</td>
<td>Q-Y/N</td>
<td>✓</td>
<td></td>
<td>VR</td>
</tr>
<tr>
<td>31</td>
<td>SE (Q-Y/N)</td>
<td></td>
<td></td>
<td>Ig</td>
</tr>
<tr>
<td>44</td>
<td>O-b</td>
<td></td>
<td></td>
<td>Ig</td>
</tr>
<tr>
<td>45</td>
<td>O-b, O-ad</td>
<td>✓</td>
<td></td>
<td>AR</td>
</tr>
<tr>
<td>51</td>
<td>L (C, D)</td>
<td></td>
<td></td>
<td>VR</td>
</tr>
<tr>
<td>52</td>
<td>O-b</td>
<td>✓</td>
<td></td>
<td>VR, AR</td>
</tr>
<tr>
<td>54</td>
<td>O-b</td>
<td></td>
<td></td>
<td>Ig</td>
</tr>
<tr>
<td>57</td>
<td>O-b</td>
<td></td>
<td></td>
<td>Ig</td>
</tr>
<tr>
<td>#</td>
<td>Child Initiated Behaviours</td>
<td>Code</td>
<td>Parent Response</td>
<td>Child Response</td>
</tr>
<tr>
<td>---</td>
<td>---------------------------</td>
<td>------</td>
<td>-----------------</td>
<td>---------------</td>
</tr>
<tr>
<td>14</td>
<td>kicks off covers</td>
<td>Al</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>sits up in bed</td>
<td>Al</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>sits up in bed</td>
<td>Al</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>reaches for another book</td>
<td>Al</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>&quot;reads&quot; her own book</td>
<td>Al</td>
<td></td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>turns away and picks up book</td>
<td>Al</td>
<td></td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>&quot;reads&quot; her own book</td>
<td>Al</td>
<td></td>
<td></td>
</tr>
<tr>
<td>69</td>
<td>holds out book to mom</td>
<td>Al</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>closes book</td>
<td>Al</td>
<td></td>
<td></td>
</tr>
<tr>
<td>79</td>
<td>holds out book</td>
<td>Al</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>drops book on floor</td>
<td>Al</td>
<td></td>
<td></td>
</tr>
<tr>
<td>81</td>
<td>reaches for a new book</td>
<td>Al</td>
<td></td>
<td></td>
</tr>
<tr>
<td>89</td>
<td>points to water jar</td>
<td>Gl</td>
<td></td>
<td></td>
</tr>
<tr>
<td>91</td>
<td>turns to look at sibling</td>
<td>Al</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX E

CODING METHODS: TIME 2
<table>
<thead>
<tr>
<th>#</th>
<th>Parent Initiated Behaviours</th>
<th>Child Response</th>
<th>Parent Response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Code</td>
<td>Co</td>
<td>Cs</td>
</tr>
<tr>
<td>6</td>
<td>Q-Y/N</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Q-Y/N</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>P (Q-Wh)</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Ex (D)</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>P (Q-Wh)</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>28</td>
<td>P (Q-Wh)</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>Q-Y/N</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>O-sa</td>
<td></td>
<td>Ig</td>
</tr>
<tr>
<td>37</td>
<td>P (Q-Wh)</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>P (Q-Wh)</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>P (Q-Wh)</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>Q-Y/N</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>52</td>
<td>Q-Y/N</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>54</td>
<td>Q-Y/N</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>Q-Y/N</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>L (D)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>72</td>
<td>SE (Q-Y/N)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#</td>
<td>Child Initiated Behaviours</td>
<td>Code</td>
<td>Parent Response</td>
</tr>
<tr>
<td>----</td>
<td>---------------------------------</td>
<td>-------</td>
<td>-----------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Co</td>
<td>Cs</td>
</tr>
<tr>
<td>1</td>
<td>chooses a book</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>labels a bus</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>9</td>
<td>vocalizes</td>
<td>✓ ✓</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>closes book</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>opens book</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>makes kissing noises</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>turns page</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>points to a picture</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>says bye bye</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>makes kissing noises &amp; gestures</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>kissing noises</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>vocalizes</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>63</td>
<td>vocalizes</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX F

TREATMENT PROGRAM OUTLINE

Session #1 1. Observe your child attempts to communicate: summarizing the Communication Observation Report and Checklist to determine how, why, and about what your child communicates. Video-tape # 1: Hanen Teaching Video- identifying child's attempts to communicate.
2. "Follow your child's lead": Observe, wait, listen

Session #2 1."Follow your child's lead": imitating actions and sounds; interpreting/labelling sounds and gestures. Video-tape # 2: investigator reviews video-tape of parent-child interaction, with parents. Self-evaluation is encouraged and feedback is provided.
2. Activities to elicit "more."

Session #3 Responding so your child learns:
2. Producing language at the child's level: modifying adult speech to young children.

Session #4 Parent interacting with child at swimming lesson, and investigator providing feedback and demonstration where necessary. Language stimulation strategies reviewed and new techniques introduced (e.g. modelling, repeating).

Session #5 1. Taking turns: increase the number of turns on the topic by pausing, expecting, and signalling a response.
2. Investigator and parents discussing ways of modifying the home environment to encourage verbal initiations (i.e. "creative sabotage").

Session #6 Prompting for better turns: open ended questions & giving choices. Investigator observing parent interacting with child during an activity, and providing feedback and demonstration where necessary.

Session #7 Preplanning activities that incorporate conversational strategies: singing and play. Music activities to encourage communication and creating opportunities for language learning through play.

Session #8 Preplanning activities that incorporate conversational strategies learned. Making reading time a time for communicating. Investigator providing
demonstration, observing parent-child interaction, and providing feedback and suggestions where necessary.

Session #9-10 Wrap up and review. Conducting parent attitudes and evaluation questionnaire.