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**Language Acquisition in Firstborn and Laterborn Children: A Comparison of Early Speech
Characteristics and the Development of Conversational Skills**

by

Brenda Roberts-Santarossa

1996

**A Dissertation Submitted to the Faculty of Graduate Studies and Research
Through the Department of Psychology
in Partial Fulfillment of the Requirements for
the Doctor of Philosophy Degree in
Human Development**

Windsor, Ontario, Canada



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ABSTRACT

The present study examined the early vocabularies and conversational turn taking behaviours of laterborn and firstborn children. Subjects consisted of five laterborn males, six laterborn females, five firstborn males, five firstborn females and their families. Participants were videotaped in their homes during a family meal with both parents present. An initial taping occurred when the target children were at the early stages of multiword speech (mean MLU 1.94) and a follow-up taping occurred six months later (mean MLU 2.71). Data on twenty children and their families were available at the initial taping, while data on fourteen subjects were available at the follow-up taping.

Of primary interest was the frequency with which children “intruded” into the conversations of others. While laterborn children were found to intrude into ongoing conversations significantly more often than their firstborn counterparts at both tapings, they did not use proportionally more semantically relevant intrusions than did firstborns at either taping. Neither laterborns nor firstborns demonstrated any significant increase in their ability to intrude with comments that contained new information and were pertinent to the ongoing conversations. It was argued that the environments of laterborns provided them with more models of intrusive behaviour and a greater need to use intrusions as a means of joining conversations or having their needs met. It was also suggested that the two groups may have formulated different perceptions or “rules” for engaging in multiparticipant discourse.

Children's language was also examined with respect to MLU, expressive vocabulary size, noun and pronoun usage, and receptive vocabulary size (initial taping only). No statistically significant differences emerged, with the exception that firstborn early expressive vocabularies tended to include more nouns. The results indicated that with respect to these aspects of syntactic and semantic development, laterborn and firstborn children appeared to be acquiring language in a similar manner.

DEDICATION

I dedicate this book to my children, our “firstborn” Marc, the little “laterborn” currently en route, and to any future “laterborns” who may someday grace our lives.

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As with my Master of Arts degree, I am once more indebted to Dr. Ann McCabe for her expert guidance, insightful comments, and continued enthusiasm during the planning and progress of this research. She is one of those rare individuals who are both outstanding educators and truly wonderful people. I would also like to take this opportunity to thank my other committee members for their valuable contributions throughout this endeavor.

As always, I must thank my parents for their unshakable belief that I can complete any project that I undertake, even one as arduous as this. I also owe an immense debt of gratitude to my husband Rob, who has assisted me in so many ways to complete this dissertation, including editing, proofreading, table construction, printing and copying. His continued support and encouragement has been invaluable throughout the years. Without his unfailing support, I am not at all certain that this project would ever have come to fruition.

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CHAPTER I

INTRODUCTION

How do young children acquire language? Despite approximately three decades of investigation, some noted researchers have described the process of language acquisition as "mysterious" and "magical" since so much remains to be uncovered (Bohannon & Warren-Leubecker, 1985).

One area in which relatively little is known concerns the process of language development in laterborn children. As Jones and Adamson (1987) point out, early differences in the linguistic skills of firstborn and laterborn children are frequently assumed but rarely demonstrated. The present study was designed to compare aspects of language acquisition in laterborn and firstborn children -- specifically, to examine the development of conversational skills and to identify early speech characteristics in both groups.

Why has so much research focused on examining language acquisition in firstborns, while comparatively little has documented the process in laterborns? To adequately address this question, it is necessary to consider several factors which have exerted an especially salient influence on the direction of language research in general.

Early research in language acquisition documented striking similarities among children in phonological, morphological, semantic, and syntactic development (Goldfield & Snow, 1985). This initial empirical focus on documenting universal commonalities in language development during the 1960's was primarily ascribed to two factors: a practical need for basic information regarding the nature and sequence of development, and the influence of Chomsky's (1957) theory of transformational syntax.

The search for linguistic commonalities had subsequent methodological ramifications -- as all children were perceived to acquire language in the same basic manner, longitudinal

research involving a single child or several children was a popular research paradigm (Brown, 1973). Children who lacked clarity in articulation or who produced "messy" multiword language strings in their early speech tended to be excluded from studies in favour of children who exhibited clear articulation (Peters, 1977).

The paradigm changed, however, as researchers shifted away from a primary concern with syntax and began to examine the pragmatic and semantic dimensions of language development. As the research scope broadened and larger samples were studied, researchers became increasingly aware that certain children's language acquisition style did not mirror the "universal" sequence of development identified in the 1960s and early '70s.

These "individual differences" in language development were initially documented by Nelson (1973) but subsequent investigations have reported similar findings (Bloom, Lightbown & Hood, 1975; Bretherton, McNew, Snyder, & Bates, 1983; Dore, 1974; Horgan, 1981; Lieven, 1978, Peters, 1977; Ramer, 1976). Such differences have been reported with sufficient consistency to be referred to as differences in the "style"-- expressive or referential -- with which children approach the language learning task (McCabe, 1989). The term "referential" stylists was used to describe children who espoused the typical "universal" language learning approach documented by early researchers. Characteristics of this style included a predominance of nouns in early vocabularies, comparatively larger expressive vocabularies, clear articulation, rapid initial vocabulary growth, steady growth in syntax, and the use of language as a tool for commenting on inanimate objects. In contrast, children who primarily espoused an "expressive" style possessed early vocabularies which reflected a pronominal preference, smaller expressive vocabularies, slower vocabulary development, comparatively poorer

articulation, a slower rate of syntax acquisition coupled with the use of formulaic phrases, and the use of language for social interaction.

Why should one child primarily use a referential language acquisition style and another use an expressive approach? Several explanations have been broached, including cognitive style, maternal speech input, differential hemispheric maturation, and a variety of nonlinguistic contextual factors (Nelson, 1981). With respect to the latter explanation, one quite interesting feature to emerge from examination of studies reporting individual differences concerns birth order -- of the expressive children described, two-thirds were laterborn, while two-thirds of the referential children were firstborns (McCabe, 1989). While many of these studies involved small samples, the data would suggest that language acquisition in laterborn children may differ considerably from that of firstborn children.

It thus appears that much of the early research on language universals involved referential stylists -- typically firstborn children. Their clearer articulation and more orderly sequence of language acquisition made them much more likely to be included in language studies. Furthermore, the absence of older siblings rendered the recording and analysis of language interactions of firstborn children easier for researchers (Goldfield & Snow, 1985).

Despite heightened awareness that most previous research has centred on firstborn children, few researchers have thus far attempted to examine the acquisition of language in laterborn children. Given the fact that more than 40% of North American and European children grow up with older siblings (Dunn & Shatz, 1989), research on laterborn language acquisition appears warranted. The fact that such children are exposed to a much wider and more complex linguistic environment due to sibling as well as parental involvement has just recently begun to command some attention.

Given the current lack of empirical data, the issue of whether or not birth order is a significant factor in children's language development remains essentially a matter for speculation (Dunn & Shatz, 1989). Some researchers contend that, relative to firstborns, laterborn children should be slower to develop language skills, given that they are exposed to language from older siblings who may provide less appropriate language input than parents (Tomasello & Mannle, 1985). Similarly, siblings may reduce the amount of time parents have to spend speaking with laterborns, culminating in an inferior linguistic environment that further negatively impacts on the laterborns' language development (Woollett, 1986). These speculations are consistent with the data from studies of individual differences, which indicate that laterborns are more prone to manifest an "expressive" style, the characteristics of which include comparatively smaller vocabulary size and slower language growth.

Conversely, others contend that exposure to ongoing conversations involving older siblings may provide opportunities for further learning. One group of researchers contends that broader rather than narrower ranges of language input should facilitate rather than hinder acquisition because the child is not led to draw false conclusions based on oversimplified information (Glietman, Newport, & Glietman, 1984). Similarly, others purport that exposure to conversations between parents and older siblings may provide prime language "fodder" for young language learners, since such input may challenge learners without exceeding the "zone of proximal development" (Dunn & Shatz, 1989). Children who interact regularly in ongoing conversations may have greater opportunities to acquire pragmatic skills, such as how to effectively join an ongoing conversation (Dunn & Shatz, 1989). Exposure to ongoing speech may also afford laterborn children the opportunity to observe others modeling more complex linguistic types (e.g. pronouns) and

thus facilitate their acquisition of such types (Oshima-Takane, 1988). This might partially account for the preponderance of pronouns in the early vocabularies of the laterborn children who reportedly manifested an "expressive" language learning style. Proponents of this view thus propose that laterborn children may not be linguistically delayed relative to firstborns, but rather that they may develop different types of language skills at different rates.

It is also argued that laterborn children are not necessarily hindered by their different linguistic environments. Dunn and Shatz (1989) argue that children do not assume "passive" roles in the language acquisition process. Instead, they contend that children possess devices for eliciting the information that they require to grow. They suggest that laterborns may simply have to "work" harder than firstborns to acquire such information.

The primary goal of the present study was to examine the development of conversational skills in laterborn children and firstborn children. Specifically, a pragmatic skill, the ability of laterborn and firstborn children to "intrude upon" or join into conversations of others, was examined. While some preliminary evidence suggests that laterborns demonstrate slower development of certain semantic aspects of language development (e.g. vocabulary size), little is known about the development of pragmatic skills. Exposure to ongoing conversations might conceivably facilitate laterborn children's development of such skills. Furthermore, the study attempted to augment the sparse amount of information currently available pertaining to the process of language development in laterborns. Towards that end, traditional measures of linguistic development (e.g. vocabulary size, noun/pronoun use, mean length of utterance) in laterborns and firstborns were also examined.

What differentiates a laterborn child from a firstborn? Quite simply, the presence of one or more older siblings. How might the presence of siblings affect the linguistic environment of laterborns? While little research has addressed the actual development of language in laterborn children, considerably more attention has been directed towards examining the linguistic environment of laterborns. This has occurred in part due to heightened awareness in the field that a large part of human interchange occurs in contexts beyond the simple mother-infant dyad traditionally employed in language research (Bronfenbrenner, 1977). Researchers have subsequently examined aspects of expanded linguistic environments -- specifically, they have attempted to identify characteristics of sibling speech to younger children and have examined how the dynamics change when siblings are present during mother-infant interactions. In order to present a comprehensive picture of the laterborn child's language experience, the literature accumulated in these areas will be reviewed as well as that specifically dealing with language development in laterborn children.

The Speech Characteristics of Laterborn Children

What empirical evidence regarding language development in laterborns has been proffered to support any of the speculations that have been broached? Surprisingly few studies have investigated laterborn language development, and those that have tend to favour the view that laterborns begin language slightly later and learn more slowly, possibly differently, than firstborns. Furthermore, the research suggests that until a certain age, laterborns tend to score lower than their firstborn counterparts on certain indices of language development. McCarthy (1930) reported that the mean length of response for children who associated with older siblings was lower than the mean length of response for children who primarily associated with adults. Davis (1937) reported that only children

were superior to children with older siblings on a variety of linguistic measures, including length of sentence, sentence structure, frequency, and function and length of different words used. Jones and Adamson (1987) found that firstborns had significantly larger "Reported Vocabulary Estimates" than laterborns.

In contrast to the preceding findings, however, Tackeff-Toledano (1992) reported that the language development of the 16 laterborn children in her study appeared quite similar to that reported for previously studied firstborns. She examined the "meaning relations" (e.g. action, existence, possession, features of objects) evident in the speech of laterborns at an initial taping (CA 19-25 months) and a subsequent taping six months later and compared her data to that reported on previously studied firstborns.

As noted previously, several studies investigating individual differences in language development have noted that laterborns appear more predisposed to employ an "expressive" style while firstborns are more prone to be referential stylists (Lieven, 1978; Nelson, 1973; Peters, 1977; Ramer, 1976). Nelson (1973), while studying the early productive vocabularies of 18 children, noted that all of the "referential" stylists in her sample were firstborns, while several of the eight expressive stylists were laterborns. Ramer (1976) noted that two of the three "expressive" children in her sample of seven were laterborns, and Lieven (1978) reported that the lone "expressive" stylist in her sample of three children was also a laterborn. Peters (1977), who reported on one expressive stylist's language development, also noted that he was a laterborn. These observations could also be construed as supportive of the view that certain aspects of laterborns' speech are not facilitated by their linguistic environment. Expressive stylists evidence smaller vocabularies and generally slower vocabulary growth than referential stylists.

However, the finding that expressive stylists exhibit a propensity for using greater proportions of pronouns appears consistent with Oshima-Takane's (1988) premise that exposure to ongoing conversations may facilitate the acquisition of certain complex linguistic types such as pronouns. This finding gives some credence to the contention that laterborn children's linguistic environments may facilitate specific aspects of language development.

While some researchers have suggested that the linguistic environment of laterborns may facilitate comparatively faster development of certain pragmatic skills (e.g. joining conversations) most research on pragmatic skills has focused on comparing older siblings' use of pragmatic skills when interacting with younger children with that of mothers. Rarely has the actual development of pragmatic skills in language learning children been systematically examined.

An exception to this is the study by Dunn and Shatz (1989) which focused on the development of pragmatic skills of young language learners when interacting in triadic mother-older sibling-infant conversations. They were interested in determining whether laterborns actually attended to and comprehended language not specifically addressed to them. They examined the number of "intrusions" children made into the conversations of their mothers and older siblings. Six children, their mothers, and older siblings were audio taped on 6 occasions (younger children taped at 24, 26, 28, 30, 33, and 36 months of age). The authors reported that on average, 22% of the younger child's conversational turns were intrusions. Obviously, these children clearly attended and responded to much talk between others and became better able to contribute information that was both new and relevant over time. In essence, the authors contended, they became more effective conversationalists.

Thus, with the exception of Dunn and Shatz (1989), researchers have yet to closely examine the development of pragmatic skills in laterborn children. Furthermore, no studies to date have attempted to compare the development of pragmatic skills in firstborn and laterborn children to determine if in fact the laterborns' greater exposure to conversations involving others may facilitate the development of such skills.

While the preceding few studies have provided some information, albeit somewhat contradictory, as to how laterborn children may develop language, several studies have attempted to examine how the linguistic environment of laterborns differs from that of firstborns. Such research has attempted to gauge the nature of sibling/sibling interactions, determine if older siblings modify their language when conversing with younger children, and examined how the dynamics of triadic linguistic exchanges compares to that of dyads. Pertinent literature in these areas is detailed below.

Early Studies Examining the Role of Siblings in Infant Development

Adult speech to adults differs in several ways from adult speech to young children (Garnica, 1977; Newport; 1977, Newport Glietman & Glietman, 1977). Characteristics of adult speech to young language learners include well-formed, short sentences, repetitiveness, exaggerated pitch, and simplified syntactic structure (Wellen, 1985). Such language modifications are argued by many to facilitate language development in young children (Dunn & Kendrick, 1982a). In the 1970's, researchers become increasingly aware of the lack of information in the literature regarding the presence or absence of these features in siblings' speech to younger children.

Why had sibling speech been largely ignored, given that siblings spend such great proportions of their time together? Lamb (1978a) suggested that the lack of attention towards sibling-infant interaction in general up to this point in time might be attributable to

failures reported in early studies (White, Cabana, Shapiro & Attannucci, 1977) to find much evidence of any sibling- infant interactions. Such studies reported that both peer and sibling interactions with infants were extremely infrequent, culminating in the perception that siblings basically exerted a negligible impact on infant development. Lamb noted, however, that many early studies had been deliberately designed with the intent of excluding siblings during observations. This factor, he suggested, may have resulted in an underestimation of actual sibling interaction and its subsequent impact.

To more closely examine infant-sibling interaction, Lamb (1978a) observed 24 children interacting with their preschool aged siblings in a laboratory playroom. Consistent with the earlier laboratory studies, Lamb found that there was surprisingly little direct interaction between siblings, particularly when parents were present. Nonetheless, Lamb noted that younger children were obviously keenly aware of the older preschoolers' behaviour and conversational interactions. Younger children attempted to keep close to their siblings and often tried to imitate the siblings' behaviour. He concluded that it might be quite precipitate to infer that siblings played an insignificant role in infant development. Rather, he suggested that siblings appear to facilitate or provide experiences that are unlikely to occur in the course of parent-infant interaction.

Many early studies such as Lamb's (1978a; 1978b) were conducted in laboratory settings; subsequent research set in more naturalistic contexts revealed considerably higher levels of sibling-infant interaction (Abramovitch, Pepler, and Corter (1982). Abramovitch, Corter, and Lando (1979) observed 34 pairs of same-sex siblings in their homes. Younger children averaged 20 months of age, and the age intervals between the siblings was either large (2.5 to 4 years) or small (1 to 2 years). Consistent with Lamb's (1978a) findings, children were observed to imitate their older siblings' behaviour much more than the

converse. In contrast to Lamb's findings, however, sibling interaction appeared quite high -- although children were free to wander about their home, 90% of the time the two children were in the same room. Younger children displayed a substantial amount of prosocial behavior (35% of all acts) and were less prone than their older siblings to initiate agonistic actions (only 10% of all agonistic acts). Female older siblings in both age intervals were found to be more likely to engage in prosocial behavior than males. There appeared to be a very high degree of rich and varied interaction among siblings within the home setting, certainly indicating that siblings might play a much larger role in infant development than had been suspected thus far. Similarly high levels of interaction in home settings were documented by Abramovitch, Corter, Pepler, and Stanhope (1986). Barry and Paxton (1971) also reported very high frequency of sibling interactions in a naturalistic study involving a non-western culture.

Dunn (1983) noted that the differences which emerged between findings in laboratory and home studies indicated that it is extremely important to study children in more than one setting. She suggested that children in a laboratory settings may become primarily interested in the novel toys presented during observation. In contrast, she asserted, observations in home contexts may be particularly important for capturing more typical interactions between siblings.

Studies Focusing on Sibling Speech to Younger Children

Shatz and Gelman (1973) conducted one of the first studies to specifically focus on sibling speech to younger children. Given that adults appeared able to vary their speech to accommodate the needs of young listeners, the authors attempted to determine if four year olds possessed this capacity. Anecdotal observations made by some researchers (Brown & Fraser, 1964) had indicated that preschoolers appeared to "talk down" to younger children.

However, these observations were quite inconsistent with the Piagetian perspective that preschool children were egocentric and thus unable to take into account perspectives other than their own.

Shatz and Gelman attempted to clarify this apparent inconsistency by studying the speech of four year old children in three contexts -- (1) speaking to an adult and two year old separately about a toy, (2) speaking to an adult and to a two year old spontaneously and (3) talking spontaneously to an adult and to a peer. Sixteen children, chronological age (C A) 39 - 60 months participated in the first part of the study. Prior to the tapings, pretests were administered, similar to traditional tests for "egocentrism". Results indicated that the subjects performed as expected; each test was successfully passed by only 38% of the children. Only 13% passed both tests. In contrast, children's speech during the experimental conditions indicated that all the children were able take their listeners into account to some extent. Specifically, mean length of utterances (MLUs) to younger children were shorter than to adults and subjects produced more long utterances and their longest utterance to adult listeners. The data also indicated that the younger the child listener (e.g. young 2 year old versus an older 2 year old) the more the subject used short utterances. The children also demonstrated an awareness of the differences in attention span evident in young children in relation to adults. Significant differences emerged in usage of attentional utterances (e.g. "look", "hey"), with subjects using more utterances of this type with young listeners. Furthermore, the younger the listener, the more the subjects used visual attention getters (e.g. "look").

To determine whether the effects detailed above would occur in spontaneous conversations, the authors conducted a subsequent study involving five children. Samples of spontaneous speech were obtained of (1) conversations between four year olds and their

mothers (2) conversations between four year olds and two year olds. Results indicated that preschoolers produced significantly shorter MLUs and used a greater proportion of attentional utterances with children. Again, the children used more long utterances and their longest utterance with adults. The authors interpreted their findings as evidence that preschoolers attempt to adjust their speech to the needs of listeners in uncontrolled as well as controlled conversational contexts.

The third phase of the study was designed to determine if four year olds talked in a similar manner to all children without concern for the changing receptive capacities of different aged children. Eight children were taped in spontaneous conversations with peers. These were compared with spontaneous conversations between subjects and adults in the first study. Results indicated that peers were treated more like adults than two year olds, thus indicating that preschoolers could adjust their speech to accommodate the changing capacities of the listener.

Results consistent with those obtained by Shatz and Gelman were also found by Sachs and Devin (1976) in a study examining the speech of four children (CA 3;9 to 5;5 years) talking in several contexts: to an adult, to a peer, to a baby, and to a baby doll. Children were also asked to role play "a baby just learning how to talk". Results indicated that children's speech characteristics varied depending on the situation. They did not talk to younger listeners (baby or doll) in the same manner in which they talked to their mother or their peer. To some extent, children used speech characteristics that have been found in mothers' speech to children. Speech "to baby" was found to be simpler than speech "to mother or peer" and showed more clarification characteristics. Specifically, differences in preverb length, names, imperatives, MLU, and tense were evident. The "as baby" analyses indicated that children knew some characteristics of baby speech, but not all. None of the

children used utterances that were exactly like those of younger children. The authors attributed this to two primary factors: (1) all of the children except one were very inconsistent about role-playing and (2) simple utterances were accompanied by relatively complex ones (often stated with babyish prosodic characteristics).

Findings from the aforementioned studies indicated that preschoolers were in fact capable of adjusting their speech as a function of the age of the listener. These adjustments occurred in spontaneous as well as controlled situations and, interestingly, were found to be independent of whether or not the subject had a younger sibling. The closer in age the subject was to the young listener, the fewer the adjustments that they made. Features evident in speech directed to young listeners included raised pitch, shorter utterances, a greater proportion of imperatives, more self-repetitions, less complex speech, and greater use of attentional devices.

Characteristics of Sibling Speech

As children did in fact appear to make some speech modifications when conversing with younger children, researchers began to question whether these adjustments mirrored those made by adults. Systematic comparisons of adult and sibling speech suggested, however, that this might not be the case (Dunn & Kendrick, 1981; Harkness, 1977; Mannle, Barton, & Tomasello, 1991; Tomasello & Mannle, 1985). Although similarities between adult and sibling speech surface consistently in the literature (e.g. raised pitch, short sentences, simple verb tenses) important differences emerge as well, particularly in relation to pragmatic aspects of speech.

One of the earliest studies to systematically compare maternal and sibling speech was completed by Harkness (1977) who examined interactions in Kenyan society. One feature of Kenyan culture was that older siblings often served in the capacity of caregivers.

Harkness reported that both mothers and older siblings did modify their speech to younger children (CA 2-3;6 years of age) in some of the ways described as "motherese" in western studies. Differences emerged, however, under closer assessment. Mothers posed more questions and gave fewer statements than siblings.

Dunn and Kendrick (1982a) also reported similar findings when they examined the speech adjustments made by forty 2 and 3 year olds when speaking to their 14 month old siblings. These adjustments were then compared with the speech adjustments made by mothers addressing their babies. In addition to linguistic measures, the authors also evaluated the subjects' behaviour towards their siblings. Results indicated that although systematic adjustments were made by children when speaking to their siblings, there were similarities and differences between these adjustments and those made by mothers speaking to the babies. Adjustments in clarification (e.g. increase in attention utterances and repetitions, shorter utterances) were evident, but the "affective-expressive" features evident in mothers' speech were not consistently evident in the children's speech. As in Harkness' study, mothers used far more questions than did the children, and the "conversations" between children and babies were comparatively short with regard to partner "turns". Children were also found to use speech more for prohibiting and restraining the sibling as well as for directing action. The authors noted that sibling use of self-repetitions and attentional devices generally occurred during attempts to prohibit or restrain the sibling. In contrast, mothers' use of such speech tended to occur in more positive interchanges (e.g. when showing the child something new). They concluded that although preschoolers can make many speech adjustments when interacting with young children, important differences are evident between adult and child modifications.

Tomasello and Mannle (1985) attempted to further elucidate the nature of preschooler speech adjustments with a focus on pragmatic as well as structural characteristics. Ten infants were video-taped twice, once at 12 -18 months of age, and once at 18 - 24 months of age in two conditions, (1) with their mother (2) with their preschool aged sibling. The authors found evidence of structural adjustments in the speech used by the preschoolers when interacting with the babies (higher pitch, short MLUs, many directives and many self-repetitions). Children's structural speech adjustments were never as extensive as the mothers', however, and they also experienced difficulty making "pragmatic" adjustments. Specifically, the authors noted that the preschoolers were less adept at providing nonlinguistic scaffolding (e.g. they were less able to follow the baby's attentional focus and less able to maintain interactions with a joint attentional focus). Also, the conversational interactions of siblings and infants were shorter than those of mothers and infants and contained fewer of the conversational techniques mothers employ to maintain dialogue. Teti, Bond, and Gibbs (1988) also reported results indicating that interactions between children and their parents were more linguistically enriched interchanges than interactions between children and their older siblings.

Pragmatic skills were again the focus in a study involving the "turn-taking" behaviour of very young children (Vandell & Wilson 1987). Specifically, the study contrasted infant interactions with three partners : mothers, older siblings, and peers. The authors reported that infants spent much less time in turn-taking interactions with peers and siblings than with their mothers. Interactions with mothers appeared to provide infants with the most extensive exchanges and most supportive experiences. In contrast, older siblings appeared to expose children to turn-taking interactions that were less supportive than mother-infant interactions but more supportive than peer interactions. Also, the quality of

sibling interactions differed from that of mother interactions -- sibling exchanges were less prone to centre on interests expressed by the infants. These exchanges instead tended to place the infant in a situation where they were responding to the sibling.

Mannle, Barton, and Tomasello (1991) attempted to further explore the linguistic modification skills of young siblings. Their study involved 16 infants (CA 22 to 28 months) their mothers, and their older siblings (CA 3;7 to 6;4 years). Infants were observed in dyadic interaction with mothers and also with older siblings. Several pragmatic differences were evident in the mothers' and siblings' conversational styles. Mothers' speech was characterized by the frequent use of language to "set up" the infants' next turn. Specifically, mothers tried harder than siblings to keep the infant involved in conversation via requests for information, turnabouts, and smooth transitions between conversational topics. They were also more prone to indicate when they did not understand the infants' utterance. Furthermore, when the infants indicated a potential breakdown in conversation, mothers attempted to repair the conversation almost twice as often as siblings. In contrast, siblings did little to "set up" the infants' next turn. They tended to try to direct the infants' behaviour more frequently and did not repair conversational breakdowns as often as mothers. Siblings thus thrust more of the responsibility for maintaining the conversation on the infants than did mothers.

While the preceding studies all indicate that preschoolers are somewhat limited in their ability to modify their speech to young listeners, they provide no insight into the skills of slightly older siblings. Hoff-Ginsberg and Krueger (1991) noted that most of the studies which provide an empirical basis for the characterization of sibling speech as less supportive than maternal speech have focused largely on children between 2 and 5 years of age speaking to even younger children. Does the child-directed speech of older children share a

greater proportion of the language supporting characteristics of mothers' speech? In an effort to examine that question, Hoff-Ginsberg and Krueger studied eighteen children (CA 1;6 and 3;0 years), their siblings (CA 4;0 to 5;9 years) their older siblings (CA 7;0 to 8;10 years) and their mothers. Dyadic interaction between the youngest child and each of the other family members was videotaped in the families' homes. Mothers' speech differed significantly from 4 to 5 year olds on eight of the nine characteristics measured. Compared to the preschoolers, mothers produced more utterances, longer utterances, more root words, more conversation-eliciting utterances, more recasts of infant speech, more self-recasts, responded to more infant utterances with topic-continuing responses, and spent more time in joint interaction with the young child.

In contrast, the 7 to 8 year olds differed from the mothers on six of the nine measures. Compared to their mothers, these children produced sentences with shorter mean length, fewer root words, fewer conversation eliciting utterances, fewer recasts of infant utterances, used fewer topic-continuing responses in reply to infant utterances, and spent less time in joint interaction with the infant.

When the 4 to 5 year olds were compared to the 7 to 8 year olds, it appeared that the latter group produced significantly more utterances, more root words, proportionately more recasts, and responded to a greater proportion of the infants' utterances with topic continuing replies. They also spent significantly more time in joint interaction.

Results suggest that the modifications made by preschool children are not nearly as extensive as those made by mothers. Also, although older children are able to modify their child-directed speech to a greater extent than preschoolers, again, these modifications are not as extensive as those made by mothers. The authors suggest that the differences evident in the speech characteristics of the younger and older siblings caution against broad

generalizations of the value of siblings in general as conversational partners. Older children appear better able to produce more supportive child-directed speech. These findings are consistent with Gibbs, Teti, and Bond's (1987) findings on communication between closely and widely spaced sibling dyads. Gibbs et al. reported that interactions between widely spaced siblings more closely resembled parent-child interaction. Siblings in widely spaced dyads engaged in more sustained turn taking bouts than did those in closely-spaced dyads. Furthermore, older siblings exposed the infants to greater amounts of vocal, verbal, and gestural input. Also, the infants used more vocal and gestural behaviour with and were more responsive to widely spaced older firstborns. Similar to Hoff-Ginsberg and Kruger's (1991) findings, Gibbs et al. did note, however, that subsequent comparisons of the widely spaced sibling-infant pairs and mother-infant pairs indicated that sibling-infant interactions were comparatively less frequent and sustained. They concluded that relative to these "older" siblings, mothers still created more enriched, stimulating experiences for the children.

The Expanded Linguistic Context - Mother, Baby and Sibling Makes Three

As noted earlier, much of the early research regarding language development had typically centered on dyadic settings, particularly mother-child interactions. Concurrent with the expanding focus on the roles that other family members play in the language learning process was a developing awareness that many children, particularly those with older siblings, typically experience a much wider and more complex linguistic environment than the traditional dyadic research setting. Bronfenbrenner (1977) and others (Lewis, 1984; Woollett, 1986) have emphasized that a large proportion of human interchange occurs within the context of larger social groups. As a consequence of this growing awareness, several researchers attempted to move beyond the traditional dyad and examine

the linguistic characteristics of more complex interactions (Barton & Tomasello, 1991; Dunn & Shatz, 1989; Jones & Adamson, 1987; Schaffer & Liddell, 1984; Wellen, 1985; Wellen & Broen, 1982; Woollett, 1986). Most studies have attempted to determine how the dynamics change when an older sibling is present during mother-child interactions.

Wellen and Broen (1982) conducted one of the earliest studies examining the dynamics of triadic contexts involving siblings. The authors were particularly interested in determining how siblings affected the question-answer interactions between adults and young children. They argued that such interactions served several possible language supporting functions: to teach the child the "turn taking process", elicit verbal responses, allow adults to expand upon child responses, and provide feedback from the child which adults can use to pace further discussion. They found that while siblings of normal children disrupted the question-answer dialogue between the experimenter and young children, they did so to a lesser degree than did siblings of language delayed children. Wellen and Broen suggested that such interruptions may deprive the adult of information about the younger child's language level and prevent the adult from modifying speech in ways that facilitate learning language. They noted, however, that with normal children, sibling interruptions usually involved the sibling rephrasing questions or providing hints to aid the younger child. Furthermore, siblings tended to interrupt in this manner more frequently when harder questions were posed. In sharp contrast, siblings of language delayed children tended to directly answer for the younger child, behaving almost as though the younger child was not even present.

Wellen (1985) attempted to expand upon her earlier study using a larger number of subjects and triads composed of mothers, older siblings and younger children. Mothers participated in this subsequent study rather than experimenters, providing a more

naturalistic triadic situation. Half of the triads involved younger children with CAs ranging from 2;4 to 2;6 years, while the other half had younger children with CAs of 4;4 to 4;10 years. Older siblings ranged in age from 7 to 10 years. Observations of question-answer dialogues were made in both triadic and dyadic contexts. The author reported that older siblings responded to 60-65% of all mothers' questions before the younger child answered. In 57-65% of these instances, sibling responses were direct answers to the questions, not the frequent rephrasing or hints evident in the earlier Wellen and Broen (1982) study. Interesting changes in the question-answer dynamics emerged. Compared to the dyadic setting, mothers asked fewer questions in general in the triadic context. Specifically, mothers produced more direct repetitions of questions (rather than rephrasing), fewer questions containing hints and answers, and fewer questions providing repetitions and expansions of the children's answers. Younger children reduced their number of utterances by half during triadic exchanges. Ultimately, the presence of the older sibling reduced the feedback provided by the child. Wellen concluded that although it could be argued that older siblings may facilitate the language development of younger children by modeling conversational turn-taking, active participation in conversation is probably more conducive to expressive language development than simply listening to others converse.

Support for Wellen's (1985) findings were reported in a subsequent study by Woollett (1986). She also examined how language exchanges were affected by the presence of an older sibling. A sample of 18 family groups, each consisting of a mother and two children, was used. The target children ranged from 17 to 27 months of age, while all the older siblings were preschoolers. Mothers were videotaped interacting with their younger child and then with both children. All tapings occurred in a room of a local family centre using a standard set of toys. Results indicated that the presence of older children

significantly reduced mothers' activity with younger children -- mothers spoke less and the number of utterances addressed to younger children was reduced considerably. Nonetheless, although mothers talked less in triadic situations, they tended to use language to serve similar purposes. With respect to the younger children, the data indicated that the presence of their siblings significantly reduced the amount of language that they produced. Features such as utterance length, and discourse functions (e.g. directives, comments, answers) did not differ, however, except with respect to questions. Younger children answered significantly more questions when alone with their mothers. In examining the dynamics of triadic situations, Woollett noted that the younger children's language environment was altered by the language mothers and older children address to one another. Mothers addressed approximately twice as many utterances to older children and the utterances were longer. More of mothers' utterances to older children were answers and referred to internal states or events outside the room. Results also indicated that the presence of older children significantly reduced the amount of younger children's language. Thus, although the triadic situation was the more linguistically complex setting, younger children participated less frequently and were addressed less often.

A later study by Jones and Adamson (1987) reported findings similar to those of Woollett (1986). The authors conducted an extensive study of communication in mother-infant-sibling triads, looking at dyadic interaction between firstborn and laterborn children and their mothers as well as triadic situations involving the laterborns' siblings. Infant chronological ages ranged from 18 to 23 months of age. Thirty two children participated in the study, which involved free play and book reading sessions. Although no qualitative differences in laterborn mothers' speech emerged in dyadic versus triadic situations,

quantitative differences were evident. Consistent with the preceding studies, mothers spoke much less to their children in triadic situations.

Interesting differences in the speech of the mothers of laterborn and firstborn children emerged as well. Even in dyadic settings, mothers of laterborns used significantly fewer "language" functions than mothers of firstborns. Specifically, they asked fewer questions, attempted to elicit fewer verbal responses, and were less supportive of the linguistic attempts of their offspring.

The authors also examined infant language usage, and reported that laterborns made significantly fewer utterances when their siblings were present than when they played only with their mothers. Also, the speech of laterborns in general contained a significantly higher proportion of "social-regulative" utterances compared to firstborns. Specifically, the authors defined this term to include speech which tended to focus on getting attention (e.g. "Hello", express feeling, e.g. "I like that!" or make a request of the listener, e.g. "Let me see"). Although siblings in the study rarely spoke to the infants, when they did, their speech also tended to be "social regulative" in nature.

While several of the preceding studies (Jones & Adamson, 1987; Wellen, 1982; Woollett, 1986) consistently found that infants produced more utterances overall in dyadic rather than triadic situations, Barton & Tomasello (1991) reported conflicting findings. They reported that "mother-infant-sibling" conversations in their study were found to be almost three times longer than either "mother-infant" or "mother-sibling" conversations, with all three participants taking more "turns" than they did in the dyadic condition. Their study was designed to document the dynamics of linguistic and nonlinguistic interaction in mother-infant-sibling triads. Nine 19 month olds and nine 24 month olds were observed interacting with their mothers and preschool aged siblings during 20 minute, free play

intervals. A standard set of toys was used, with new toys being introduced at 5 minute intervals. The authors reported the interesting finding that children as young as 19 months of age were able to participate in triadic conversations and triadic joint attentional episodes (defined as social interactions between two or three participants who share the same attentional focus at the same time for at least 3 second intervals). The authors attempted to account for the surprising finding noted earlier that mother-infant-sibling conversations were much longer than either mother-infant or mother-sibling conversations. They suggested that in the triadic conversation, less pressure is put on each child. In the dyadic settings, approximately half of the conversational weight rests on the child. The child must make appropriate turns at specific points if the conversation is to be maintained. In triadic conversations, however, the child may simply remain silent if she has nothing to contribute. The other participants can carry the conversation, and the child may rejoin the conversation at a later point. Analysis of the data supported these speculations. Mothers in the study took one-half of the turns in both the dyadic and triadic conversations. While children in the dyadic situation took approximately half of the turns, children in the triadic situations took roughly one-quarter of the turns each. The authors asserted that such dynamics might account for longer conversational interactions in certain triadic situations.

Thus far, no studies have attempted to examine how the linguistic dynamics change when a third or fourth sibling is added to the triadic situation. However, a related study by Schaffer and Liddell (1984) looked at how adult-child interactions are affected by the addition of three more peers. Their findings suggest that compared to dyadic contexts, polyadic contexts considerably reduce the amount of language adults direct at individual children. Furthermore, children's verbalizations are treated in a different manner. The study attempted to explore the nature of adult-child interaction under two conditions, dyadic

(adult with one child) and polyadic (adult with 4 children). Sixteen day nursery staff members participated, together with children aged 22 to 38 months. The study was not designed specifically to assess language but rather to determine how a caretaker's behaviour changes when interacting with a group rather than a single child. Results indicated that although adults produced a greater amount of speech in the polyadic situations, each child in the large group received considerably less adult speech specifically addressed to her or him. A different style of interaction was evident among adults in the larger group setting in that they were more likely to use direct imperatives than declarative statements. Also, although prohibitive expressions (e.g. "no") were frequent under both conditions, significantly more were evident in polyads. Fewer incidences of joint involvement between adult and child occurred in the polyadic context, and such incidences were of significantly shorter duration than those in the dyadic setting. Several strategies were used by adults in the larger group setting to cope with increased demands, including ignoring child speech, fragmented attention, use of a more controlling style, and reduced participation in individual child activities. Differences in child behaviour were noted as well. In the polyadic group, children significantly reduced the number of bids for adult attention. This was not attributable to the children's increased interaction with one another as little interaction with peers was evident.

Summary and Implications

Little is known about how language development in laterborn children compares to that of firstborns. Results from early studies in the area suggest that laterborns acquire speech more slowly (Davis, 1936; McCarthy, 1930), while more recent research suggests that laterborn language development may be quite similar to that of firstborns (Toledano-Tackeff, 1992) or that laterborns may actually develop certain aspects of speech more

quickly than firstborns (Oshima-Takane, 1988). Researchers investigating individual differences in language acquisition styles have noted a trend whereby laterborns tend to surface more frequently as "expressive" stylists -- a language acquisition approach characterized by smaller initial vocabularies, a later start and slower rate of language development, and a preference for pronouns rather than nouns. While some researchers suggest that laterborns may develop certain pragmatic skills at a more rapid pace than firstborns (Dunn & Shatz, 1989), no comparative studies have been conducted to date.

With respect to the literature accumulated regarding the linguistic environment of laterborns, several aspects seem to emerge consistently in the literature. Do preschoolers modify their speech to meet the needs of younger language learning children? Research suggests that they do; even children as young as four years of age are capable of modifying their speech to some extent when talking to younger children (Sachs & Devin, 1976; Shatz & Gelman, 1973). Children's speech adjustments, although similar to adults' in some respects, do not mirror those of adults (Dunn & Kendrick, 1982; Mannle, Barton, & Tomasello, 1991; Tomasello & Mannle, 1985). As they grow older, however, children's modifications begin to more closely approximate those of adults, both in type and degree (Hoff-Ginsberg & Krueger, 1991). Siblings appear to talk less to younger children than parents do, and many older siblings do not appear to use "affectionate endearments" when conversing with younger children.

With respect to research concerning infant/mother/sibling linguistic interchanges, the data accumulated thus far strongly suggest that the linguistic dynamics of such conversations differ significantly from those of dyads (Barton & Tomasello, 1991; Jones & Adamson, 1987; Wellen, 1985; Wellen & Broen, 1982; Woollett, 1986). Thus, it would appear that the linguistic environment typically experienced by laterborn children (40% of

North American and European children) is substantially different from that of firstborns, with the latter typically spending a greater proportion of their time in mother-infant dyadic exchanges.

What effects might exposure to these more complex linguistic contexts involving siblings (with their limited ability to modify their speech) have on laterborn language learners? Findings from many of the studies reviewed strongly suggest that ongoing contexts are less than ideal for facilitating language development because children must share access to adults with siblings or peers. The presence of another child appears to detrimentally affect the general quantity and quality of adult-child linguistic exchanges. Fewer adult utterances are directed towards the child (Jones & Adamson, 1987, Woollett, 1986) and adults become more directive in their interactive styles (Schaffer & Liddell, 1984). Some researchers contend that, given these findings, laterborn children should be slower to develop linguistic skills than firstborns because part of their linguistic input comes from siblings who tend to be more directive and less attuned to their skills than are mothers (Tomasello & Mannle, 1985). Directedness is considered to detrimentally affect language development (Newport, Gletman, & Gletman, 1977). Conversely, parental attunement is presumed to be positively associated with language development (Cross, 1977). Siblings appear to interfere in the question-answer dialogues of mothers and younger children (Wellen, 1985; Wellen & Broen, 1982), which reduces the amount of feedback children provide to their parents. This may detrimentally affect the parent's ability to gauge the child's comprehension and modify their subsequent speech to the child. Furthermore, mothers have been observed to talk less to younger children when older siblings were present (Jones & Adamson, 1987; Wellen, 1985; Woollett, 1986). Jones and Adamson even reported that mothers of laterborn children talked less about language than mothers of

firstborns, even in dyadic situations. This could be interpreted as support for the contention that laterborns may endure an inferior linguistic experience in relation to firstborns (Dunn & Shatz, 1989). Furthermore, numerous studies have documented that children's verbalizations are reduced when siblings are present. Although the literature certainly indicates that young children attend to the conversations of others (Dunn & Shatz, 1989; Lamb, 1978a, Lamb, 1978b), some researchers argue that active participation in conversations facilitates language to a greater extent than simply listening to others talk (Wellen, 1985).

It thus appears that research concerning the linguistic environment of laterborns offers little to support the contention that exposure to such an environment might facilitate rather than hinder many aspects of language development. Until more studies actually compare laterborn and firstborn language development, however, all such contentions remain essentially speculative.

Statement of the Problem

It would appear that the literature accumulated thus far indicates that the linguistic environment to which laterborns are exposed differs from that of firstborns. These differences may have ramifications on the semantic, syntactic, and pragmatic aspects of language acquisition in firstborn and laterborn children. With respect to the syntactic and semantic aspects, there is some evidence that laterborn children may differ from firstborns in the manner in which they acquire language. Specifically, laterborns may acquire language more slowly and manifest characteristics associated with an expressive language learning style. They may also differ with respect to their social or pragmatic use of language. By virtue of their greater exposure to ongoing linguistic exchanges, laterborns may learn certain conversational skills at a faster pace than firstborns.

The present study was designed to explore each of these possibilities. The goals of the study were thus twofold: first, to compare the development of pragmatic skills -- specifically the ability to "join" ongoing conversations -- in firstborn and laterborn children. Second, to compare the early speech of firstborn and laterborn children on a variety of linguistic measures to determine if differences in early speech characteristics were evident.

With respect to the first goal, it is plausible that becoming effective at joining the conversations of others is an important pragmatic skill which might be facilitated by frequent exposure to ongoing conversations. Evidence that children "attend" to the conversations of others would support the argument that laterborn children are active participants in the language learning process who "work" to acquire the linguistic input they require to grow. Intrusions into ongoing conversations may be perceived as evidence of children's "attentiveness" to the conversations of others; they suggest that children are cognizant that the attention of others is not directed at them. Intrusions enable children to redirect this attention towards themselves. However, intrusions by themselves are not evidence of "understanding", nor do they necessarily reflect an interest in joining a conversation. By assessing the quality of intrusions, however (relevant versus irrelevant), it is possible to distinguish between "joining" a conversation, and merely "interrupting" a conversation (Dunn & Shatz, 1989). Given their more frequent exposure to ongoing conversations, it is possible that laterborns may differ from firstborns in the frequency or quality of their intrusions over time.

With respect to the second goal, by concurrently examining relatively large samples of laterborn and firstborn children, it was possible to compare early speech use in both groups on a variety of measures (MLU, expressive vocabulary size, receptive vocabulary size, noun use, pronoun use) for trends reported to be evident in previous studies using

smaller samples. Thus, the present study served to augment the sparse data currently available regarding early language use by laterborn children.

In addition to the preceding goals, the study served the further purpose of providing data on language development under naturalistic conditions. It makes intuitive sense to attempt to examine language development in the most natural settings and in the most unobtrusive manner possible. One such natural setting is a family meal with both parents and all siblings present. The current study involved assessing children's language usage within their homes during such a meal. No attempt was made to intervene in the ongoing activities or limit the number of individuals present during taping. The data thus represent the linguistic environment typically experienced by each child in the study.

Research Hypotheses

Hypothesis 1. It was expected that differences would be evident in the frequency of intrusions made by firstborn and laterborn children. Specifically, it was expected that intrusions would occur more frequently in laterborns' conversational turns at both the initial and six month observations. It was anticipated that the laterborns' linguistic context would present them with both the need and the opportunity to intrude with greater frequency than firstborns, even at the very early stages of language development.

Hypothesis 2. Developmentally related changes would be found, whereby both groups evidenced greater ability to "join" rather than simply "interrupt" conversations at Time 2 ("joining" involved contributing relevant information to the conversation of others, "interrupting" involved interjecting with information that was not relevant to the ongoing conversation). It was anticipated that laterborns would "join" conversations rather than "interrupt" them to a greater extent than firstborns at both Time One and Time Two,

however. They would thereby demonstrate more refined conversational skills relative to firstborns. This hypothesis was based on the premise that the laterborns' greater exposure to ongoing conversations would present them with more conversational models to observe and afford them more opportunities to practice joining.

Hypothesis 3. Differences would be evident in the early vocabularies of laterborn and firstborn children. Specifically, relative to firstborns, laterborns were expected to have smaller expressive vocabularies and use more pronouns at both the initial taping and the subsequent six month taping.

CHAPTER II

METHOD

Subjects

Subjects for the current study were selected from the participants in a larger, ongoing language research project investigating variations in children's language learning styles. The larger study involved a total of 34 primarily middle-class, Caucasian children and their families who reside in the Windsor/Essex County area. Families were recruited via television and radio requests for volunteers and all were offered a small monetary award for participation in the study

Of the larger sample, a subset of 21 children and their families were selected for the present study, based on the following criteria: (1) child MLUs of approximately 1.50 to 2.50 at the time of the first supper videotaping and (2) families with two parents residing in the home. Target MLUs in the 1.50 to 2.50 range were set to ensure that all children possessed sufficient expressive language capabilities to enable them to intrude orally into the conversations of others. In addition, specifying a limited MLU range ensured that all children had essentially comparable linguistic skills at the onset of the study. The criterion of two parent families was necessitated by the focus of the study, whereby a minimum of two family members in addition to the child were necessary for the examination of the child's ability to intrude into ongoing conversations. Both parents were thus necessary for the examination of firstborn children's capabilities in this regard. Preliminary examinations of the supper tapings indicated that parents were major participants in a great deal of the discourse. Given the apparently central conversational role of parents, it was felt that the absence of one parent might substantially alter the nature of the linguistic exchanges. To

explore this possibility further, the follow-up tapings which were available for two of the children whose father was absent at Time Two were examined. The conversational dynamics did appear altered by the absence of one parent (specific findings are detailed further in the Results section). It was therefore decided to apply the criterion of two parents present for laterborns as well as for firstborns.

The sample included the families of 5 firstborn males, 5 firstborn females, 5 laterborn males, and 6 laterborn females. Data were not available for one of the laterborn females at Time One but were available at Time Two. Her data were thus only included for Time Two analyses and were necessarily excluded from any longitudinal analyses which were completed.

Unfortunately, it was not possible to control for the number of older siblings present in the laterborns' family units. It was similarly not possible to control for the birth spacing between siblings or the gender of siblings. As noted in the literature review, although no clear consensus exists regarding the effect that these variables may have on the laterborns' linguistic environment, it is possible that they do exert some impact.

Tables 1 through 3 present a general description of the data. Table 1 provides information on each child at Time One regarding birth order status (laterborn versus firstborn), gender, age, MLU, number of older siblings, and the number of people present during the taping. Table 2 provides the same information for children at Time Two, while Table 3 provides a summary description of each of the four groups of children. Only tapings in which both parents were present were analyzed; therefore one child's (Child 9) taping was excluded from analysis due to the father's absence at Time One. This reduced

Table 1

Description of Laterborn and Firstborn Children, Time One

<u>Child</u>	<u>MLU</u>	<u>Age</u>	<u>Sex</u>	<u>Birth Status</u>	<u>No. of Older Siblings</u>	<u>No. of People Present</u>
Child 1	2.00	28	M	LB	1	4
Child 2	1.85	26	M	LB	1	4
Child 3	2.41	26	M	LB	1	4
Child 4	1.96	23	M	LB	2	6 ^a
Child 5	1.65	24	M	LB	2	6 ^a
Child 6	2.84	28	F	LB	3	6
Child 7	2.34	27	F	LB	1	4
Child 8	1.95	26	F	LB	1	4
Child 9	1.84	25	F	LB	3	6
Child 10	1.50	22	F	LB	3	6
Child 11	1.45	25	M	FB	0	3
Child 12	1.60	22	M	FB	0	3
Child 13	1.91	26	M	FB	0	4 ^a
Child 14	1.60	20	M	FB	0	3
Child 15	2.19	26	M	FB	0	3
Child 16	2.08	28	F	FB	0	3
Child 17	1.94	25	F	FB	0	3
Child 18	1.75	20	F	FB	0	3
Child 19	1.56	20	F	FB	0	3
Child 20	2.41	26	F	FB	0	3

Note. Age is described in months. LB = laterborn; FB = firstborn; M = male, F = female

^a The additional person present during the family meal is a younger sibling.

Table 2

Description of Laterborn and Firstborn Children, Time Two

<u>Child</u>	<u>MLU</u>	<u>Age *</u>	<u>Sex</u>	<u>Birth Status</u>	<u>No. of Older Siblings</u>	<u>No. of People Present</u>
1	2.51	34	M	LM	1	4
2	1.58	32	M	LM	1	5 ^a
3	3.41	32	M	LM	1	4
4 ^b						
5 ^c						
6 ^c						
7	3.66	33	F	LF	1	4
8	2.01	32	F	LF	1	4
9 ^d	2.83	33	F	LF	3	6
10	2.07	28	F	LF	3	6
11	2.14	31	M	FM	0	3
12	1.93	28	M	FM	0	4 ^e
13	3.31	32	M	FM	0	4 ^e
14 ^c						
15	3.29	32	M	FM	0	3
16	3.41	34	F	FF	0	4 ^e
17	3.27	31	F	FF	0	4 ^e
18 ^f						
19	2.48	26	F	FF	0	3
20 ^c						

Note. Age is described in months. LB = laterborn; FB = firstborn; M = male; F = female

^a The extra person present is an uncle.

^b No follow - up taping was available for this child.

^c Child's data was excluded due to the absence of one parent.

^d Child is not the original subject; she is a child for whom data were available at Time Two only.

^e The extra person present at the taping is a younger sibling.

^f Child was excluded from analysis due to illness during the taping.

Table 3

Summary Description of the Data at Time One and Time Two

Subject		Time One	Time Two
<u>N</u>		20	14
Gender	Male Laterborns	5	3
	Female Laterborns	5	4
	Male Firstborns	5	4
	Female Firstborns	5	3
Mean Age (in Months)	Male Laterborns	25.4	31.4
	Female Laterborns	25.6	31.4
	Male Firstborns	23.8	29.8
	Female Firstborns	23.8	29.8
Mean MLU	Male Laterborns	1.97	2.50
	Female Laterborns	2.09	2.64
	Male Firstborns	1.75	2.67
	Female Firstborns	1.95	3.05
Mean Number of Utterances	Male Laterborns	139.9	198.7
	Female Laterborns	125.6	129.0
	Male Firstborns	198.8	148.3
	Female Firstborns	202.4	129.3

the number of laterborn females at Time One from six to five. A total of seven tapes were excluded from analysis at Time 2, six due to the fathers' absence (Children 4, 5, 6, 9, 14, and 20) and one due to the fact that the child appeared to be quite ill during the taping (Child 18). Consequently, the data on two laterborn males, two laterborn females, one firstborn male, and two firstborn females were not available at Time Two.

MLU was used as an index of linguistic maturity so that children could be compared with one another as well as with other children of similar linguistic ability reported in the literature. Mean MLU at Time One was 1.94, with a range of 1.45 to 2.84. This particular range of MLU was selected for the first Table 1 observation in an effort to capture the early stages of multiword utterances. Mean MLU at time Two was 2.71, with a range of 1.58 to 3.66.

Procedure

Consistent with the current research focus on attempting to obtain language samples in naturalistic settings, all families were videotaped in their homes. Each family was videotaped on three occasions, the order of which was consistent for all families. The initial taping was a free play taping, followed within two weeks by a supper time taping (Time One for the present study). The final taping occurred six months later and also involved a supper context (Time Two for the present study). Parents were asked to try to act as they typically would and the videographer attempted to be as unobtrusive as possible.

Each taping session was approximately forty minutes in length, thirty minutes of which was subsequently analyzed and coded. A portable camcorder was used for taping purposes, allowing the videographer (a research assistant) to move freely. Whenever possible, the same researcher recorded all three tapings for each child.

Prior to the initial taping of each family, a series of psychological tests were administered by trained research assistants, including the Peabody Picture Vocabulary Test -Revised (PPVT-R) (Dunn & Dunn, 1981). The latter measure was used in the present study to serve as an index of receptive vocabulary development.

The initial videotaping session involved a free play context in which children were taped while interacting with other family members in activities of their choice. "Supper" was defined as a forty minute interval in the late afternoon when the family gathered for a meal. Tapings were begun just prior to the commencement of the meal. The meal itself was recorded, with the target child as the primary focus. If the child finished his/her meal prior to the end of the taping period, his/her subsequent activities were also recorded. The verbalizations of all participants were recorded and transcribed.

The supper tapings of each family were utilized in the present study primarily because these tapings provide an opportunity to observe children interacting with both parents. As the central focus of the present study concerns children's ability to "intrude" upon the conversations of others, a minimum of two participants other than the child were required in order for conversations to occur not involving the child, thereby affording the child an opportunity to intrude. Furthermore, supper settings are a common experience for most families and provide family members with an opportunity to converse as well as eat. They thus provided an excellent opportunity to observe ongoing language interactions in a naturalistic context.

Classification of Conversational Turn Taking

The coding scheme used to examine the conversational turn-taking behaviour of children in the present study is a modified version of the scheme devised by Dunn & Shatz

(1989). Initially, children's utterances were categorized as one of five "Turn Types" described below:

Turn Types.

Five child turn types were identified: (1) child-addressee turn -- child's turn that followed a speaker turn addressed directly to the child (or child and another; concurrently); (2) intrusion -- child's turn that followed a speaker's turn addressed to another; (3) child initiates -- child's turn began a new conversation, on a new topic, following an extended pause after a previous speaker turn; (4) other's self talk -- child's turn followed a previous turn in which another speaker was engaged in self-talk; (5) child's self talk (egocentric speech) -- child engaged in self talk, not addressed to anyone else.

Following this, each child's conversational turn was further evaluated in terms of the information it added to the conversation (old versus new) and its relevance to the conversation. These terms are defined more explicitly below:

Relevance. The child's turn was coded as relevant if it was semantically related to the previous speaker's turn, not relevant if it was unrelated, or unclear if its relevance to the previous speaker's turn was not clear.

Information. The information in the child's turn was coded thus: 1) new information where the child's turn added new information to the topic of the conversation of the previous speakers, and 2) old information when the child's turn was essentially a repetition of previous information on the topic.

In order to ascertain if children's "intruding" was influenced by the primary referent of ongoing conversations (e.g. if the ongoing conversation primarily concerned the child as opposed to others or objects) and to determine whether the child primarily intruded with information concerning him/herself, others/objects, the following were identified:

Referent of Prior Turn. The main referent of the speaker's turn preceding the child's turn, whereby the main referent refers to the actor most involved. Three categories were distinguished: child -- a conversational turn whereby the primary referent was the child or the child's action; other/object -- a conversational turn in which the primary referent was the speaker, other people present, family members, friends or an object; and unclear --- a conversational turn in which the primary referent was unclear.

Referent of Childs' Turn. The referent of each child turn was coded in accordance with the categories detailed above.

Linguistic Measures

In addition to the preceding "pragmatic" analyses concerning conversational turn-taking behaviour, several semantic and syntactic measures of child speech were calculated to facilitate a comparison of laterborn and firstborn language development. These included the following:

Mean Length of Utterance (MLU). Coded for each target child at Time One and Time Two in accordance with the guidelines established by Brown (1973) and modified by Nelson (1973). This provided an index of linguistic maturity and allowed for the selection of children with similar linguistic levels at Time One.

Noun Use Ratio (N/[N+PN]). The total number of nouns used by a child divided by the combined number of nouns and pronouns used by the child. This measure provided an indication of whether the child primarily used nouns or pronouns when speaking and has been used to differentiate "expressive" and "referential" children in previous studies.

Expressive Vocabulary. The number of different words used by a child, calculated by a vocabulary count. Several researchers have noted that "referential" children tend to have larger initial expressive vocabularies than "expressive" children. In addition to a

general word count, the specific number of different nouns used by each child was calculated. Nelson (1973) reported that the initial productive vocabularies of “referential” stylists tend to contain a greater number of nouns than those of “expressive” stylists.

Receptive Vocabulary. Determined via the child's raw score on the PPVT-R administered at Time One. At the time of administration, many of the children in the study were below the age range for which the PPVT-R was normed. It is therefore not possible to calculate standardized scores for the children; however, age equivalencies could be calculated and provide a gauge of receptive vocabulary level.

Supplementary Measures

Early research (Davis, 1968; McCarthy, 1930) and more recent studies examining the referential/expressive dimension (Dore, 1981; Nelson, 1973; Snow, 1979) suggest that laterborns acquire language later than firstborns. Furthermore, this preliminary research suggests that relative to their firstborn counterparts, laterborns continue to develop their linguistic skills at a slower pace. Given that children in the present study were selected for inclusion using the criterion of similar linguistic level (indexed by MLU at Time One), it was decided to compare the age of each group to determine if in fact laterborns were significantly older than firstborns at the onset of the study.

It was also decided to examine several additional measures in order to elucidate how language was used in ongoing contexts. Towards that end, the following measures were also calculated:

Number of Parental Utterances. Total number of utterances directed at the target child by both parents. This provided an indication of whether or not laterborns received less direct parental speech than firstborns.

Conversational Partner Intrusions. The number of intrusions that laterborns made into parent/sibling conversations were compared with the number of intrusions made into parent/parent conversations.

Correlations. To explore possible relationships between variables, Pearson r correlation coefficients were calculated at Time One and Time Two.

Interrater Reliabilities

To assess interrater reliabilities, eight of the tapes and transcripts were coded by an independent examiner with previous training in language research and the number of coding agreements was divided by the number of coding agreements plus the number of coding disagreements (agreements/[agreements + disagreements]). Reliabilities were found to range from .80 to .99.

CHAPTER III

RESULTS

The analyses of children's and parents' speech in the present study were based on all decipherable utterances produced during the middle 30 minute segment of each 40 minute tape. As noted previously, only tapings in which both parents were present were analyzed; therefore one laterborn female's Time One taping was excluded from analysis due to the father's absence. Data on 20 subjects were therefore available for Time One analyses. A total of seven tapes were excluded from analysis at Time Two, six due to the fathers' absence and one due to the fact that the child appeared to be quite ill during the taping. As data on one additional subject were available at Time Two, a total of 14 tapes were included in Time Two analyses

Analyses of Conversational Turns

Of primary interest in the present study were the frequency and type of "intrusions" used by laterborn and firstborn children. Specifically, it was anticipated that differences would be evident between the two groups, such that intrusions would occur more frequently in laterborns' conversational turns at both Time One and Time Two (Hypothesis One). Figures 1 and 2 present laterborn and firstborn children's use of intrusions at Time One and Time Two respectively. Mann - Whitney *U* tests were used to compare the frequency of laterborn and firstborn children's intrusions at both time intervals. The average rank assigned to each group as part of the Mann-Whitney *U* calculations as well as the specific results of these analyses are displayed in Table 4. As hypothesized, the results indicated that laterborns did in fact make significantly more intrusions than firstborns at both Time One (*U*_{smaller} = 4.5, $p < .01$) and Time Two (*U*_{smaller} = 1, $p < .01$).

Figure 1 No. of Laterborn and Firstborn Intrusions, Time One

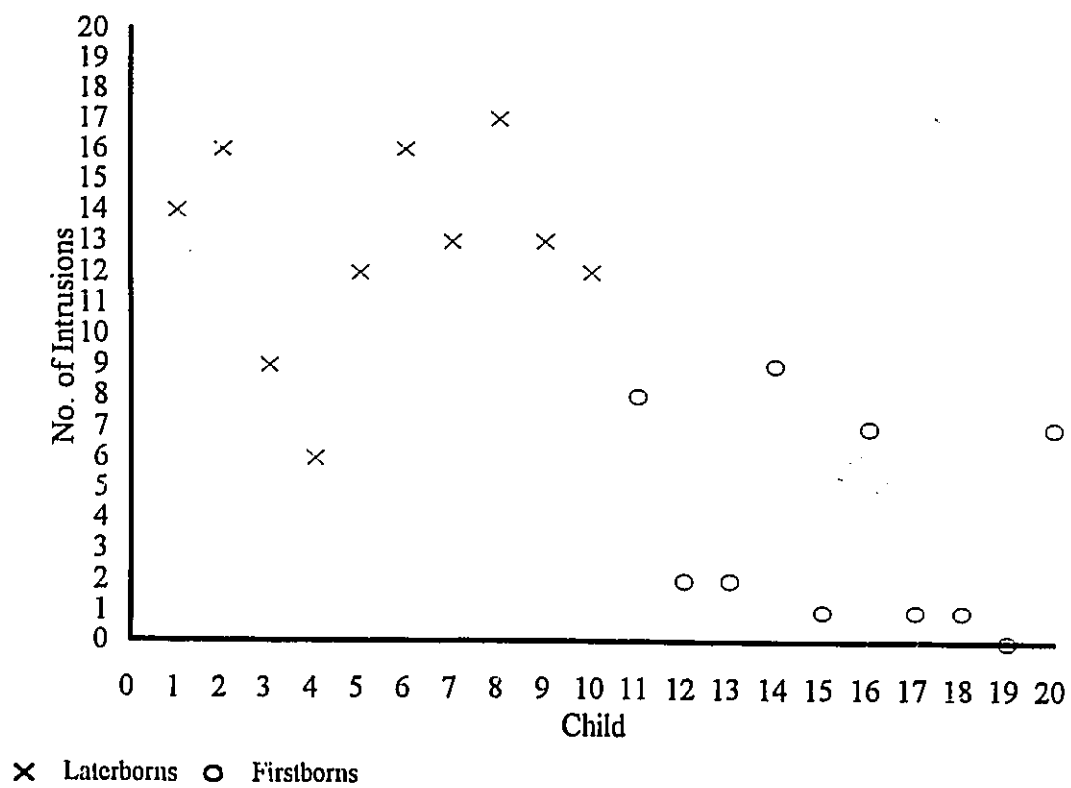


Figure 2. Total No. of Firstborn and Laterborn Intrusions, Time Two

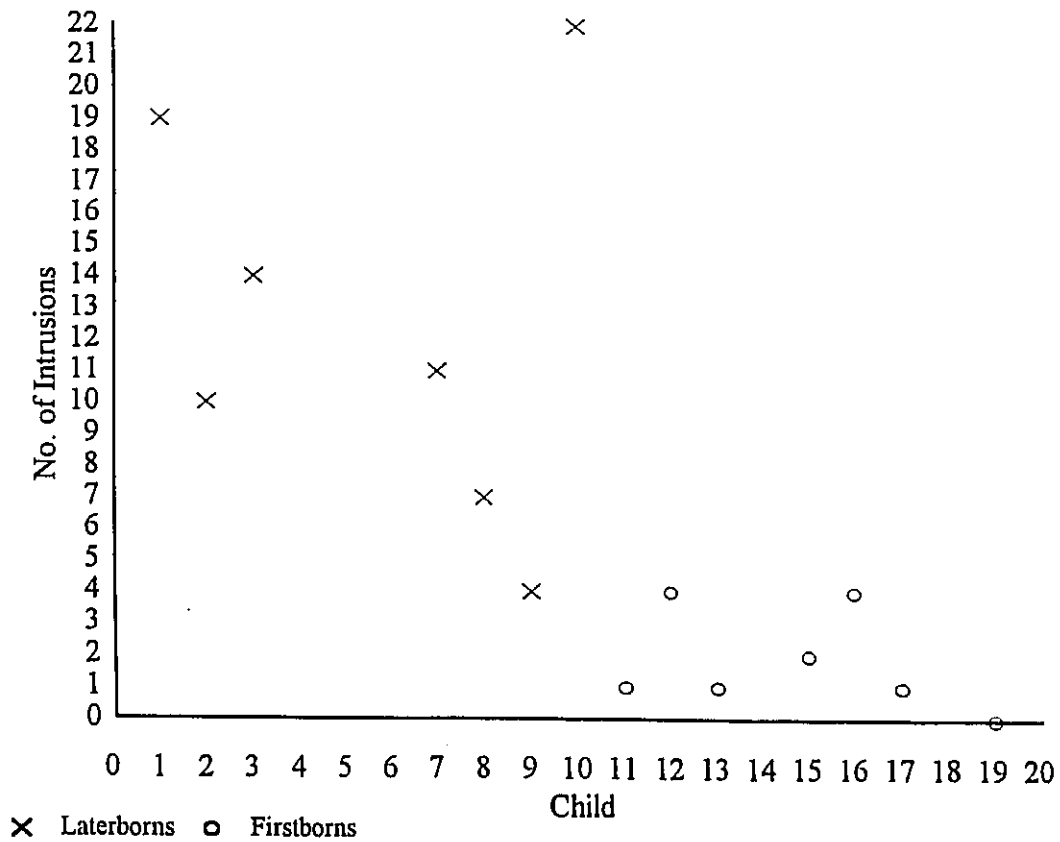


Table 4

Average Group Ranks and Results of Mann-Whitney U Tests on Conversational Turns of
Laterborn and Firstborn Children at Time One and Time Two

		<u>Average Rank</u>		
<u>Turn Type</u>		<u>LB</u>	<u>FB</u>	<u>U smaller</u>
<u>Time 1</u>	Child Addressee	7.0	14.0	15.0*
	Child Initiates	7.5	13.5	19.5*
	Intrusions	15.1	5.9	4.5**
	Egocentric	12.6	8.4	29.0
	Total Turns	7.4	13.6	19.0*
<u>Time 2</u>	Child Addressee	6.8	8.2	19.5
	Child Initiates	7.3	7.7	23.0
	Intrusions	10.9	4.1	1.0**
	Egocentric	9.6	5.4	9.5
	Total Turns	7.3	7.7	23.0

Note. LB = Laterborns, FB = Firstborns

* $p < .05$

** $p < .01$

In addition to making a greater number of intrusions, it was also hypothesized that laterborns would make a greater proportion of *relevant* intrusions, thereby “joining” rather than “interrupting” conversations to a greater degree (Hypothesis 2). Mann-Whitney *U* tests were performed to compare the number of relevant intrusions made by each group at Time One and Time Two. Although the results indicated that laterborns did in fact make a significantly greater *number* of relevant intrusions, ($U_{smaller} = 19$, $p < .05$ at Time One; $U_{smaller} = 7.5$, $p < .05$ at Time Two), when the *proportion* of each group’s relevant intrusions out of all intrusions was examined via the application of a Chi-square, no significant group differences emerged ($\chi^2 [1, N = 20] = 1.4$ for Time One; $[1, N = 14] = .15$ for Time Two, $p > .05$).

It thus appeared that while laterborns did make a greater number of intrusions at both times than firstborns, the proportion of those intrusions which were relevant did not differ for the two groups. The Wilcoxon Test for Two Correlated Samples was used to determine if either group manifested developmental change in their ability to make relevant intrusions. The number of relevant intrusions made by each group at Time One was thereby compared with the number they made at Time Two. As Table 5 indicates, no significant differences were obtained for either group. Table 5 also details the results of Wilcoxon tests that were computed for laterborns and firstborns using the number of relevant intrusions which contributed *new* information at Time One and Time Two. Again, the findings were not significant. Overall, these results suggest that contrary to expectations, neither laterborns nor firstborns “joined” rather than interrupted conversations to a greater extent at Time Two than they had at Time One.

Table 5

Results of the Wilcoxon Test for Correlated Samples on Conversational Turn Measures.Comparing Time One and Time Two

<u>Measures</u>	<u>T</u>			
	<u>Laterborns</u>	<u>Firstborns</u>	<u>Males</u>	<u>Females</u>
Relevant Intrusions	8.5	14.0		
Relevant New Intrusions	7.0	12.0		
Child Initiated Turns	7.5	2.5*	9.0	9.0
Total Conversational Turns	8.0	9.0	12.0	3.0
Child Addressee Turns	5.0	11.0	10.0	13.0

* $p < .05$

gender and birth order together on children's use of intrusions. Towards this end, the two groups (laterborns and firstborns) were divided into four groups based on birth order and gender, and Kruskal-Wallis Tests were performed for all conversational turn types, including intrusions, at Time One. For illustrative purposes, the average rank each group received per turn type is presented in Table 6, along with the test results. Unfortunately, attrition limited the number of children on whom data were available at Time Two to such an Table 5 extent that the sample size was not sufficient for the computation of Kruskal-Wallis tests.

As presented in Table 6, Kruskal-Wallis analyses indicated that significant group differences were evident for intrusions at Time One ($T = 12.89, p < .05$), so subsequent pairwise comparisons were computed (Table 7). Laterborn males were found to differ significantly from both firstborn males and females. Similarly, laterborn females were also found to differ significantly from both firstborn males and females. These findings suggest that irrespective of gender, laterborns made significantly more intrusions into ongoing conversations at Time One than did firstborns. As noted earlier sample size at Time Two was insufficient for the application of similar quantitative analyses. Qualitative assessment of the raw data presented in Table 8 does strongly suggest, however, that both laterborn males and laterborn females continued to manifest a very high frequency of intrusions at Time Two, relative to firstborn males and females. The topic of children's intrusions was also examined, to determine if their intrusions primarily centred on themselves ("child" referent), or on another person or an object. The topic of the utterance which preceded the child's intrusion was also coded accordingly. Data are presented in Appendix A.

Table 6

Group Rank Means and Results of Kruskal-Wallis Tests for Conversational Turns, Time One

<u>Turns</u>	<u>Average Group Rank</u>				
	<u>LM</u>	<u>LF</u>	<u>FM</u>	<u>FF</u>	<u>T</u>
Child Addressee	8.4	5.6	15.8	12.2	8.49*
Child Initiates	7.8	7.1	13.1	14.0	5.41
Intrusions	13.5	16.6	7.1	4.8	12.89*
Egocentric	11.6	13.6	7.7	9.1	2.95
Total Turns	8.2	6.6	15.6	11.6	6.81

Note. LM = laterborn males, LF = laterborn females, FM = firstborn females, FF = firstborn females.

* $p < .05$

Table 7

Kruskal-Wallis Pairwise Comparisons for Selected Measures, Time One

<u>Measure</u>	<u>LM & LF</u>	<u>LM & FM</u>	<u>LM & FF</u>	<u>LF & FM</u>	<u>LF & FF</u>	<u>FM & FF</u>
Intrusions	3.1	6.4 *	8.7 *	9.5 *	11.8 *	2.3
Child Addressee	2.8	7.4 *	3.8	10.2 *	6.6 *	3.6

Note. LM = Laterborn males, LF = laterborn females, FM = firstborn males, FF = firstborn females
* $p < .05$

Table 8

Raw Data for Conversational Turns, Time Two

<u>Subjects</u>	<u>Conversational Turn Types</u>			
	<u>Child Addressee</u>	<u>Child Initiates</u>	<u>Intrusions</u>	<u>Egocentric Speech</u>
Laterborn Males	84	17	19	2
	160	4	10	0
	91	24	14	4
Laterborn Females	21	16	11	2
	128	15	7	3
	80	1	4	1
Firstborn Males	48	8	22	1
	107	20	1	0
	191	3	4	0
Firstborn Females	67	16	1	4
	88	14	2	0
	128	13	4	0
	34	18	1	0
	105	8	0	0

* $p < .05$

Chi-square analyses were calculated to determine if a greater proportion of laterborn or firstborn intrusions had their primary referent as “child”. Group differences were marginally significant at Time One ($\chi^2 [1, N = 20] = 2.78, p < .1$), with firstborns talking more about others/objects and laterborns more frequently intruding with information about themselves. Significant group differences were not evident at Time Two ($\chi^2 [1, N = 14] = .38, p > .05$), where both groups tended to talk about themselves when they intruded. Wilcoxon Tests were used to examine whether the children’s intrusions varied with respect to “me” versus “others/object” focus at Time Two relative to Time One. Significant differences were not obtained ($T = 6.5, p > .05$ for laterborns, $T = 2, p > .05$ for firstborns).

Laterborn intrusions were also examined to determine if laterborns tended to intrude more frequently on parent/sibling, parent/parent, or sibling/sibling conversations. At Time One, the distribution was as follows: 26 parent/parent intrusions, 99 sibling/parent intrusions, and 2 sibling/sibling intrusions. The distribution at Time Two was as follows: 23 parent/parent intrusions, 62 parent/sibling intrusions, and 2 sibling/sibling intrusions. It should be stressed that observations strongly indicated that sibling/parent conversations were much more prevalent in laterborn families than parent/parent exchanges, which may partially account for the large number of sibling/parent intrusions noted. Also, very few families had sufficient children for sibling/sibling conversational intrusions, as many of the laterborn children only had one sibling.

It was noted that some of the children’s intrusions tended to serve a purpose other than attentional/conversational. Some intrusions appeared aimed at fulfilling needs (e.g. “more pizza”). The purpose of the children’s intrusions were therefore examined. The two groups appeared quite similar at Time One; 30% of laterborn intrusions were aimed at

fulfilling a “food request” compared to 29% of firstborn intrusions. Time Two data revealed that 24% of laterborn intrusions were “food requests”, compared to 16% of firstborn intrusions.

Given that laterborn and firstborn group differences were evident with respect to intrusions, it was decided to examine each group’s use of the remaining conversational turn types as well. As with intrusions, Mann-Whitney U tests were used to compare laterborns and firstborns, while Kruskal-Wallis tests were used for four group comparisons.

Table 4 displays the average group ranks and test results of the Mann-Whitney U analyses for all conversational turn types. No differences were evident between laterborns and firstborns for any of the turn types except intrusions at Time Two; however, differences were evident on several measures at Time One. Specifically, it appeared as though firstborns made a significantly greater number of overall turns ($U_{smaller} = 19, p < .05$), child addressee turns ($U_{smaller} = 15, p < .01$), and child initiated turns ($U_{smaller} = 19.5, p < .05$) at Time One. Each of these significant findings was examined in further depth.

To more closely examine total turn taking behaviour at Time One, the two groups were divided into four subgroups to compare the children on the basis of gender as well as birth order. Although the results of Kruskal-Wallis analyses approached statistical significance ($T = 6.81, p < .05$), differences between the four groups were not in fact significant. The average ranks assigned to each group (Table 6) indicate a pattern wherein firstborn males took the most conversational turns, while laterborn females took the least.

How do we account for the absence of differences between firstborn and laterborn children’s overall turn taking frequency at Time Two, given that significant differences were evident at Time One? Several possible scenarios may account for the discrepancy.

Laterborns may have increased the number of turns that they took at Time Two; firstborns

may have conversely decreased the number of turns which they took at Time Two; or children within each group may have exhibited more variable turn taking behaviour at Time Two, relative to Time One. Wilcoxon Tests for Correlated Samples were used to explore each of these possibilities. Each group's total turn taking behaviour at Time One was therefore compared with their behaviour at Time Two. Results (Table 5) indicated that neither laterborns nor firstborns exhibited significantly different behaviour at Time Two relative to Time One. A Wilcoxon Test comparing total female and total male turn taking behaviour at Time One versus Time Two also yielded nonsignificant differences, indicating that females as a group and males as a group did not significantly alter their turn taking behaviour at Time Two, compared to Time One. Variability within each group (laterborns and firstborns) thus appeared to be the factor accounting for the Time One/Time Two turn taking discrepancy.

Was there a pattern evident within each subgroup, however, which might elucidate the nature of the variability? Unfortunately, the small sample size of children for whom data were available at both time intervals precluded statistical examination of any gender by birth order analyses. Qualitative examination of the raw data along these lines, however, provided some insight.

Within the laterborn sample, it was noted that while all of the three males participated in more conversational turns at Time Two relative to Time One (61, 43, and 33 more turns), the opposite pattern was evident for females. All three of the laterborn females for whom data were available at both times participated in fewer conversational turns at Time Two, relative to Time One (4, 45, and 2 fewer turns). Results for firstborns were mixed, but generally tended to reflect a pattern of decreased overall turn taking by both genders at Time Two. Three of the four males made fewer turns at Time Two (22, 121,

and 53 fewer turns), while one took more turns (60). Of the three females, two took fewer turns at Time Two (decreases of 28 and 41 turns) while only one increased the number of turns that she took (36 more). It thus appeared that laterborn males in particular took more conversational turns as they became more linguistically adept, while laterborn females took fewer turns. Firstborns, in comparison, displayed more variability across gender.

Mann-Whitney *U* test results indicated that firstborns took significantly more child addressee turns than laterborns at Time One (Table 4). Of all of the conversational turn types, the "child addressee" type is the sole measure which is largely contingent upon the speech of others -- for a child to take such a turn, someone else must directly address the child. The other turn types (child initiates, intrusions, egocentric speech) are all essentially spontaneous turns initiated by the child. The present findings regarding child addressee turns (Time One) suggest that at the early stage of language development, firstborn children received significantly more direct requests to participate in conversations.

To examine the effect of birth order and gender on child-addressee turns at Time One, a Kruskal-Wallis Test was completed on the four groups (Table 6). Since significant findings were obtained ($\chi^2 = 8.49, p < .05$), pairwise comparisons were computed and are presented in Table 7. Interestingly, laterborn males were found to take significantly fewer child-addressee turns than firstborn males but not significantly fewer than firstborn females. Laterborn females, however, were found to take significantly fewer child-addressee turns than firstborns of both genders. It would appear that while firstborn males were presented with the most direct opportunities to join in conversations, laterborn females were presented with the least.

While firstborns took a significantly greater number of child-addressee turns than laterborns at Time One, they did not at Time Two. As with the preceding discussion on

total turn taking behaviour, this finding might be attributable to firstborns making fewer such turns at Time Two, increased laterborn use of this turn type at Time Two, or greater variability within groups at Time Two. A Wilcoxon Test was subsequently used to compare the number of child addressee turns made by firstborns at both Time One and Time Two (Table 5). The same procedure was then used to determine if laterborns differed in their usage of this turn type at Time One and Time Two. Neither group was found to differ significantly in their use of child addressee turns over time. A subsequent Wilcoxon Test comparing males and females also resulted in nonsignificant differences, indicating that males and females as groups were not significantly varying their usage of this turn type over time. Once more, however, qualitative examination of the raw data using both birth order and gender provided some interesting information. In the laterborn sample, all of the males increased the number of child addressee turns that they took at Time Two compared to Time One (increases of 52, 55, and 14 turns). Conversely, only one laterborn female took a greater number of child addressee turns at Time Two (8 more), while the remaining two females actually took even fewer child addressee turns at Time Two. (4 and 6 fewer turns). Once more, more variability was evident in firstborn patterns; two of the four firstborn males took more turns at Time Two (5, 65 more) while two took fewer turns (95, 51 fewer). Two of the three female firstborns took fewer turns at Time Two (20, 42 fewer turns) while only one female took a greater number of turns at Time Two (50 more).

These data patterns suggest that parents of laterborn males may provide more opportunities for their sons to join conversations as their children became more linguistically adept. A similar pattern was not evident for the laterborn females, however. Conversely, the parents of firstborns (males and females) appeared to elicit speech more actively from their children when the children were at the earlier stages of language development. It

should be noted that the decrease in child addressee turns directed towards firstborns at Time Two might also partially reflect the fact that newborn siblings were present in four of the seven firstborn children's families at Time Two. Although these infants didn't actively converse, they were quite active and demanding of parental attention, thereby reducing the amount of attention that could be directed towards the firstborns.

As indicated in Table 4, although firstborns were found to make significantly more child initiated turns relative laterborns at Time One, the two groups did not differ significantly from one another on this turn type at Time Two. Again, this finding might have been attributable to firstborns making fewer such turns at Time Two; to increased laterborn use of this turn type at Time Two; or to greater variability within the groups at Time Two. To clarify this matter, a Wilcoxon Test was computed comparing the number of child-initiated turns made by firstborns at both Time One and Time Two. The findings were significant ($T = 2.5, p < .05$), which suggest that, compared to the frequency with which they initiated conversations at Time One, firstborns did in fact initiate fewer conversations at Time Two.

No significant differences emerged when a Kruskal-Wallis test was completed to compare the four groups' use of child initiated turns at Time One (Table 6). However, examination of the average group ranks clearly indicates that both laterborn males and females made fewer such turn types than did firstborn males and females. Qualitative evaluation of the raw data for Time Two (Table 8) does not suggest any clear systematic patterns among the groups, as scores within each of the four groups seemed to be quite variable.

Finally, Table 4 also presents data regarding laterborns' and firstborns' use of egocentric turns. The two groups did not appear to differ from one another significantly in

their use of these turns at Time One or Time Two. Furthermore, no significant differences were evident in this turn type when the four groups were compared at Time One via a Kruskal-Wallis test (Table 6). Examination of the average group ranks (Table 6) does suggest a nonsignificant trend, however, whereby laterborn males and females tend to use this speech type to a greater extent than firstborns of both genders.

Analyses of Linguistic Measures

In addition to the conversational turns, the present study was concerned with comparing laterborn and firstborn children's performance on a variety of linguistic measures. These included MLU, number of child utterances, expressive and receptive vocabularies and relative noun and pronoun usage. It was anticipated that laterborns would possess smaller expressive vocabularies and use proportionally more pronouns at both Time One and Time Two, both features associated with an "expressive" language learning style. Table 9 presents the results of Mann-Whitney *U* tests computed at Time One and Time Two for all linguistic measures.

To assess relative noun versus pronoun preference, Noun/Noun + Pronoun ($N/[N+PN]$) measures were calculated for each child. This measure has been used in prior research as an index of stylistic preference and values of between 0.00 and .50 are considered to reflect a preference for pronoun usage (expressive stylists) while values of

Table 9

Average Group Ranks and Results of Mann-Whitney U-Tests on Linguistic Measures
Time One and Time Two

		<u>Average Ranks</u>		
		<u>LB</u>	<u>FB</u>	<u>U smaller</u>
	<u>Measures</u>			
<u>Time One</u>	MLU	12.0	9.0	35.5
	N/[N+PN]	8.9	12.1	34.0
	No. of Child Utterances	8.3	12.7	27.5
	PPVT-R	10.7	10.3	48.5
	Vocabulary Count	8.1	12.9	26.0
	Noun Count	7.7	13.3	22.5 *
<u>Time Two</u>	MLU	7.1	7.9	21.5
	N/[N+PN]	6.6	8.4	18.0
	No. of Child Utterances	8.4	6.6	18.5
	Vocabulary Count	6.9	8.1	20.0
	Noun Count	7.4	7.6	24.0

Note. LB = laterborns, FB = firstborns, N/[N + PN] = Noun / [Noun + Pronoun]

* $p < .05$

between .50 and 1.00 reflect a noun preference (referential stylists). It should be stressed that most researchers consider the referential/expressive dimension to reflect a continuum rather than a dichotomy, with some children choosing a balanced approach ($N/[N+PN] = .40$ to $.60$) while others manifest a stronger preference for nouns or pronoun usage.

A Mann-Whitney *U* test was performed to compare laterborns' and firstborns' $N/[N+PN]$ scores at Time One and Time Two (see Table 9). No significant differences between the two groups was evident at either time (*U*_{smaller} = 34 at Time One; *U*_{smaller} = 18, Time Two, $p > .05$ for both time intervals). Although statistically significant differences between firstborn and laterborn children's acquisition styles were not obtained, a perusal of the raw data indicates that several children manifested rather strong stylistic preferences at Time One. It also noted that while laterborn children's style preferences varied considerably across the expressive/referential dimension (.32 to .85), firstborn children's did not, ranging only from a balanced approach to a strongly referential (.52 to .83) approach.

To examine the effect of gender as well as birth order, the children were further subdivided into four groups and a Kruskal-Wallis test was completed. Table 10 displays the average group ranks and computed T values for each linguistic measure at Time One. No significant differences were evident for noun/pronoun preference ($T = 4.93, p > .05$). Although the small sample size at Time Two precluded quantitative analysis of gender and birth order effects, the data presented in Table 11 can be assessed qualitatively. In contrast to Time One, all of the $N/[N+PN]$ scores at Time Two reflect either a balanced or an expressive style. This finding is consistent with those reported in previous studies, whereby children's vocabularies become more complex (e.g. master pronominal system) and less noun centred as their language develops.

Table 10

Average Group Ranks and Results of the Kruskal-Wallis Tests on Linguistic Measures
Time One

Linguistic Measures	Average Group Ranks				T
	<u>LM</u>	<u>LF</u>	<u>FM</u>	<u>FF</u>	
MLU	12.1	11.8	7.2	10.9	2.19
N/[N + PN]	10.1	7.4	15.3	9.2	4.93
No. of Utterances	9.7	6.8	13.1	12.4	3.53
PPVT-R	10.2	10.4	11.6	9.7	0.27
Vocabulary Count	7.9	8.3	12.5	13.3	3.35
Noun Count	7.1	8.4	14.1	12.4	4.65

Note. LM = laterborn males, LF = laterborn females, FM = firstborn males, FF = firstborn females
 N/[N + NP] = Noun/[Noun + Pronoun]

* $p < .05$

Table 11

Raw Data for Linguistic Measures, Time Two

<u>Subjects</u>	<u>Linguistic Measures</u>				
	MLU	N/[N + PN]	No. of Utterances	Vocabulary Count	Noun Count
Laterborn Males	2.51	.39	209	147	30
	1.58	.51	211	117	37
	3.41	.34	176	129	36
Laterborn Females	3.66	.47	68	111	22
	2.01	.39	194	103	29
	2.83	.44	126	127	32
	2.07	.34	128	98	18
Firstborn Males	2.14	.54	188	120	33
	1.93	.59	147	136	42
	3.31	.37	110	108	22
	3.29	.48	148	137	44
Firstborn Females	3.41	.28	186	153	38
	3.27	.39	74	73	20
	2.48	.50	128	118	37

Note. N/[N + PN] = Noun/Noun + Pronoun

* $p < .05$

As indicated in Table 9, no significant differences between the groups were evident when laterborns and firstborns were compared with respect to expressive vocabulary size (vocabulary count) using Mann-Whitney U tests at Time One ($U_{smaller} = 26, p > .05$) and Time Two ($U_{smaller} = 20, p > .05$). Furthermore, no significant group differences emerged when a Kruskal-Wallis test was used to investigate the possibility of gender x birth order differences (Table 10) at Time One.

However, when laterborn and firstborn children's expressive vocabularies were compared with respect to the number of different nouns used by each child at Time One, a significant difference did emerge ($U_{smaller} = 22.5, p < .05$). Subsequent Kruskal-Wallis comparisons of the four groups did not reveal statistically significant group differences. It would appear that, when viewed as an entire group, laterborns tended to have significantly fewer nouns in their initial expressive vocabularies at Time One than did firstborns.

It has been suggested (McCabe, 1989) that although laterborn children may demonstrate more limited expressive vocabularies relative to firstborns, they may in fact possess comparable receptive language capacities. A Mann-Whitney U test was performed to compare firstborn and laterborn children's receptive language skills at Time One as indexed by age equivalence scores on the PPVT-R-T. Results (Table 9) indicate that differences between the two group's receptive vocabularies were not significant when assessed at Time One ($U_{smaller} = 48.5, p > .05$). Subsequent analyses completed to explore the impact of birth order and gender (Kruskal-Wallis results, Table 10) also indicated that the four groups did not differ with respect to receptive language capabilities ($T = 0.27, p > .05$)

Mann-Whitney U tests performed on the number of utterances produced by laterborn and firstborn children at Time One and Time Two indicated no significant

differences between the two groups at either time ($U_{smaller} = 27.5$ at Time One; $U_{smaller} = 18.5$ at Time Two, $p > .05$ at both time intervals). A subsequent Kruskal-Wallis test at Time One also indicated that the differences evident among the four subgroups were not statistically significant ($T = 3.53$, $p > .05$), although a nonsignificant pattern emerged whereby firstborn males and females both talked more than laterborn males and females. Qualitative assessment of the raw data for each of the four groups at Time Two suggests that considerable variability was evident within each group at the later taping, as no systematic patterns were clearly discernible.

Finally, MLU was assessed at both Time One and Time Two in the present study (Table 9). As MLU was initially used to select children of similar linguistic capabilities at the beginning of the study, it was not surprising that Mann-Whitney- U and Kruskal-Wallis analyses completed on the Time One data revealed no significant group differences, ($U_{smaller} = 35.5$, $p > .05$) and ($T = 2.19$, $p > .05$) respectively. The Mann-Whitney- U results comparing laterborns and firstborns MLUs at Time Two also indicated that the differences between the two groups was not statistically significant ($U_{smaller} = 21.5$, $p > .05$).

Supplementary Analyses

Although the present study was primarily concerned with examining children's language, it was decided to examine the number of utterances parents directed towards target children in order to compare parents in the present study with those reported in the literature. Towards that end, all decipherable parental speech directed to the target child was counted for both mothers and fathers at Time One and Time Two. Mann-Whitney- U

tests were used to compare the number of utterances directed towards firstborn and laterborn children (Table 12). While no significant differences were evident at Time Two, significant differences were apparent at Time One ($U_{smaller} = 16, p < .05$), with parents of firstborns directing a greater number of utterances towards their children than parents of laterborns (average group rank of 13.9 for firstborns, 7.1 for laterborns). When the two groups were subdivided into four to examine the impact of gender and birth order, the group differences approached but did not reach statistical significance ($T = 7.1, p > .05$).

Previous research has suggested that relative to firstborns, laterborns tend to acquire language later than firstborns. Given that MLU was used to purposefully select children of similar linguistic development at the onset of the study, it was decided to compare the children's chronological ages at Time One to determine if in fact laterborns in the sample were significantly older than firstborns. Results of firstborn and laterborn comparisons using a Mann-Whitney U Test indicated that the group differences were not significant ($U_{smaller} = 34, p > .05$). Birth order by gender comparisons also failed to reach levels of statistical significance. ($T = 2.19, p > .05$) As has been noted throughout the paper, the small sample size remaining at Time Two precluded statistical birth order by gender comparisons. In order to glean some information from the data regarding the impact of gender, however, Mann-Whitney U analyses were completed comparing males and females (irrespective of birth order) on all conversation turn and linguistic measures at Time Two. Although no statistically significant differences emerged, a persistent trend was evident in the data, whereby males consistently had higher scores on 10 of 11 measures (Table 13). Although differences on two measures (intrusions and egocentric speech) were extremely

Table 12

Average Group Ranks and Results of Mann-Whitney U-Tests on Supplementary Measures,
Time One and Time Two

	<u>Measure</u>	<u>Average Rank</u>		<u>U smaller</u>
		<u>L B</u>	<u>F B</u>	
Time One	Parental Utterances	7.1	13.9	16.0 *
	C.A.	12.1	8.9	34.0
Time Two	Parental Utterances	7.9	7.1	22.0

Note. LB = laterborns, FB = firstborns

*p <.05

Table 13

Average Group Ranks and Results of Mann-Whitney U-Tests on Conversational Turn and Linguistic Measures for Males and Females, Time Two

<u>Measure</u>	<u>Average Rank</u>		<u>U smaller</u>
	<u>Males</u>	<u>Females</u>	
Child Addressee	8.9	6.1	15.0
Child Initiate	8.5	6.5	17.5
Intrusion	7.6	7.4	24.0
Egocentric Speech	7.6	7.4	23.5
Total Conversational Turns	8.6	5.7	17.0
MLU	6.9	8.1	20.5
N/[N + PN]	8.8	6.2	15.5
No. of Utterances	9.3	5.7	12.0
Vocabulary Count	9.1	5.9	13.0
Noun Count	9.1	5.9	13.0
No. of Parental Utterances	8.7	6.2	16.0

Note. N/[N+PN] = Noun/[Noun +Pronoun]

* $p < .05$

small, the persistent nature of the pattern was intriguing nonetheless. It was therefore decided to complete the same gender comparison analysis on Time One data (Table 14). Results indicated that the pattern was not evident at this earlier stage of language development. As detailed in Table 14, the average group ranks assigned to males and females tended to be very similar at Time One. Furthermore, females were assigned higher average ranks on six of the 13 measures at Time One.

As noted earlier, data was obtained for two laterborn children whose father was absent (due to work) at the follow-up taping. It was decided to examine the tapes for insights into conversational dynamics when one parent was absent. Two quite different situations were evident in the two tapes. Child 5, a male, had two older siblings and one newborn sibling. His mother was in the kitchen for much of the meal, preparing food. The four children, alone for much of the meal, were in the dining room. After several failed attempts to engage their mother in conversation by shouting between the rooms, the children gave up attempting to converse with her. Some subsequent conversations ensued among the siblings, but these were generally quite short. In contrast to most laterborn family meals, this meal was quite short and characterized by frequent lulls in the conversation, unless the mother was present. The target child intruded on only 4 occasions, initiated conversations 28 times, and participated in 95 child-addressee turns. The latter turns primarily occurred after the family meal, when the mother read a book with the target child. In contrast, the mother of Child 6 remained at the table for most of the family meal. She was engaged in almost continuous conversation by the three older siblings for most of the meal. The target child engaged in 19 intrusions, initiated a conversation once (with the family cat), and participated in 24 child addressee turns. The latter turns primarily occurred after the child had intruded into the ongoing conversation. Although no incidences

Table 14

Average Group Ranks and Results of Mann-Whitney U-Tests on Conversational Turns and Linguistic Measures for Males and Females, Time One

<u>Measure</u>	<u>Average Rank</u>		<u>U smaller</u>
	<u>Males</u>	<u>Females</u>	
Child Addressee	12.7	8.3	28.0
Child Initiates	10.4	10.6	49.5
Intrusions	10.3	10.7	48.0
Egocentric Speech	9.6	11.4	41.5
Total Turns	11.9	9.1	36.0
MLU	9.6	11.4	41.5
N/[N + PN]	12.6	8.4	28.5
No. of Utterances	11.4	9.6	41.0
Vocabulary Count	10.1	10.9	46.0
Noun Count	10.6	10.4	49.0
PPVT-R	10.9	10.1	46.0
CA	10.2	10.8	46.5
No. of Parental Utterances	11.1	9.9	44.0

Note. N/[N+PN] = Noun/[Noun +Pronoun]

* $p < .05$

of egocentric speech were recorded, Child 6 was observed to make numerous vocalizations to herself during the meal.

Finally, to explore any possible relationships among the variables, Pearson r Correlations were computed for data at Time One (Appendix B) and Time Two (Appendix C). Five correlations emerged as significant at both time intervals. These included child addressee turns and number of child utterances ($r = .84$, $p < .05$ at Time One, $r = .67$, $p < .05$ at Time Two); parent speech and child addressee turns ($r = .75$, $p < .05$ at Time One, $r = .82$, $p < .5$); the number of people present and the number of child intrusions ($r = .55$, $p < .05$ at Time One, $r = .71$, $p < .05$); parent speech and number of child utterances ($r = .67$, $p < .05$ at Time One, $r = .58$, $p < .05$ at Time Two); and number of child utterances and number of different nouns in the child's vocabulary ($r = .78$, $p < .05$ at Time One, and $r = .53$, $p < .05$ at Time Two). Thus, it was consistently found that parents who talked more tended to directly address their children more frequently, while children tended to talk more if they were more frequently directly addressed. Also, the more people present at a gathering, the greater the incidence of children's intrusions. When parents talked more, children talked more, and children who talked more tended to have more different types of nouns in their vocabularies.

Several correlations were significant only at one of the time intervals, particularly at Time One. MLU was found to be strongly correlated with CA ($r = .68$, $p < .05$) at Time One but not at Time Two, suggesting that the relationship between these two variables tended to weaken over time. The total number of different nouns in a child's vocabulary was found to correlate with numerous variables at Time One, including: number of parent utterances ($r = .69$, $p < .05$), vocabulary ($r = .86$, $p < .05$) number of child utterances ($r = .78$, $p < .05$) child addressee turns ($r = .89$, $p < .05$) and child initiated turns ($r = .46$, $p < .05$). Number of child

initiated turns correlated with many variables at Time One, including number of child addressee turns ($r = .44, p < .05$), number of child utterances ($r = .74, p < .05$), and amount of parent speech ($r = .50, p < .05$). Vocabulary size was another variable which tended to correlate with many variables at Time One but not Time Two. It was found to correlate with the number of utterances a child produced ($r = .76, p < .05$), the number of child addressee taken ($r = .84, p < .05$) and amount of parental speech ($r = .70, p < .05$). Results also indicated that older children tended to obtain higher scores on the PPVT-R ($r = .49, p < .05$), that children who intruded more frequently were more likely to engage in self talk ($r = .60, p < .05$), and that older children tended to intrude more frequently than younger children ($r = .46, p < .05$). Finally, the number of child addressee turns taken was found to be negatively related to the number of people present ($r = -.47, p < .05$), suggesting that the more people that were present, the fewer number of child addressee turns taken.

Considerably fewer significant correlations were evident at Time Two. In addition to those discussed earlier, parent speech was found to be negatively related to MLU ($r = -.75, p < .05$), while number of child addressee turns was found to be positively related to MLU ($r = .61, p < .05$). Number of child addressee turns was also found to be positively related to the number of different nouns used by a child.

CHAPTER IV

DISCUSSION

The present study had two primary goals: to compare the development of conversational turn-taking skills in firstborn and laterborn children, and to compare the early speech characteristics of these groups. Findings pertaining to each of these goals will be discussed and considered in relation to the literature reported to date, and a synopsis of particularly salient findings will be presented. The limitations of the study will then be discussed, in conjunction with some recommendations for future research areas.

Conversational Turns

With regard to the development of conversational skills, the central focus of the present study was the frequency and type of “intrusions” that children made into the conversations of others. It was argued that the linguistic environment of laterborns should present them with both the need and the opportunity to intrude with greater frequency than firstborns (Hypothesis 1). Furthermore, it was hypothesized that the laterborn’s greater exposure to ongoing conversations would present them with more opportunities to observe conversational exchanges and provide more opportunities for them to “practice” joining. It was therefore expected that laterborns would make significantly more relevant intrusions than firstborns, at both the initial taping and at the six month follow-up. Both groups, however, were expected to demonstrate growth in their ability to make relevant intrusions over time (Hypothesis 2).

Results were mixed. Expectations regarding frequency of intrusions were confirmed; laterborns did in fact make a significantly greater number of intrusions than their firstborn counterparts at both the initial and subsequent taping. Despite their heightened use of intrusions as a conversational technique, however, laterborns did not make a

significantly greater proportion of relevant intrusions at either time. Nor was there any evidence that either group was better able to make relevant conversational intrusions at Time Two. Hence, no evidence of developmental change with respect to “joining” rather than “intruding” upon the conversations of others was demonstrated by either group.

What then, do these findings suggest, with respect to the development of conversational turn-taking skills in laterborn and firstborn children? To adequately address this question, it is necessary to view the “intrusion” findings within the context of other conversational behaviours examined in the study.

At the onset of the study, parents of firstborn children were found to talk to their young language learning children more than parents of laterborns. Consistent with this finding, firstborns also participated in significantly more “child-addressee” turns than their laterborn counterparts at Time One. These findings concur with those of Jones and Adamson (1987), who reported that even in dyadic settings, mothers of firstborn children attempted to elicit speech from their children to a greater extent than mothers of laterborns. Children in the Jones & Adamson study were similar in age (CA 18-23) to the children in the present study at the initial taping.

As noted previously, one unique feature of child addressee turns relative to the other turn types examined is that child addressee turns are contingent upon others. For a child to engage in such a turn, the child must be directly addressed by another person. This is not so for the remaining turn types (intrusions, child initiated, and egocentric speech) which are essentially measures of spontaneous child speech. Together, these findings suggest that when dealing with very young language learners, parents of firstborns not only talk more to their children than parents of laterborns, they also more actively attempt to elicit speech by providing more direct opportunities for children to “join in” and participate in

conversations. Since firstborns were presented with more direct opportunities to join conversations at Time One, it is therefore not altogether surprising that laterborns “intruded” on conversations with greater frequency than firstborns, as intrusions provided laterborns with an alternative mechanism for joining.

The preceding discussion provides a plausible rationale for firstborn children’s comparatively infrequent usage of intrusions at Time One but does not account for their persistent infrequent usage at Time Two. Analyses of parental speech and child addressee data at the six month follow-up taping clearly indicated that firstborns were no longer presented with significantly more direct opportunities to converse relative to laterborns. Why then, did laterborns continue to intrude at a much greater rate than firstborns at Time Two? It is possible that the aforementioned early differences in the linguistic experiences of firstborn and laterborn children culminated in the formation of different perceptions concerning the nature of conversational turntaking, whereby firstborns perceived conversational turntaking as an orderly process, while laterborns saw the process as relatively unstructured. These different perspectives, which are discussed in greater detail below, may have had subsequent ramifications in the children’s use of intrusions as a conversational tool over time.

In addition to residing within a linguistic environment that to some extent “encouraged” the usage of intrusions by providing fewer direct opportunities for joining a conversation, laterborns in the present study were also exposed to more models of intrusive behaviour than were firstborns. Consistent with Wellen (1985) and Woollett’s (1986) findings, the siblings of laterborn children frequently intruded into the linguistic exchanges of laterborns and their parents. This was particularly evident for siblings who appeared to be relatively close in age to the target child (2-3 years older). The behaviour was so

pronounced for some siblings that parents in several instances attempted to divert the older child while the other parent conversed with the laterborn. In one instance, the elder child was eventually sent outside to prevent further interruptions. In contrast, firstborns rarely experienced such intrusions. If the firstborn was engaged in a conversation with a parent, it was extremely unlikely that the other parent would intrude and take the child's turn. The following exchange from Time One, Child 2's transcript, illustrates one such instance of a sibling's intrusive behaviour:

(Family is just finishing their meal, the father is having the target child count cookies)

Father: "Show me two cookies."(speaking to target child).

Sibling: "I have two cookies."(speaking to father).

Father: "Two cookies."(ignores sibling, repeats request for target child).

Child: "Two cookies." (child indicates to two cookies).

Furthermore, while conversational lulls were often evident during firstborn tapings, such lulls were quite rare during laterborn tapings, where conversations appeared to be almost continuous. To participate in discourse at a laterborn table, one had to be quick; it was not unusual for people, particularly siblings, to respond for one another and "jump" in, irrespective of whose "turn" they were taking. Under such circumstances, it is possible that laterborns may have eventually come to view engaging in ongoing discourse as a cooperative affair, characterized by participants joining in at will or when they have something meaningful to contribute, irrespective of whose formal "conversational turn" was being usurped. In contrast, the conversations to which firstborns were exposed appeared quite different in character. Turntaking appeared to proceed in a more orderly fashion, with participants taking their turns in sequence. By virtue of their different experiences,

firstborns at the follow-up taping might not yet have viewed intrusions as a viable mode for interacting.

It is also quite interesting to note that at the time of the time of the second taping, a new baby was present in four of the seven firstborn homes. The decrease in parental speech and child addressee turns taken by firstborns at Time Two may be partially attributable to the presence of these new “laterborn” siblings. Although all the babies were nonverbal (each approximately 2 - 7 months of age), they were quite vocal and demanding of parental attention.

Clearly, laterborns used intrusions to a far greater extent than firstborns at both times. Why then did they not manifest more “refined” intruding skills over time? It was expected that laterborn’s Time Two intrusions would reflect greater semantic relevance and contribute proportionally more “new” information to the conversation. The following factors may have contributed to this finding of persistent “not relevant” intrusions usage over time.

One possible factor may be that the time interval used in the present study was not sufficient to capture developmental change. Dunn and Shatz (1989), who reported evidence of improved laterborn “intruding” skills over time, followed the children in their study for a one year interval. It is possible that children in the present study might also have manifested change, had a longer interval been used.

Another factor relates to the criterion of “relevance” as an index of “joining” skill. It was assumed prior to the study that children’s intrusions were intended to divert attention towards the target child and enable them to converse with others. Under such conditions, the primary purpose of a child’s intrusion would be linguistic or attentional; they wanted to participate in the conversation, thereby receiving attention. With time, it was anticipated

that children might discover that the use of more “relevant” intrusions facilitated acceptance into conversations, thereby better enabling them to achieve their goal. The preceding argument is based on the premise that the child’s goal in intruding is ultimately to join the ongoing conversation. Actual examination of the children’s intrusions suggests, however, that the children’s goal in all instances was not necessarily to join a conversation, and that intrusions often reflected more basic, nonlinguistic goals.

Many of the intrusions made by children reflected specific needs or wants (e.g. “More Juice Daddy” or “Salad allgone, more salad”). This finding was particularly pronounced for laterborns. It appeared as though the larger number of people involved in the laterborn’s mealtime taping had subsequent ramifications on the amount of attention that parents were able to direct towards the target child’s eating progress. While at least one parent was generally available to monitor the firstborn child’s progress, this appeared more difficult for parents of laterborns. Subsequently, laterborn children in particular used intrusions as a means of appraising their parents of their needs and wants. As such, children’s intrusions sometimes functioned not a bid to converse, but as a tool for more pragmatic purposes.

Since the purpose of intrusions seemed to vary (e.g., used as a conversational tool, used as a means to get needs/wants met), it is difficult to predict whether or not heightened use of intrusions might ultimately facilitate the development of more refined intruding skills. It is possible that the context examined in the present study (supper time) might partially account for the fact that some intrusions tended to be aimed at fulfilling needs and desires rather than joining conversations. It is possible that in different settings (e.g. family gatherings in the evening, family outings, bath time/bedtime rituals) children may intrude primarily to converse. Alternatively, the present findings might actually reflect the manner

in which children use intrusions across a variety of contexts. Further study is needed to address this issue.

As noted previously, the parents of laterborn children appeared less attentive of their children's eating progress than parents of firstborns. One reason for their greater difficulty in gauging their children's progress appeared to be the phenomenon noted by Lamb (1978a, 1978b) and Dunn and Kendrick (1982) -- children appeared to prefer their parents to their siblings as conversational partners. It was noteworthy that when a parent was present at the table, children tended to speak to their parents rather than their siblings. The parents of laterborns were thus frequently engaged in conversations by older children, which thereby reduced the amount of attention that they could direct towards the target child. They were less able to monitor the needs of the target child, many of whom responded by intruding into conversations whenever they wanted more food or drink or whenever they considered themselves to be "all done" their supper.

As previous researchers have indicated, however, (Lamb, 1978a, 1978b; Dunn & Kendrick, 1982), the fact that children appeared to prefer parents as conversational partners at the table did not mean that siblings were completely disregarded. It was apparent that the younger children were keenly aware of their siblings' behaviour and were very quick to respond to or participate in the production of "silly" sounds or actions initiated by the older child (as in the following exchange involving Child 7),

Mother: "Tomorrow we go see 'Art in the Park'"

Sibling: "Hip hip hooray, hip hip hooray!"

Child: "Hip hip hooray, hip hip horray!"

Mother: "And then we are gonna take the city bus!"

Sibling: "Hip hip hooray, hip hip hooray!"

Child: "Hip hip hooray!"

Sibling interaction was also often quite high once children left their parent's presence (e.g. during play prior to or immediately after supper). As previous researchers have documented (Abramovitch, Corter, & Lando, 1979; Dunn, 1983), however, sibling interactions tended focus more on action/play sequences rather than initiating and maintaining conversations. The following excerpt from Time One taping, Child 1, immediately prior to the meal, demonstrates the tendency:

Sibling: "Kyle, Kyle, I'm a birdie." (child jumps from top of a chest, arms flapping).

Father: "Hey, hey! Ok, ok, this is a living room!"

Sibling: "I'm a birdie, tweet tweet." (runs around his brother, flapping his arms).

Child: "Superman? Superman?" (mimics brother's actions by jumping off the couch and running around the room while flapping his arms).

Father: "No more, no more. No more!"

Child: "Batman?" (pauses on edge of couch with his sibling, arms extended).

Father: "Not even Batman. Not even a butterfly!"

Child and sibling climb down from the couch and go to the dining room.

Also consistent with the literature on sibling speech to younger children, "older" siblings appeared better attuned and more supportive of the laterborn child's linguistic attempts than did "younger" siblings. Younger siblings (apparently 2-3 years older than the target child) appeared more inclined to ignore laterborn verbalizations and to "intrude" and respond for the target child. This behaviour was much less noticeable with older siblings. This appeared to coincide with older siblings' more "parent like" overall demeanor towards

younger children. In one instance, an older sibling took her younger sister into the kitchen to get her desert when she noticed that the younger child had finished her supper. The remainder of the family, including the parents, continued conversing during the incident.

Thus far conversational turns have been discussed solely on the basis of birth order, without consideration of gender. Although birth order status was the primary focus of the research, some interesting patterns with regard to gender surfaced in the data. With respect to intrusions, laterborns at both time intervals intruded more frequently than firstborns, irrespective of gender. Similarly, both laterborn males and females received fewer parental utterances and participated in fewer child addressee turns at Time One than did firstborns of both genders. Laterborn females in particular participated the least in child addressee turns and thereby received fewer direct opportunities to converse. It is therefore not surprising that this group was the most prone to intrude into the conversations of others and to talk to themselves (egocentric speech). Unfortunately, the small sample size at Time Two prevented further evaluation of this trend. It is important to stress, however, that these findings may reflect the fact that this group tended to have the “largest” families with more people present during the tapings.

Linguistic Measures

Based on prior research, it was hypothesized that laterborn children might manifest linguistic characteristics typically associated with an “expressive” language acquisition style, while firstborns conversely might espouse a “referential” style (Hypothesis 3).

Characteristics of the latter approach include comparatively larger initial productive expressive vocabularies, a preference for noun usage, and relatively faster language growth. In contrast, characteristics of the former include smaller initial expressive vocabularies, a preference for pronouns rather than nouns, and generally slower language acquisition.

Contrary to expectation, laterborn children's language acquisition process appeared very similar to that of firstborns, both at initial and at subsequent taping. Although some trends consistent with initial expectations were evident in the data, only one -- the number of different nouns in children's vocabularies at the first taping -- was statistically significant. Firstborns were in fact found to use a greater number of different nouns compared to laterborns, although this difference disappeared over time.

Since children at similar stages of language development (early multiword speech) were selected for inclusion in the study, it is not surprising that Time One analyses indicated that the children possessed comparable levels of linguistic complexity. It was reasoned, however, that if laterborn children did acquire language more slowly than firstborns, then the laterborn sample should have been older than the firstborn sample at Time One. Subsequent analyses indicated that this was not the case, as no statistically significant differences emerged. Although laterborns tended to be slightly older than firstborns, they also tended to have slightly higher MLUs at Time One. This was not so at Time Two, however, where firstborns were found to have slightly higher MLUs.

A nonsignificant trend consistent with expectations was evident with respect to expressive vocabulary size, whereby firstborns manifested slightly larger vocabularies at both time intervals. Overall, however, the expressive and receptive vocabularies of laterborn and firstborn children were found to be of comparable size.

With respect to nominal/pronominal usage, it was not possible to associate a specific language acquisition style with a specific group. However, although statistically significant differences between firstborn and laterborn children's acquisition styles were not obtained, it was noted that while laterborn approaches varied considerably from referential to expressive, firstborn approaches did not, reflecting either a balanced or a referential

approach. Consistent with previous studies (Bloom, Lightbown, & Hood, 1975; Nelson, 1973), over time, both laterborns and firstborns tended to gravitate towards a more expressive style, reflecting less reliance on nouns and increased use of other word types (e.g. adjectives, articles, pronouns).

While laterborns tended to talk less at the initial taping, they did not make significantly fewer utterances than firstborns. This pattern was not evident at the follow-up taping, where qualitative examination of the data indicates that laterborn males were the most vocal group.

In summation, despite the presence of patterns in the data, firstborns and laterborns did not differ significantly in their use of a referential, expressive, or balanced approach to language learning. Nor did the groups differ with respect to receptive vocabulary size at Time One. Furthermore, no significant differences were evident in laterborn and firstborn MLU level or expressive vocabulary size at the initial taping or the follow-up taping. It would thus appear that despite minor variations, laterborn and firstborn children's semantic and syntactic language abilities were developing in a similar manner and at a similar rate.

The discussion thus far has centred on birth order comparisons and not addressed the issue of gender. No one subgroup manifested consistently high or low performance on any of the linguistic measures. While laterborn females were found to make the lowest number of utterances at the onset of the study, they also tended to have higher MLU levels and larger receptive vocabularies than two of the other groups at the same time period.

Synopsis and Implications of Major Findings

The present study was intended to augment the sparse fund of empirical data regarding language development in laterborn children. As noted previously, differences in

the language development of laterborns and firstborns are frequently assumed but rarely demonstrated.

As reported in previous research, the linguistic environments of laterborns appears to differ from those of firstborns, particularly at the early stages of multiword speech. Parents of firstborns directed significantly more speech towards their children and attempted to elicit children's speech by providing more direct opportunities for the child to engage in conversation. While firstborn children rarely observed intrusions, laterborns witnessed many such occurrences. Laterborns with closely spaced siblings also appeared to experience intrusions firsthand, as siblings often intruded on exchanges between parents and laterborn children. While firstborn environments tended to foster orderly conversational exchanges interspersed with periodic lulls, laterborn environments supported more chaotic, ongoing exchanges. The more hectic nature of the laterborn family meal also appeared to reduce parental attention to the needs of the laterborn child, culminating in a situation where the child had to be more vocal about his/her needs.

Did the laterborn child respond passively to this arguably "less supportive" linguistic environment? No, consistent with Shatz's assertion that children are active participants in the language learning process, laterborn children actively used their burgeoning linguistic skills to intrude into ongoing conversations. They appeared to use intrusions as a tool for fulfilling their needs as well as a mechanism for joining conversations.

Findings from the present study suggest that the "linguistic edge" (more parental speech, more direct opportunities to join conversations) enjoyed by firstborns dissipates over a relatively short time period. Despite this, firstborns still do not appear to use intrusions as a tool to the same extent as their laterborn counterparts. It is argued that this finding may reflect the fact that firstborns and laterborns have evolved different perceptions

or “rules” for engaging in ongoing discourse. These perceptions may change with time and experience, especially if the firstborn’s environment is altered by the addition of little “laterborns”. Many of the firstborn children in the present study were experiencing such adjustments at the time of the second taping, a factor which may have contributed to the reduction in parental speech addressed to these children. If this phenomenon is indeed true, it does suggest that many firstborns may only reap linguistic benefits for short time period until a laterborn joins the family.

One of the most salient findings from the present study is that despite being exposed to a linguistic environment which appears to be less attuned and supportive of language development, laterborn children did not appear to differ significantly from firstborns in the manner or rate at which they acquire language. Although some nonsignificant trends in the expected direction were evident, no statistically significant differences surfaced with the exception that firstborn early vocabularies tended to include more nouns. The fact that laterborn and firstborn language development appears to proceed in such a similar manner suggests that environmental factors may play a more restricted role in the language acquisition process than previously thought, and is consistent with the ideas espoused by Scarr (1992), who contends that ordinary differences between families have little effect on children’s development, unless the family is outside of a normal developmental range. She suggests that, “If we were so vulnerable as to be led off the normal developmental track by slight variations in our parenting, we should not long have survived” (p 16). It would thus appear that the less supportive environment available to laterborns still provides sufficient linguistic support for children to develop language in a manner that does not differ significantly from that of firstborn children.

Limitations of the Present Study and Directions for Future Research

The present study suggests that while laterborn and firstborn children may differ in certain pragmatic aspects of language development, their semantic and syntactic development is quite similar. Several issues limit the generalizability of these findings, however. At the present time, the dearth of information regarding laterborn language development precludes the formation of any definitive conclusions regarding possible similarities/differences in laterborn and firstborn children's language development. Further research is needed to replicate or repudiate the present findings.

Families in the present study volunteered for inclusion, and no measures of socio-economic status or other sociological variables were obtained. It is therefore difficult to determine how generalizable the present findings are to the general Canadian population. In addition, the study involved only two parent families, as the conversational dynamics of one parent situations appeared to differ. Attrition also proved problematic in the present study, and the resultant small sample at Time Two limited statistical examination of any possible birth order by gender differences. A trend was noted in the study, which suggested that laterborn females in particular might receive less linguistic support than children in other groups, but the small sample size at the six month follow-up tapings prevented further quantitative assessment of this trend. Subsequent research using larger samples could compare the groups at various time intervals to determine if any such trends persist. The aforementioned findings might simply reflect the fact that the laterborn female subgroup tended to have more family members than the laterborn male subgroup. The present study was unable to control for this "family size" factor, for the gender of siblings, or for the age interval between siblings. Prior research (Dunn, 1983; Gibbs, Teti, & Bond, 1987; Hoff-Ginsberger & Kruger, 1991) indicates that sibling gender and interval size may play a role

with regard to sibling interaction. Consistent with this, anecdotal observations of subjects in the present study indicated that interval size did appear to affect the nature of sibling interactions in some instances.

Surprisingly, “sibling” factors also appear to be a concern with firstborn children. The term “firstborn” surfaces frequently throughout the literature and is difficult to distinguish from “only child”. The two are not synonymous, however. The present study suggests that the arrival of laterborns may significantly alter the linguistic environments of firstborn children, rendering them quite different from those of “only children”. Subsequent research could examine this possibility.

Children in the present study were followed for a six month interval. A longer interval would provide additional insight into the continued pragmatic, semantic, and syntactic development of laterborn and firstborn children. A six month interval may not have been of sufficient duration to capture developmental change. Alternately, the interval may not have been long enough to detect differences in children’s semantic and syntactic development.

Finally, receptive language skills were only gauged at Time One in the present study. Future research could continue to gauge growth in this area over time. Given the larger number of participants in laterborn linguistic environments, laterborns may arguably have less of an opportunity to use their expressive vocabulary skills at the time of the taping. Usage of a measure such as the PPVT-R over several time intervals would at least provide an index of the number of words that the child understands, even if they do not or can not use these words expressively.

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Appendix A

Total Counts, Per Group of the Topic of Child's Intrusion and the Topic of the Preceding Conversation, Time One and Time Two

		Child's Intrusion			Preceding Conversation		
		Child	Object/Other	Unclear	Child	Object/Other	Unclear
Time One	LM	34	22	1	8	49	0
	LF	30	37	4	2	69	0
	FM	4	17	1	4	18	0
	FF	9	6	1	1	15	0
Time Two	LM	29	14	0	8	35	0
	LF	21	19	4	1	42	1
	FM	5	3	0	3	5	0
	FF	4	1	0	2	3	0

Note. LM = laterborn male, LF = laterborn female, FM = firstborn male, FF = firstborn female

Appendix B

Pearson *r* Correlation Coefficients, Time One

	MLU	CA	PRES	NPLUS	UTTER	NOUNC	CADD	CI	IN	EGO	PPVT	VOC	PAR
MLU	1.00												
CA	.68*	1.00											
PRES	.13	.12	1.00										
NPLUS	-.44	-.39	-.16	1.00									
UTTER	-.14	.01	-.38	.10	1.00								
NOUNC	.06	.04	-.40	.32	.78*	1.00							
CADD	-.07	-.08	-.47*	.28	.84*	.89*	1.00						
CI	-.15	.02	-.29	.03	.74*	.46*	.44*	1.00					
IN	.25	.46*	.55*	-.17	-.13	-.10	-.32	-.20	1.00				
EGO	.13	.43	.03	-.41	.09	-.01	-.23	.25	.60*	1.00			
PPVT	.20	.49*	-.08	-.34	-.09	-.25	-.13	-.19	.13	.31	1.00		
VOC	.32	.27	-.43	-.11	.76*	.86*	.84*	.43	-.17	.01	-.01	1.00	
PAR	.15	.00	-.41	.08	.67*	.69*	.75*	.50*	-.13	.12	-.21	.70*	1.00

Note. PRES = No. of People Present; NPLUS = Nouns/[Nouns plus Pronouns]; UTTER = No. of Child Utterances; NOUNC = Different Noun Count; CADD = Child Addressee turns; CI = Child Initiated turns; IN = Intrusions; EGO = Egocentric turns; PPVT = PPVT-R; VOC = Expressive Vocabulary; PAR = No. of Parental Utterances

* $p < .05$

Appendix C

Pearson *r* Correlation Coefficients, Time Two

	MLU	CA	RES	NPLUS	UTTER	NOUNC	CADD	CI	IN	EGO	VOC	PAR
MLU	1.00											
CA	.43	1.00										
RES	-.31	-.04	1.00									
NPLUS	-.45	-.40	-.37	1.00								
UTTER	-.52	.24	.01	-.02	1.00							
NOUNC	-.16	-.04	-.48	.42	.53*	1.00						
CADD	.61*	-.17	-.09	.41	.67*	.75*	1.00					
CI	.50	.35	-.32	-.39	.03	-.24	-.42	1.00				
IN	-.18	.12	.71*	-.36	.24	-.32	-.20	.07	1.00			
EGO	.30	.32	.13	-.47	-.01	-.37	-.28	.48	.32	1.00		
VOC	-.15	-.02	.28	-.18	.42	.32	.23	-.25	-.51	-.12	1.00	
PAR	-.75*	-.34	.28	.16	.58*	.37	.82*	-.29	-.08	.02	-.16	1.00

Note. PRES = No. of People Present; NPLUS = Nouns/[Nouns plus Pronouns]; UTTER = No. of Child Utterances; NOUNC = Different Noun Count; CADD = Child Addressee turns; CI = Child Initiated turns; IN = Intrusions; EGO = Egocentric turns; VOC = Expressive Vocabulary; PAR = No. of Parental Utterances

* $p < .05$

VITA AUCTORIS

Brenda Roberts-Santarossa was born in Charlottetown, Prince Edward Island in 1963. She completed a Bachelor of Science (Honours) in Psychology at Acadia University in 1984. Her Master of Arts (1989) and Bachelor of Education (1992) degrees were obtained from the University of Windsor. The convocation of her Doctor of Philosophy (Developmental Psychology) degree will occur in the Spring of 1996.