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Date April 25, 1989

A COMPARISON OF THE TYPES OF UTTERANCES USED BY MOTHERS AND DAY CARE WORKERS TO INFANTS

A Thesis

Presented for the

Master of Arts

Degree

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Lori J. Watson

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DEDICATION

This paper is dedicated to Elizabeth Merrie Watson, my daughter, for whom I hope I provide the richest of environments in which she can learn and grow.

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ABSTRACT

During this decade many mothers of infants are returning to the work force soon after their child's birth. Therefore substitute child care has become more of a focus of research to determine its effects upon infants. This study investigated whether there are differences between the types of utterances that mothers and day care workers use with infants, specifically interrogative, imperative, and declarative types of utterances. Ten mothers and ten day care workers were observed during a fifteen-minute play session and a fifteen-minute feeding session. Both sessions were taperecorded. The utterances were transcribed and coded as to the types of utterances used by each caregiver.

A Chi-square test was performed and revealed that there was not a significant difference between groups in the types of utterances used with infants. Therefore it was concluded that lower-middle class mothers and lower-middle class female day care workers do not differ in the types of utterances that they use with infants. The implications of the individual differences which were observed between subjects were also discussed.

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I. INTRODUCTION

Theories concerning the role of adult speech addressed to young children have changed over the last three decades. In the 1960's behavioral theories concentrated on the reinforcing properties of adult speech. Then social learning theories emerged with the view that parent's speech was a model for imitation. In the 1970's the psycholinguistic theories viewed adult speech as the main source of stimuli to the child's innate Language Acquisition Device (Gleason and Weintraub, 1978). Thus the theories have shifted toward the premise that caretaker speech is an important source of speech input to the child in his environment (Ringler, 1978).

There has been a general consensus among researchers concerning what the characteristics of adult speech are when addressing children (Kaye, 1980; Stern, Spieker, Barnett, and MacCain, 1983; Snow, 1972). Yet there are conflicting results reported in research literature as to the significance of the impact of adult speech on children's language development (Hoff-Ginsburg, 1986; Olson, Bayles, and Bates, 1986; Peterson and Sherrod, 1982; Cross, 1978; Newport, Gleitman, and Gleitman, 1977; Nelson, 1973). Some studies have even reported that children have a

significant influence in eliciting different types of speech from adults (Furrow and Nelson,1984; Leiven, 1978; Moerk, 1974). Yet whether it is the adult or the child who elicits the type of language used in the environment, it is certain that the environment influences the child's subsequent language development. Studies which have examined the caretaker-child language environment have shown several characteristics which have correlated with both positive and negative effects on a child's language development and on an infant's prelinguistic development. Specifically the types of utterances, such as imperatives, declaratives, interrogatives, etc., used by a caretaker have been shown to have different effects on a child's development of language skill (D'Odorico and Franco, 1985; Penman, Cross, Milgrom-Friedman, and Meares, 1983; Gleason and Weintraub, 1978; Ringler,1978).

The years 1956-1976 showed a marked increase in maternal employment (U.S. Bureau of Census, 1976) and it is evident that this trend has continued into the 1980's. With this trend nonmaternal child care has also increased. Studies which have examined the day care environment have reported conflicting results as to the overall effects of substitute child care on children (Phillips, McCartney, Scarr, and Howes, 1987;

Belsky, 1987; Chess, 1987; Belsky, 1986; McCartney, Scarr, Phillips, and Grajek, 1985; O'Connell, 1983; Etaugh, 1981; White, 1981; Kagan, Kearsley, and Zelazo, 1977). Fewer studies have examined the characteristics of day care worker speech and the effects it has on children and infants (Goelman, 1986;McCartney, 1984). For this reason it is important that research be continued so that more information may be obtained concerning substitute caregiver speech. Therefore it is the purpose of this study to compare the types of utterances used by mothers and day care workers when addressing infants in the caregiving environment.

II. REVIEW OF LITERATURE

Adult speech which is addressed to young children has generally been labeled motherease or baby talk by researchers. In studies which describe the baby talk of Western middle-class societies there seems to be a consensus that this is a type of speech which is adjusted in specific ways to fit the needs of the infant or child listener. In this section the characteristics of baby talk will be reviewed as well as the effects that baby talk has upon infants and children. The speech of fathers, peers, strangers, and day care workers will also be discussed.

Types of Utterances

The types of utterances used in caregiver speech have been considered in several studies. In a study of fifteen mother-daughter dyads Newport, et al.(1977) found that the mothers in their study used 18 percent imperatives, 44 percent questions, and the remaining utterances were mostly action directives or here-and-now declarative statements. Cross (1977) reported that mothers used one-third questions, one-third declaratives, and seven percent imperatives. These results are similar to those found by Penman, et al. (1983) and Murphy and Messer (1977), in which

mothers were also observed to use the question forms significantly more than the imperative forms of utterances. Yet these results conflict with those found by D'Odorico and Franco (1985) in a study where mothers were asked to associate sentences they considered appropriate for a drawing which pictured different types of interactions between the mother and child. They found that the imperative structure was chosen the highest percentage of the time while the interrogative structure was chosen least. Whether the D'Odorico and Franco results were attributable to the fact that the mothers were Italian or to the fact that the mothers' speech was not sampled is open to further research.

Due to the fact that the interrogative form has been observed to occur so frequently in mothers' speech several studies have examined it in further depth. Snow (1972) reported that mothers' speech to two-year-olds contained more questions than mothers' speech to ten-year-olds. Halliday and Leslie (1986) also reported that the frequency of questions change with the child's age and that a question's most common function is to precede the giving of information to the child. Snow (1977) further described the function of interrogatives in mothers' speech as being tutorial (e.g. What is it? or What color is it?), requests for

action, or as being a request for clarification of the child's utterances or intents. Holzman (1972) categorized mothers' interrogatives into five types: 1) requests for information, 2) requests for behavior, 3) questions designed to display or test the knowledge of the child, 4) interrogatives in which what is questioned is not in the verbalization, and 5) uses of the interrogative form for purposes other than questioning. Remick (1976) classified mothers' questions similarly: 1) questions which require no answer because there is no answer or because the answer is beyond the child's capabilities, 2) questions which elicit naming from the child, 3) questions which elicit more information or repetition from the child, 4) yes-no questions, and 5) questions which require the child to choose between objects or explain an event in the environment.

The imperative structures used in mothers' speech have also been shown to change with a child's age. Freedle and Lewis (1977) reported that mothers used fewer questions at 24 months of age than with younger children and that directive types of utterances increased. Snow (1977) hypothesized that this increase in the use of imperatives was due to the fact that the child had reached an age where compliance could reasonably be expected.

Vocabulary

Usually when the term baby talk is used outside of research it is thought to mean the simplified vocabulary used by adults. Yet in a study by Hayes and Aherns (1988) it was found that adults did not choose from the 10,000 most common word types in English when speaking with young children (age newborn-twelve years old). The word choices made by adults in their spontaneous conversations with children was essentially distributed in the same proportion to that of adults speaking with adults. From these results one must assume that vocabulary simplification is not necessarily occurring in the adult's choice of words but possibly in something else.

Ferguson (1977) identified baby talk as a register which may be identified by the use of diminutives, suffixes, and affixes to adult words. He noted that changes in vocabulary use or in word form usually occur in the words used for kin terms, body parts or functions, qualities, foods, animals, and games. Bynon (1977) suggested that baby talk words are derived from adult words by processes of mutation, deletion, gemination, reduplication, or suffixation of sounds and syllables. He defined mutation as mispronunciations of words and defined gemination as consonant tensing or lengthening.

Ferguson (1977) observed that adult speech was also simplified into motherease by the avoidance of first and second person pronouns. Wills (1977) reported that baby talk is distinguished from adult speech through the apparent intermixture of the pronouns which denote the sender and the receiver. For example, the use of kin terms to replace the pronoun "I" was found to be the most common substitution of third person for first person pronouns. Wills also found that of the basic pronouns only "they" is used consistently in its adult-adult sense. Gleason and Weintraub (1978) reported similar results of a study which identified pronoun usage in baby talk as the following: 1) the use of kin terms in place of 'I' (e.g., father to child: "Daddy is going to catch you."), 2) the use of 'we' by the caretaker in sentences where it does not clearly function as the first person plural (e.g., mother to child:"We'll go change your diaper, ok?"), 3) the use of the third person to replace 'you' when addressing the listener (e.g., mother to child: "Did Johnny drink it?"), and 4) the use of 'we' when the speaker seems to be addressing only the hearer (e.g., father to child: "We don't want to throw food from our highchair, do we?"). Yet further research needs to be done to determine if other types of words are used differently in caretaker speech.

Prosody and Paralinguistic Elements

Garnica (1977) defines the prosodic features of mothers' speech as pitch, stress, and quantity which are correlated with the acoustic measures of fundamental frequency, duration, and intensity. If pitch, stress, and quantity are used to mark lexical and grammatical differences then they are said to be prosodic features. If they are used to indicate emotional and attitudinal aspects of communication they are said to be paralinguistic.

In the examination of prosody of mothers' speech Remick (1976) found that mothers used a greater frequency range with young children. Garnica (1977) reported that mothers use a two octave span with young children and a one-half to one octave span with adults. The frequency range was observed to be greatly expanded in the higher frequencies for young children. Remick (1976) studied the spectrographs of mother-child and adult-adult speech and found that the median fundamental frequency for all mothers studied was higher for adult-child speech than for adult-adult speech. This finding is the same as those found in the studies reviewed by Gleason and Weintraub (1978) which had also analyzed the fundamental frequency of mother-child and adult-adult speech.

Garnica (1977) found a rising pitch terminal to be present on adult imperative and declarative forms when they were addressed to two year olds during instructional tasks. He proposed that the rising pitch terminal may function to cue the child as to the location of sentence boundaries and to cue the appropriate time for social verbal exchange. Blount and Padgug (1977) found that exaggerated intonation, as measured by differing pitch levels within an utterance, marked 20-24 percent of a mothers' speech. Ferguson (1977) proposed that the exaggeration of intonational contours, primarily by extending the pitch range of intervals, may serve to clarify elements within an utterance to the child listener.

Sullivan and Horowitz (1983) investigated this use of higher pitch further by examining its influence on the infant listener. They did this to see whether the use of pitch variation was a way of maintaining the child's attention as had been hypothesized by other researchers. In this study they tried to isolate the influence of pitch variation using female, male, and synthesized stimuli and they found that infants attended more to female stimuli with rising pitch contour than to the male or the synthesized stimuli. They also reported that the infant attended more to falling intonation in the synthesized stimuli than to

rising intonation. The infant's preference for rising and falling pitch contour in the male stimuli was split half-and-half between the two types of intonation. Thus it appears that the infant possibly was attending more to the female voice rather than to the pitch contour.

Stress was another prosodic element discussed in Garnica's (1977) results. He found that mothers often stressed two primary syllables in their utterances to children rather than one primary syllable as in their utterances to adults. He proposed that two primary stresses may function to better indicate to the child what the key words are in a sentence. He also hypothesized that another function of stress may be to divide up the sentence into perceptually smaller units. Garnica also reported that the duration of verbs was longer when addressed to child listeners than when addressed to adult listeners. Garnica proposed that this may be another way that the mother stresses key words in her utterances.

The paralinguistic elements of maternal speech were described extensively by Blount and Padgug (1977). They indicated that the mother altered the prosody of her voice through tension, nasality, rounding of vowels, and phonetic substitution to indicate her emotion or attitude toward the child. If a child did

not respond to the mother's utterance the mother would either tend to repeat, change the topic, or alter the prosodic or paralinguistic elements of her speech so as to elicit a response from the child. Therefore the prosodic and paralinguistic elements of maternal speech appear to serve the function of both conveying and eliciting information from the child.

Ferguson (1977) discussed the influence of non-verbal cues, such as maternal facial expressions, gazing, and head movements, as being another paralinguistic feature of maternal interaction with infants. Garnica (1978) proposed that the non-verbal aspects of maternal communication, such as gestures, were necessary so that the infant could determine the mother's intentions. The two primary gestures Garnica identified in maternal non-verbal communication was the pointing gesture and the manipulation of an object which was being talked about. He found that the mothers of one year olds tended to point and manipulate the objects more than the mothers of two and three year olds. This finding indicates that the use of non-verbal cues declines with the growing language comprehension of the child. Schnur and Shatz (1984) reported similar results and found that when mothers were not allowed to use gestures that the infant did not attend to the mother as well.

Halliday and Leslie (1986) felt that a principal characteristic of maternal-child interaction was the provision of a non-verbal context for maternal utterances. They identified pointing to, holding, and playing with objects as the primary non-verbal contexts which are used by mothers. Murphy and Messer (1977) also found that pointing was the most common method of providing a context for a maternal utterance. They reported that mothers of younger infants (age nine months) tended to use more pointing, tapping of the child's shoulder, and clicking of their fingers when uttering a command than mothers of older infants (age 14 months). This was attributed to the fact that the older infant was better able to follow the point and comprehend the utterance. Murphy and Messer also noted that the mother's visual behavior of looking at the object that she was pointing to and then looking back at the infant was remarkably well synchronized with the pointing behavior. This would indicate that the mother is continually monitoring her child's response and is providing further non-verbal cues to aid the child in comprehending her utterances.

Schaffer, Hepburn, and Collis (1983) found that pointing was used more with utterances which directed a child's actions than with utterances which directed the child's attention even though pointing served an

attentional function. They also reported that gestures accompany a mother's verbalizations 84-86 percent of the time. From this they concluded that non-verbal behavior supplements the mothers' verbalizations and that mothers who better coordinated their utterances with their gestures had children who were better able to comprehend the mothers' utterances and intentions.

Rate and Repetition

Gleason and Weintraub (1976) reviewed several studies which had examined both the rate and repetition found in maternal speech. Generally the findings were reported to be that mothers' speech addressed to children was one-half the rate of speech addressed to adults and that the mothers tended to frequently repeat the child's and their own utterances. Both Kaye (1980) and Snow (1972) described mothers' speech as being slower and more repetitive. Stern, Spieker, Barnett, and MacKain (1983) reported that mothers tended to decrease their rate. Yet cultural differences may exist for the use of these features. Harkness (1975) found that Guatemalan mothers did not slow their rate of speech to their children but tended to use a "rapid-fire monotonic style" of speech (p.496). Future research may reveal that other cultures have differences in their use of these features of caregiver speech as well.

Cross (1977) found that the majority of a mother's repetitions immediately follow the child's failure to respond or the child's misinterpretation of an utterance. Similarly Gleason (1977) reported a high rate of repetition in a mother's speech if the child failed to respond either physically or linguistically to an utterance. Yet Gleason also found that repetition not only functioned to clarify a mother's utterances but when repetition was used to guide and direct a child's behavior it also functioned as a directive. Gleason proposed that this directive type of repetition was similar to the "inner speech" that a child would later use to guide and direct his or her own behaviors (p.201). Snow (1972) suggested that this directive type of repetition which repeated all or parts of the mother's preceding utterance may function to give the child information about the grammatical boundaries of the units within an utterance since whole units, such as noun phrases or prepositional phrases, are usually repeated.

Intelligibility

In examining the clarity of adult speech to young children, Ratner (1984) found that mothers tended to modify their articulation to make speech more intelligible. In her study she found that the formant frequency characteristics of front vowels addressed to

pre-verbal children and adults were almost identical. Yet when speech was addressed to children who had a mean length of utterance of two to three words it was found that the vowels were more precise and of shorter duration than those found in utterances addressed to adult or pre-verbal listeners. Thus Ratner concluded that mothers were non-selectively clarifying their speech to children during this particular period of language-learning.

Stern, et al. (1983) reported that mothers tended to elongate vowels when speaking with infants and children (age 4-24 months). Gleason and Weintraub (1976) reviewed a study which found that voice onset time (VOT) greatly overlapped for the consonants /d/ and /t/ in adult-adult speech. Yet in mothers' speech to ten-month old children the VOT boundaries were clearly defined for these consonants indicating that mothers were simplifying the phonetic features of their speech. Ferguson (1977) reported a tendency of mothers to primarily use labial and apical stops, and nasals in the baby talk of the six languages he reviewed. He reported that mothers also tended to omit or replace liquids in their baby talk. This tendency of mothers to primarily use labial and apical stops is very similar to the child's speech sound development in

that these are the first sounds which are usually well articulated by a child.

Grammatical Complexity

Another feature of motherease which has been studied is the grammatical complexity of utterances. Early studies have characterized maternal speech as being more syntactically simple than speech which is addressed to adults (Phillips, 1973; Broen, 1972; Snow, 1972; Remick, 1971). Mean length of utterance (MLU) has been the measurement used to examine this feature in several studies. Nelson (1973) found that the MLUs of mothers changed proportionately with the children's language growth. Other studies have found that adult MLUs are lower in adult-child speech than in adult-adult speech (Gleason and Weintraub,1978; Snow, 1972). Since MLU is a measurement which is usually interpreted as a measure of the syntactic complexity of an utterance then the results of these studies indicate that mothers simplify the grammar they use in their utterances to children. This is also indicated in a study by Remick (1976) in which she found that 68-92 percent of the utterances used by mothers contained present tense verb clauses.

Snow (1977) proposed that the syntactic simplicity found in maternal speech was related to the fact that the speech of mothers is semantically simple. She

found that the semantic content of mother's speech is largely limited to the constructions that a child has already mastered. One can observe this semantic limitation in Remick's (1976) observation that the referents of pronouns in mothers' speech were to things that the child could comprehend. She found that the majority of referents of pronouns were to physical objects rather than to abstract concepts (e.g. pronouns with a physical referent "It is a dog." as opposed to those without a physical referent "It's starting to snow.").

Pragmatic Elements

Bateson (1975) found that mothers often ask questions of infants and then wait for a response from the infant before renewing their vocalizations. From this Bateson hypothesized that mothers are teaching the rules which govern initiation and termination of conversation, alternation of turns, and the pacing of verbal and non-verbal elements. Many studies have shown that the maternal monitoring of this pragmatic skill of turn-taking begins early in infancy (Ginsburg and Kilbourne, 1988; Bloom, Russell, and Wassenburg, 1987; Harding, 1983; Anderson, 1977). Gleason (1977) and Snow (1977) discuss research that supports the fact that language acquisition is largely composed of the learning of how to make conversations. Snow,

Arlman-Rupp, Hassing, Jobse, Joosten, and Vorster (1976) reported significantly fewer maternal utterances during bottle feeding and during spoon feeding when the baby's mouth was full. This finding indicates that mothers are only verbalizing at times when the infants are better able to take their turn in conversation.

Freedle and Lewis (1977) reported that mothers who begin and end more of the consonant clusters with their young infants have children with higher MLU's at the age of two. These results indicate that the mother's modeling of how to initiate and close vocal interaction significantly shapes the rate at which language can be acquired by the infant.

Cultural Differences

There are several cultural differences which have been reported concerning the use of motherease. In an analysis of societies (such as Luo, Koya, and Samoa) in which the mother is not the primary caretaker Blount (1977) found that the speech styles of caregivers was highly correlated with the socialization of the child. Specifically in the society of Luo the infant was not regarded as a conversational partner and the speech style of the caregiver reflected the social position of the child. These results are similar to those found by Schiefflin and Ochs (1983) in a study comparing Anglo-American and Kaluli, New Guinea societies and the

caregiver speech addressed to young children. In contrast to the Anglo-American caregivers the Kaluli caregivers did not regard the infant as a conversational partner and thus there was no establishment of gaze for conversational turn-taking. The Kaluli mother talked for the infant in a triadic conversation using language which would be used by an older child. The only distinction made in the Kaluli mother's speech was that she used a higher pitch when speaking for the infant.

The cultural use of pitch variation was also examined in a study by Ratner and Pye (1984) on Quiche Mayan speakers. They found that the Mayan speakers used lower pitch when speaking to children than American speakers. They attributed the lower pitch of Mayan speakers to their use of speech to identify the social status of an individual within the culture. Mayan speakers used higher pitch to higher status individuals and lower pitch to lower status individuals i.e. children. Thus they concluded that pitch variation may not reliably differentiate speech to child listeners from adult listeners in all languages.

Cultural differences were also found in a study of Japanese mothers and their speech to infants. Morikawa, Shand, and Kosawa (1988) found that Japanese mothers' speech was primarily used to soothe rather

than to chat as American mothers do. Japanese mothers also used more of an indirect speech style than American mothers, but both groups of mothers tended to use shortened sentences and a high proportion of questions. In another study Bulum (1976) reported differences in the amount of yes/no and wh-questions used by Israeli and American mothers. American mothers tended to use more yes/no questions, thus putting less of a cognitive demand upon their children.

Social Class Differences

Mothers from different social classes have also been shown to use different types of verbal interactions with their children. Blauw, Dubber, Roosmalen, and Snow (1979) reported that middle-class mothers vocalized significantly more to their infants than lower-class mothers. Hess and Shipman (1965) found that middle-class mothers were more verbally productive, used more grammatically complex forms, and used more abstract words than the lower-class mothers who were included in this study. Bee et al. (1969) reported similar findings in that middle-class mothers were less restrictive and were better in helping their children with problem-solving during verbal interactions than the lower-class mothers.

Freedle and Lewis (1977) reported that upper class mothers tended to be more responsive in their verbal

interactions by producing more openings to conversational exchanges than did lower class mothers. Holzman (1974) found that lower-class mothers tended to use imperative structures rather than using the implicit directions (e.g. "I can't wash your hands unless you put down the toy.") which are commonly used in Standard English when speaking with young children. Holzman also reported that the only difference in the verbalizations of lower and upper class mothers was the presence of non-standard utterances in lower class mothers' speech. Thus the above research indicates that there are social class differences in both the pragmatic and syntactic elements of speech.

Sex Differences

Differences have also been reported in the speech of mothers to male and female infants. In a study of the speech of adolescent mothers to their male or female infants several differences were found in the type of speech used (Smith, 1988). Mothers gave more simple and elaborate information to female infants than to male infants. Adolescent mothers also verbalized more to female infants using more verbal play and informative statements than with male infants. Similar sex differences in the use of motherease were reported by Blauw, et al.(1979) as well as Halverson and Waldrop (1970).

The results of Phillips' (1973) study indicated that in general mothers of females tended to have a more diverse speech style than mothers of boys. Mothers of males tended to use more verbs while mothers of females tended to use more function words. Freedle and Lewis (1977) found that mothers allowed male infants to begin conversational clusters more often than females. They also reported that mothers of females tended to ask fewer questions and give more directives than the mothers of males. They hypothesized that these sex differences may be a reflection of the differential socialization patterns for each sex.

The Child's Influence on the Mother

Other studies have shown that the child influences a mother's use of motherease in various ways. Masur (1984) reported that mothers responded differently to the infant's gestures in that mothers tended to reply more when the child extended an object than when a child pointed to an object. They also used labels more frequently when the child pointed. If the child vocalized with a gesture the mother responded more than if the child did not vocalize.

Furrow and Nelson (1984) found that mothers tended to use either a majority of nominal or pronominal references in their speech depending on whether the

child was referential or expressive. Referential was a term used to identify those children who used nouns more than pronouns and who tended to name objects. Expressive was a term used to identify children who used more pronouns than nouns and who tended to use language more for pragmatic reasons than for naming purposes. Results of a study by Sylvester-Bradley and Trevarthen (1978) indicate that if a child was less sociable in the mother-child interaction that the mother would use more syllables per second of speech production. They also related that 84.3 percent of mothers' utterances related directly to the child, the child's body, clothes, or physical state rather than to the environment.

The child's level of prelinguistic or linguistic development has also been shown to influence the mother's speech. Stern, et al.(1983) found that mothers tended to use higher pitch more to four-month old infants than to any other age group. They attributed this finding to the great amount of face-to-face interaction with the mother during this stage of development. The clarity and grammatical complexity of the mother's speech has also been shown to change according to the language level of the child (Ratner, 1984; Cross, 1977; Snow, 1977; Moerk, 1974;

Nelson, 1973; Phillips, 1973). Therefore it is evident that the child plays a definite role in the elicitation of motherease.

The Mother's Influence on the Child

Yet the influence of motherease on a child's language development has been studied much more extensively than the child's influence on the elicitation of motherease. Cross (1977) hypothesized that if a mother possesses a deep concern to comprehend and to be comprehended by her child that this results in maternal verbalizations during interaction which "may quite powerfully assist the child in his acquisition" (p. 182). The results of Moerk's (1976) study indicated that mothers actively teach all aspects of language including syntax and morphology. Hoff-Ginsburg (1986) identified several properties of maternal speech which correlated with the child's acquisition of syntax. The mother's use of noun-phrase utterances correlated with both the child's use of noun-phrase utterances and the number of words contained in the child's noun-phrase utterances. The mother's use of wh-questions correlated with the child's verb-phrase per utterance and auxiliary per verb-phrase usage. The mother's use of self-repetition correlated with the child's verb-phrase per utterance. The mother's use of verbally reflective questions was

associated with the child's auxilary growth. Nelson (1980) reported that the more complex the auxilaries are that a mother uses, the more rapid the growth in the use of auxilaries by the child. Newport, et al. (1977) identified similar correlations between maternal speech and the speech of the child. They reported that the growth of the child's verbal auxilaries showed partial correlations to mothers' yes-no questions. They also found that the mothers' use of linguistic variables (such as This is...,or That is...) to make a reference was positively correlated with the child's growth in vocabulary and with the child's use of noun-phrase inflections. Gleitman, Newport, and Gleitman (1984) found that there is a significant relationship between the mother's use of declarative sentences and the child's growth in the use of verbs. Nelson (1973) found that the use of a high percentage of questions by the mother was positively related to a child's language comprehension at 20 months of age. She also reported that the mother's use of object references was positively related to a child's language production at 20 months of age.

Similar findings were reported in a study of lower-class black mothers (Ringler, 1978). These black mothers were found to use a more directive speech style which was characterized by a significant amount of

imperative utterances. The use of imperatives was negatively correlated with the children's MLUs. This is similar to the results reported by Gleitman, et al. (1984) in which the more frequent use of imperatives in maternal speech was correlated with the child's slower acquisition of auxiliaries as well as noun-phrase inflections. Nelson (1980) summarized several studies which also supported the finding that heavy maternal use of imperative utterances was negatively correlated with both the child's current language level and the child's continued language growth.

Cross (1978) reported that mothers who tended to repeat all or part of the child's preceding utterance had children who had higher MLUs in his study. Similarly, Newport et al.(1977) found that maternal expansions of the child's utterances were positively correlated with the child's auxiliary growth. Nelson (1980) also included comparable results in her summary which support the finding that expansions, or recasts, on the child's utterances were positively associated with the child's syntactic growth over time.

Maternal verbal responsiveness to the child has also been shown to influence the child's language development. Olson, et al. (1986) found that children who engaged in frequent speech-type vocalization exchanges at home tended to have larger vocabularies.

Yet they also found that negative verbal interactions negatively correlated with a child's use of nouns and action words. Jones (1972) reported that mothers who provided more opportunities for the use and development of language had children who had better verbal abilities. Peterson and Sherrod (1982) reported that children tended to be language delayed if their mothers used speech during a mother-child interaction which was semantically unrelated to the child's activity. Newport et al. (1977) also related similar findings in that they found that maternal verbal reinforcement during mother-child interactions was positively related to the child's growth in vocabulary, verbal inflections, and auxilaries. Schaffer, Hepburn, and Collis (1983) found that a mother's use of gestures when responding verbally to the child proved significant in increasing the child's comprehension of the mother's speech.

Early social interaction has also been reported to be important for the child's language development. Carew's (1980) study strongly supports the fact that highly stimulating caretaker-child interactions during the first two and a half years of age is a major predictor of the child's language development. Bee, et al.(1982) also supported this view with

the finding that assessments of mother-child interactions and environmental quality were two of the best predictors for both IQ and language skill.

The Speech of Fathers

The studies which have been cited above have primarily been concerned with the speech of middle-class white mothers. There are other studies which examine the speech of fathers, peers, and other caretakers. In a study of both mother's and father's speech to young children it was found that utterances of mothers were longer and more tuned to the child's linguistic abilities than the utterances of fathers (McLaughlin, White, McDevitt, and Raskin, 1983). In a review of the literature on fathers' speech addressed to children Gleason and Weintraub (1978) reported that generally fathers' speech was very similar to that of mothers but it usually contained more imperatives, fewer yes/no questions, and more wh-questions than the speech of mothers.

The Speech of Peers

In studies of peer language it has generally been found that children are able to modify their speech to adjust to the needs of a younger listener (Gleason and Weintraub, 1978; Sachs and Devin, 1976; Gleason, 1973;

Shatz and Gelman,1973). Yet there is a general agreement among researchers that children who primarily receive language stimulation from peers are at a relative disadvantage when compared with children who receive their primary language stimulation from adults.

The Speech of Strangers

The speech of strangers to infants has been found to be longer in duration and more varied than the utterances of mothers (Kaye, 1980). Yet in a study of non-caregiver adult speech, including both male and female adults, there were results which indicated that adults spoke significantly slower, used a higher percentage of interrogatives, and used less grammatically complex sentences, but the adults did not significantly reduce the use of past tense and simple declaratives in their speech (Sachs et.al., 1976).

The Speech of Day Care Workers

In an examination of the studies which have researched substitute caregiver speech there are conflicting results. Gleason and Weintraub (1976) compared the speech of fathers and mothers to the speech of male and female day care workers in the Boston area. The results of this comparison indicated that day care workers used fewer imperatives than the parents of the children when the speech of both groups

was examined under similar conditions. Yet it may be that the results of this study can be attributed to the fact that the parents were in an unfamiliar environment and were therefore more restrictive in their use of speech.

Goelman (1986) and McCartney (1984) maintained that if the substitute caregiver does not provide an environment where positive verbal interaction is frequent and where the child is not restricted in the opportunities to initiate conversation then there will be adverse effects on the child's language development. Etaugh (1981) found that mothers and day care workers initiated verbal exchanges and responded to infant vocalizations equally often. Yet mothers were shown to have a higher incidence of face-to-face interactions with the infants than day care workers. Therefore the children who were primarily cared for by their mothers were reported to interact and verbalize more in situations where an unfamiliar adult was present than the children who were primarily cared for by day care workers.

Ideal Motherease

Gleitman, et al.(1984) summarized the results of several studies and propose that ideal motherease consists of the following: 1) a high percentage of questions or statements which have the auxiliary at the

beginning of the sentence, 2) followed in frequency by a smaller percentage of declarative utterances, and 3) a relatively smaller percentage of imperatives. Motherease should also have the distinguishing characteristics which are outlined above for vocabulary, prosody, paralinguistic elements, intelligibility, and grammatical complexity.

Snow (1977) emphasized that one of the primary determinants of the elicitation of motherease was that the caretaker treat the child as a participant in the conversation. Snow found that if the caretaker does not feel a need to communicate with the child as a conversational partner then the structure of the caretaker's utterances are not as simplified and typical motherease is not produced. Therefore Snow concluded that a child's conversation with an interested adult may be more crucial to the production of motherease and to the child's language development than any particular techniques used by the adult to elicit a child's production of language.

In summary there are several characteristics of adult speech to children which research has investigated. Although the types of utterances used by adults when speaking to children have been studied, there is still a need to examine this characteristic in the speech of adults who are in other cultures and

social classes. Similarly, the types of utterances used in day care worker speech is in need of thorough examination. Therefore before conclusions can be made concerning the effects of day care worker speech on infants and children further research must be done to determine the characteristics of day care worker speech.

III.RESEARCH QUESTION AND HYPOTHESIS

In our society a growing number of mothers are working and placing their children in a caregiving environment which is different from the traditional one-to-one mother-child caregiving environment. In the preceding section it was reported that substitute caregivers do not maintain as high of a percentage of face-to face interaction during verbal exchanges as mothers do. It is possible that this could be attributed to the larger caregiver-child ratio in a day care environment. Because of this larger caregiver-child ratio it is hypothesized that the caregiver-child interactions in a day care situation would mainly consist of directive or restrictive types of verbal exchanges. Research has shown that this type of speech negatively correlated with the language growth of children (Olson, Bales, and Bates, 1986; Ringler, 1978; Nelson, 1973).

If one assumes that the primary care giver is the infant's main source of language stimulation then it is vital that conclusions be drawn from further research as to the extent of the influence that the types of caregiver speech have on a child's language development. Specifically the frequency of occurrence of the different types of utterances which have been

shown to influence language development should be examined. Therefore the question that this study investigated is whether there is a significant difference in the frequency of occurrence of imperative, interrogative, and declarative types of utterances in the speech of lower-middle class white mothers and lower-middle class white female day care workers to infants (age 10-14 months).

IV. METHOD

This study was descriptive research with a between-subjects design. The classification variable was the type of caregiver i.e. lower-middle class white mothers or lower-middle class white female day care workers. The criterion variables were the frequency of occurrence of imperative, interrogative, and declarative sentence structures used by each type of caregiver. Since caregiver speech has been shown to change according to the language level of the child (Ratner, 1984; Snow, 1977; Nelson, 1973) this study only included infants who were in the prelinguistic stage of jargon speech and non-reduplicated babbling so as to reduce any effects which may arise if children of various language levels were included. Snow (1977) concluded from the results of her study that there were no abrupt changes in mothers' speech in response to the child's growing linguistic abilities between 10 and 14 months of age. Similarly Blount and Padgug (1977) found that during this prelinguistic stage of language development adult modification of speech was frequent and extensive thus making this an optimal period in which to study caregiver input.

Subjects

Ten mothers were randomly solicited from a public health children's program, LaLeche League enrollment, and from church nursery rolls in the Chattanooga and Knoxville areas. Ten day care workers were randomly solicited from state-licensed church or private day care facilities in the Chattanooga and Knoxville areas. To control for possible differences in types of caregiver speech due to culture, social class, and sex, subjects were white, lower-middle class females. The status of lower-middle class was determined from Adler's (1979) recommended criteria, i.e., that the subject has a high school education, that the family is supported by a trade occupation, and that the family is within lower-middle class income ranges. All of the subjects reported that their families were supported by trade occupations ranging from mechanics, warehouse supervisors, construction workers, and salesmen. No subject had less than 11 years of education nor more than 14 years of education. The mothers and day care workers were between the ages of 21 and 38.
Age and education data are summarized in Table 1. All of this information was obtained through a questionnaire (see Appendix A). A t-test for age (t=2.36, df=18) and a t-test for years of education (t=.256, df=18) revealed no significant

Table 1 Individual data description of each subject's age and education

	Mothers		Day care workers	
	Age	Years of Education	Age	Years of Education
1	30	13	25	12
2	25	12	25	12
3	31	13	35	12
4	25	12.5	27	12
5	27	13	38	12
6	24	14	33	11
7	23	14	21	12
8	25	13	37	12
9	36	12	24	12
10	29	12	23	12
M=	27.5	12.85	28.8	11.9
SD=	3.9	.70	5.9	.42

M=Mean t=2.36 t=.256
SD=Standard Deviation df=18 df=18

differences between groups at the $p < .01$ level of significance. Therefore one can conclude that the groups were homogenous.

A questionnaire was provided to the mothers of all infants who were included in the interactions with mothers and day care workers (see Appendix A). A normal full-term pregnancy with no complications was reported for each of the infants. Each infant was reported to be within normal limits in achieving such developmental milestones as sitting up, walking holding on, and walking alone. In studies of infant speech development infants of the age 10-14 months are normally beginning to use first words and are

continuing to use non-reduplicated babbling (Oller, 1980; Stark, 1980). Therefore these infants were also reported to be within normal limits on prelinguistic milestones such as using jargon speech, using first words, occasionally imitating words, seeming to understand simple questions, and enjoying listening activities (such as music, rhythm games, and reading of books). No unusual illnesses, high fevers, or suspected hearing loss was reported for any of the infants.

Due to the fact that differences have been shown in the speech of mothers to infants who are the only child and to infants who have siblings (Jones and Adamson, 1987) each infant who participated with a mother in this study had at least one sibling but no more than three siblings. At least one other sibling was present during the mother-infant interaction. Infants who interacted with the day care workers were in the care of the day care facility six to eight hours a day, four to six days a week so that the day care workers were similar to the mothers in the amount of time that they spent with the infant.

Five mothers had male infants and five mothers had female infants. It was difficult for each day care worker to only address utterances to just one infant due to the fact that there were at least three or four

other infants in the room while the day care worker was attempting to speak to one infant. Therefore the distribution of utterances by day care workers were not as evenly distributed between male and female infants as was with the mothers. Yet four day care workers were able to primarily address their utterances to a male infant and two day care workers were able to do so with female infants. The other four day care workers distributed their utterances between the male and female infants in the room.

Both the mothers and day care workers were also questioned as to whether they had had any training in child care. So that the day care workers would be similar to the mothers in their experience with infants, the day care workers had to have at least two to five years experience working with infants or be married with two or more children. No day care worker was included that had more than twelve years of experience. All of the day care workers, except for one, reported taking child care workshops which primarily trained the workers in first-aid, CPR, and infant care. These workshops are required by the state for the day care to obtain state licensure. Three mothers reported taking similar workshops when they had previously worked in day cares. These three mothers had not worked in a day care for more than four years

and they did not have any children who were older than four years old. Therefore they had not had more than eight years experience with children. The other mothers reported no training in child care. No subject reported any training which related to altering their speech to benefit the child's language development.

Procedure

To obtain an overall view of speech used in caretaking activities two fifteen minute sessions of interaction were used in the procedure. In the first session each caregiver was given a standard set of toys which included a doll, truck, yarn, squeaky toy, plastic cup, ball, two blocks, and an abstract "man" from a child's game. This standard set of toys is similar to that used by Cross (1978) and Nelson (1973) for eliciting verbal exchanges between mothers and children. For this first session each caregiver was instructed to try to get the infant to play with each toy. In the second session each subject was observed while feeding the infant. Each caregiver was told to feed the infant or to allow self-feeding during a regular snack or meal. The use of these two sessions was recommended by Snow (1977) since speech varies in complexity in different situations of caretaking e.g. eating and playing.

Both sessions were audiotaped using a Marantz audio taperecorder (Model PMD-201). The recorder was placed in an inconspicuous place in the room where the sessions occurred. The subjects were aware that the sessions were being taped but they were not aware that it was being taped for the purpose of analyzing their speech. The taperecorder was checked before and after the two sessions to make sure that it was in working order and that the settings were the same for each subject.

The mothers were taped while interacting with their own infants in a room of their house in which the child normally plays. The day care workers were taped while interacting with an infant who attended their center in a room where they normally play. After entering the room the subjects were allowed a five minute warm-up period to allow for any confounding factors which may have arisen due to the presence of the experimenter in the environment.

V. RESULTS

Reliability

The audiotapes were transcribed by the experimenter and two other judges. The judges were graduate students in the field of speech and language pathology. They were trained in transcription and coding procedures using a sample tape prior to the transcription of the actual tapes . The judges and the experimenter were able to code the types of utterances on the practice tape with 96-98 percent agreement as determined by a certified clinical supervisor. The experimenter transcribed the tapes of all of the mothers' and day care workers' interactions with infants. One of the other judges transcribed 100 consecutive utterances from a randomly chosen day care worker-infant interaction while the second judge transcribed 100 consecutive utterances from a randomly chosen mother-infant interaction. These two judges were kept blind as to the purpose of this experiment. Interjudge reliability was calculated using the percentage of agreement between the experimenter's and each of the judges' coding of utterances. The judge who transcribed and coded the utterances in the day care worker-infant interaction was in 91 percent agreement with the experimenter. The judge who

transcribed and coded the utterances in the mother-infant interaction was in 94 percent agreement with the experimenter. Discrepencies between the judges' and experimenter's coding of utterances were discussed. It was determined that the majority of disagreement arose from the judges' misinterpretations of the guidelines set forth and from the fact that the judges were not present during the taping of the subjects.

One hundred consecutive utterances, 50 from the play session and 50 from the feeding session, were coded as either imperative, interrogative, or declarative according to the guidelines set forth by Snow (1977), Snow et al. (1976), and Lee (1974) (see Appendix B). Those utterances which included run-on sentences were scored according to the intonation pattern and pause location. A sentence fragment was scored as an utterance if it was characterized by a complete intonation pattern (Seitz and Marcus, 1976). Those utterances which were unintelligible, which were contentless (such as ah!, oh!, or uh-huh), or which did not fit into the other categories were coded in a category named other.

Description of Data

The frequency of occurrence of each type of utterance is summarized in Table 2. In examining the

frequency of occurrence within groups, mothers used 59 more interrogative forms than imperative forms, while day care workers used four more imperative forms than interrogative forms. The declarative and other forms of utterances were essentially the same between groups. Mothers used approximately 30 percent interrogatives, 27 percent declaratives, and 24 percent imperatives. The day care workers used 26.9 percent interrogatives, 27 percent imperatives, and 28 percent declaratives.

Table 2 The frequency of occurrence of each type of utterance used by mothers and day care workers

	Imperatives	Interrogatives	Declaratives	Other
M	243	302	270	185
D	273	269	283	175

Total number of utterances for each group = 1000
M=mothers
D=day care workers

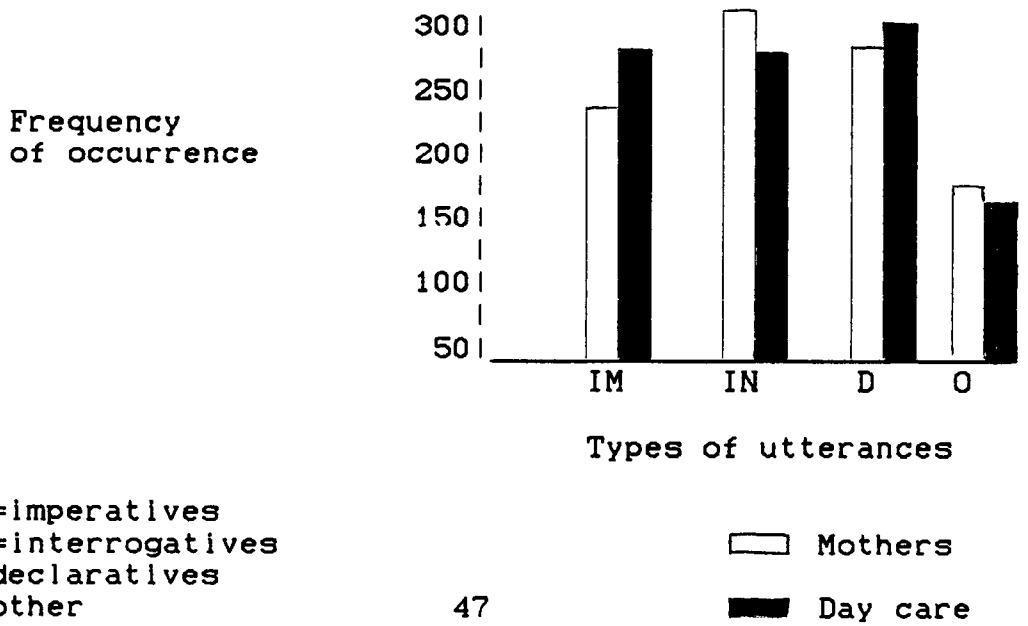
A Chi-Square test was used to determine if a significant difference existed in the four types of utterances used by mothers and day care workers. With d.f.= 3, X^2 of 3.479 is associated with $.50 < p < .25$. Thus the X^2 value of 3.479 was only slightly above

chance level and was not significant at the $p < .05$ level of probability. Therefore one can conclude that there are no statistically significant differences in the types of utterances used by the mothers and the day care workers.

VI. DISCUSSION

In Figure 1 it can be seen that the two groups of subjects varied in the amount of imperatives and interrogatives that they used. There are some valuable observations which can be made concerning this. The mothers' use of each type of utterance was more similar to the percentages observed by Penman, et al.(1983), Newport, et al. (1977), and Remick (1976) for motherease than was the day care workers. Yet the mothers' use of 30 percent interrogatives was not as high as the percentage reported by Newport, et al. (1977). There also was not as great a difference

Figure 1 The frequency of occurrence of each type of utterance used by mothers and day care workers



between the interrogative and imperative forms used by each group as was found in Penman, et al. (1983) and Murphy and Messer (1977).

In Table 4 it can be seen that Mother 4, who used 44 percent interrogatives and 10 percent imperatives, and Mother 10, who used 41 percent interrogatives and 10 percent imperatives, came the closest to the Newport, et al.(1977) description of typical motherease. Mothers 2, 7, and 9 had less than 22 percent interrogatives and had more than 30 percent

Table 4 The frequency of occurrence of each type of utterance used by each individual subject.

	Imperatives	Interrogatives	Declaratives	Other
M1	15	34	26	25
M2	30	22	29	19
M3	19	27	41	13
M4	10	44	24	22
M5	31	30	18	21
M6	35	34	16	15
M7	37	19	28	16
M8	25	33	28	14
M9	31	18	33	18
M10	10	41	27	22
D1	35	24	29	12
D2	28	26	31	15
D3	28	13	45	14
D4	24	36	31	9
D5	34	36	21	9
D6	33	29	19	19
D7	9	44	22	25
D8	21	22	30	27
D9	28	22	30	20
D10	33	17	25	25

M=mothers
D=day care workers

imperatives. The rest of the mothers averaged 30 percent interrogatives and 25 percent imperatives. In examining the individual day care worker data only one of the day care workers was close to the Newport, et al. (1977) description of motherease. Day care worker 7 used 44 percent interrogatives and nine percent imperatives. The rest of the day care workers averaged about 27 percent in their use of both interrogatives and imperative utterances.

Since the most common function of the question form is to precede the giving of information (Halliday and Leslie, 1986), it can be seen that most of the day care workers spent as much time directing the child, as measured by imperatives, as they did in preparing the child to receive information, as measured by questions. From the percentages observed in the mothers' utterances it can be seen that most of the mothers spent more time preparing the child to receive information than they did in directing the child. Yet overall both groups used more imperatives than what would be expected in ideal motherease. This may have possible implications for the infant's language development (Gleitman, et al., 1984; Nelson, 1980; Ringler, 1978). The high frequency of imperatives may also be a reflection of social class differences

similar to those found by Snow, et al.(1977) and Holzman (1974) for lower-class mothers. There may be a tendency for caregivers who are lower-middle class, as in this study, to use more imperatives than the subjects in the Newport, et al. study who were middle class i.e. with higher incomes and education levels.

There were significantly more utterances recorded for the day care workers than there were for mothers because the day care workers interacted with more than one infant who was 10-14 months of age. The mothers had older siblings present but only the utterances which were addressed to the infant were transcribed. Therefore to obtain an equal view of both groups of subjects 50 consecutive utterances were taken from the play session and 50 consecutive utterances were taken from the feeding session. One of the day care workers and two of the mothers did not produce 50 utterances during the feeding session. This may be attributed to the fact that they may have been only verbalizing when the infant was able to participate in the conversation (Snow, et al., 1976) and that all three of these subjects tended to talk more to the other children present in the environment while feeding the infant. For these three subjects more than 50 consecutive utterances were taken from the play session so that 100 utterances could be analyzed for each of the subjects.

For all of the subjects the amount of utterances obtained may have been limited further by the presence of the experimenter during taping since several of the subjects felt compelled to talk to the experimenter. Yet valuable notes were made during the sessions which aided the experimenter in distinguishing between which utterances were addressed to the infant and which utterances were addressed to the siblings or other adults in each environment.

Although the differences in the types of utterances used by the subjects were not statistically significant there were several other aspects of caregiver language (i.e. vocabulary, prosody and paralinguistic elements, rate and repetition, grammatical complexity, and pragmatic elements) which were not analyzed that may reveal significant differences. These elements are open to further research.

VIII. CONCLUSIONS

The basic conclusion that can be drawn from the data of this study is that there were no statistically significant differences in the types of utterances, i.e. imperatives, interrogatives, and declaratives, used by mothers and day care workers to infants. Yet individual differences were observed in each group. These individual differences may be a reflection of the individual interest each caretaker was observed to take in communicating with their infant. Snow (1977) discussed the fact that if a caregiver felt a need to communicate with the infant as a conversational partner then typical motherease was produced. Those caregivers in this study who produced the ideal motherease described by Newport, et al. (1977) did appear to view their child as more of a conversational partner in that a high percentage of their utterances were questions which referred to how the child was feeling e.g. You're hungry, aren't you? or What do you want? Those caregivers who did not appear to be as interested tended to use imperatives which required the child to do as directed e.g. Look here! or Go get it!

Since the language development of the infants was not examined in this study one cannot come to any conclusions regarding the effects that the speech of

the mothers or the day care workers had on the infants. This is certainly in need of further study. Yet the amount of interest in communicating with the infants that a caregiver exhibited, and the types of utterances which resulted, leads one to conclude that the caregiver's interest in communicating may be an important factor for providing an optimal environment in which an infant can learn language. However the effects of day care worker speech may be one of the last things that a mother may be concerned about when searching for substitute child care since the factors that a mother usually considers first is cost and convenience. Belsky (1986) discussed the fact that children are often moved from one child care situation to another due to the fact that the mother has become dissatisfied with the types of care and interactions that have taken place in that particular day care, even though the child was initially placed there because of cost and convenience.

Therefore the implications of this study are that mothers should be made aware of the fact that they should also consider the type of verbal environment and the types of interactions that take place when enrolling a child in substitute child care. This is further supported by the studies of Goelman (1986) and McCartney (1984) in which it was found that if a

substitute caregiver does not provide an environment where positive verbal interaction can take place then there may be adverse effects on the child's language development.

The results of this study also has implications for the training of lower-middle class day care workers and mothers in the use of ideal motherease. Training of caregivers would need to focus on creating more of an awareness of the importance of treating the child as a conversational partner. Further research which compared lower-middle class caregivers who had received such training with lower-middle class caregivers who had not received such training, and the effects that this had on the infants' language development, would be of interest to professionals who are interested in the factors which lead to optimal language development in children.

VIII. SUMMARY

This study examined the question of whether there were significant differences in the types of utterances used by mothers and day care workers to infants age 10-14 months. Ten lower-middle class mothers were randomly solicited from a public health children's program, LaLeche League enrollment, and church nursery rolls. Ten lower-middle class female day care workers were randomly solicited from state-licensed private and church day care facilities.

The mothers were observed with their infants and the day care workers were observed with the infants which attended their facility during a fifteen-minute play session and a fifteen-minute feeding session. The utterances used by each caregiver were transcribed and coded as an interrogative, imperative, declarative, or other type of utterance. Interjudge reliability was calculated using two trained judges. The percentage of agreement in the coding of tapes was high between the experimenter and the judges.

A Chi-square test was performed to determine if there were significant differences in the types of utterances used by the mothers and day care workers. The results of the test revealed that there was no significant difference between groups as to the types

of utterances used. Therefore it was concluded that lower-middle class mothers and lower-middle class female day care workers do not differ in the types of utterances they use with infants. The implications of the individual differences which were observed between subjects were also discussed.

BIBLIOGRAPHY

BIBLIOGRAPHY

Adler, S. (1979). Poverty children and their language. New York: Grun and Stratton, Inc.

Anderson, B.J. (1977). The emergence of conversational behavior. Journal of Communication,27, (2), 85-91.

Bateson, M.C. (1975). Mother-infant exchanges: the epigenesis of conversational interaction. In D. Aaronson and R.W. Rieber (Eds.) Developmental psycholinguistics and communication disorders. Annals of the New York Academy of Sciences, 263, 101-113.

Bee, H.L., Barnard, K.E., Eyres, S.J., Gray, C.A., Hammond, M.A., Spietz, A.L., Snyder, C., and Clark, B. (1972). Child Development,53, 1134-1156.

Belsky, J. (1987). Risks remain. Zero to Three,7, (3), 24-25.

Belsky, J. (1986). Infant day care: a cause for concern? Zero to Three,7, (1), 1-7.

Blauw, A., Dubber, C., Roosmalen, G. and Snow, C. (1979). Sex and social class differences in early mother-child interaction. In Garnica, O. and King, M.L. (Eds.) Language, children and society. New York: Pergamon Press.

Bloom, K., Russell, A., and Wassenburg, K. (1987). Turn-taking affects on the quality of infant vocalizations. Journal of Child Language,14, 211-227.

Blount, B.G. (1977). Ethnography and caretaker-child interaction. In C. Snow (Ed.) Talking to children. London: Cambridge University Press.

Blount, B.G. and Padgug, E.J. (1977). Prosodic, para-linguistic, and interactional features in parent-child speech: English and Spanish. Journal of Child Language,4, 67-86.

Broen, P. (1972). The verbal environment of the language learning child. Monograph of the American Speech and Hearing Association, No. 17.

Bulum, N. (1976). Interrogative types in parental speech to language-learning children: a linguistic universal? Journal of Psycholinguistic Research, 5, (2), 135-142.

Bynon, J. (1977). The derivational processes relating Berber nursery words to their counterparts in normal inter-adult speech. In C. Snow and C.A. Ferguson (Eds.) Talking to children. London: Cambridge University Press.

Carew, J.V. (1980). Experience and the development of intelligence in young children at home and in day care. Monographs of the Society for Research in Child Development,45, (6-7), 115.

Chess, S. (1987). Comments: 'Infant day care: a cause for concern'. Zero to Three,7, (3), 24-25.

Cross, T.G. (1979). Mothers' speech adjustments and child language learning: some methodological considerations. Language Sciences,1, 3-27.

Cross, T.G. (1978). Mothers' speech and its association rate of linguistic development in young children. In N. Waterson and C. Snow (Eds.) The development of communication. New York: Wiley & Sons.

Cross, T.G. (1977). Mothers' speech adjustments. In C. Snow and C.A. Ferguson (Eds.) Talking to children. London: Cambridge University Press.

D'Odorico, L. and Franco, F. (1985). The determinants of baby talk: relationship to context. Journal of Child Language,12, 567-586.

Etaugh, C. (1981). Effects of non-maternal care on children: research evidence and popular views. Annual Progress in Child Psychiatry and Child Development (pp. 392-412).

Ferguson, C.A. (1977). Baby talk as a simplified register. In C.E. Snow and C.A. Ferguson (Eds.) Talking to children: language input and acquisition. Cambridge: Cambridge University Press.

Freedle, R. and Lewis, M. (1977). Prelinguistic conversations. In M. Lewis and L. Rosenblum (Eds.) Interaction, conversation, and the development of language. New York: Wiley & Sons.

Furrow, D. and Nelson, K. (1984). Environmental correlates of individual differences in language acquisition. Journal of Child Language,11, 523-534.

Garnica, O. (1978). Non-verbal concomitants of language input to children. In N. Waterson and C. Snow (Eds.) The development of communication. New York: John Wiley & Sons.

Garnica, O.K. (1977). Some prosodic and paralinguistic features of speech to young children. In C. Snow and C.A. Ferguson (Eds.) Talking to children. London: Cambridge University Press.

Ginsburg, G.P. and Kilbourne, B.K. (1988). Emergence of vocal alternation in mother-infant interchanges. Journal of Child Language,15, 221-235.

Gleason, J.B. (1977). Talking to children: some notes on feedback. In C. Snow and C.A. Ferguson (Eds.) Talking to children. London: Cambridge University Press.

Gleason, J.B. and Weintraub, S. (1978). Input language and the acquisition of communicative competence. In K.E. Nelson (Ed.) Children's language. New York: Gardner Press, Inc.

Gleason, J.B. and Weintraub, S. (1976). The acquisition of routines in child language. Language in Society,5, 129-136.

Gleitman, L., Newport, E., and Gleitman, H. (1984). The current status of the motherease hypothesis. Journal of Child Language,11, 43-79.

Goelman, H. (1986). The language environments of family day care. Advances in Early Education and Day Care,4, 153-179.

Halliday, S. and Leslie, J.C. (1986). A longitudinal semi-cross-sectional study of the development of mother-child interaction. British Journal of Developmental Psychology,4, 211-222.

Halverson, C. and Waldrop, M. (1970). Maternal behavior toward own and other preschool children: the problem of "ownness". Child Development,41, 839-845.

Harding, C.G. (1983). Setting the stage for language acquisition: communication development in the first year. In R.M. Golinkoff (Ed.)The transition from pre-linguistic to linguistic communication. Hillsdale, NJ: Lawrence Erlbaum Associates,Inc.

Harkness, S. (1975). Cultural variations in mothers' language. Word,27, 495-498.

Hayes, D.P. and Aherns, M.G. (1988). Vocabulary simplification for children: a special case of "motherease"? Journal of Child Language,15, (2), 395-410.

Hess, R.D. and Shipman, V.C. (1965). Early experience and the socialization of cognitive modes in children. Child Development,36, 869-886.

Hoff-Ginsburg, E. (1986). Function and structure in maternal speech: their relation to the child's development of syntax. Developmental Psychology, 22, (2), 155-163.

Holzman, M. (1974). The verbal environment provided by mothers for their very young children. Merrill-Palmer Quarterly,20, (1), 31-42.

Holzman, M. (1972). The use of interrogative forms in the verbal interaction of three mothers and their children. Journal of Psycholinguistic Research, 1, (4), 311-336.

Jones, C.P. and Adamson, L.B. (1987). Language use in mother-child and mother-child-sibling interactions. Child Development,58, 356-366.

Jones, P.A. (1972). Home environment and the development of verbal ability. Child Development, 43, 1081-1086.

Kagan, J., Kearsley, R.B., and Zelazo, P.R. (1977). The effects of infant day care on psychological development. Evaluation Quarterly,1, (1), 109-117.

Kaye, K. (1980). Why we don't talk "baby talk" to babies. Journal of Child Language,7, 489-507.

Lee, L. (1974). Developmental sentence analysis. Evanston, IL: Northwestern University Press.

Lieven, E.V.M (1978). Conversations between mothers and young children: individual differences and their possible implication for the study of language learning. In N. Waterson and C. Snow (Eds.) The development of communication. New York: Wiley & Sons.

Masur, E.F. (1982). Mother's responses to infant's object-related gestures: influences on lexical development. Journal of Child Language,9, 23-30.

McCartney, K. (1984). Effect of quality of day care environment on children's language development. Developmental Psychology,20, (2), 244-260.

McCartney, K., Scarr, S., Phillips, D., and Grajek, S. (1985). Day care as intervention: comparisons of varying quality programs. Journal of Applied Developmental Psychology,6, 247-260.

McLaughlin, B., White, D., McDevitt, T., and Raskin, R. (1983). Mother's and father's speech to their young children: similar or different? Journal of Child Language,10, 245-252.

Moerk, E.L. (1976). Processes of language teaching and training in the interactions of mother-child dyads. Child Development,47, 1064-1078.

Moerk, E. (1974). Changes in verbal child-mother interactions with increasing language skills of the child. Journal of Psycholinguistic Research,3, (2), 101-116.

Morikawa, H., Shand, N., and Kosawa, Y. (1988). Maternal speech to prelingual infants in Japan and United States: relationships among functions, forms, and referents. Journal of Child Language, 15, 237-256.

Murphy, C.M. and Messer, D.J. (1977). Mothers, infants, and pointing: a study of gesture. In H.R. Schaffer (Ed.) Studies in mother-infant interaction. London: Academic Press.

Nelson, K.E. (1980). Theories of the child's acquisition of syntax: a look at rare events and at necessary, catalytic, and irrelevant components of mother-child conversation. Annals of the New York Academy of Sciences,345, 45-67.

Nelson, K. (1973). Structure and strategy in learning to talk. Monographs of the Society for Research in Child Development, 38, No. 149.

Nelson, K.E., Carskaddon, G., and Bonvillian, J. (1973). Syntax acquisition: impact of experimental variation in adult verbal interaction with the child. Child Development, 44, 497-504.

Newport, E.L., Gleitman, H., and Gleitman, L.R. (1977). Mother, I'd rather do it myself: some effects and non-effects of maternal speech style. In C. Snow and C.A. Ferguson (Eds.) Talking to children. London: Cambridge University Press.

O'Connell, J.C. (1983). Children of working mothers: what the research tells us. Young Children, 38, 62-70.

Oller, D.K. (1984). The emergence of the sounds of speech in infancy. In G.H. Yeni-Komishian, J.F. Kavanagh, and C.A. Ferguson (Eds.)Child phonology volume 1: production. New York: Academic Press.

Olson, S.L., Bayles, K., and Bates, J.E. (1986). Mother-child interactions and children's speech progress: a longitudinal study of the first two years. Merrill-Palmer Quarterly, 32, (1), 1-20.

Penman, R., Cross, T., Milgrom-Friedman, J., and Meares, R. (1983). Mother's speech to prelingual infants: a pragmatic analysis. Journal of Child Language, 10, 17-34.

Peterson, G.A. and Sherrod, K.B. (1982). Relationship of maternal language to language development and language delay of children. American Journal of Mental Deficiency, 86, (4), 391-398.

Phillips, D., McCartney, K., Scarr, S., and Howes, C. (1987). Selective review of infant day care research: a cause for concern. Zero to Three, 7, (3), 22-24.

Phillips, J. (1973). Syntax and vocabulary of mothers' speech to young children: age and sex comparisons. Child Development, 44, 182-185.

Ratner, N.B. (1984). Patterns of vowel modification in mother-child speech. Journal of Child Language, 11, 557-578.

Ratner, N. and Bruner, J. (1978). Games, social exchange and the acquisition of language. Journal of Child Language, 5, 391-401.

Ratner, N.B. and Pye, C. (1984). Higher pitch in BT is not universal: acoustic evidence from Quiche Mayan, Guatamala. Journal of Child Language, 11, 515-522.

Remick, H. (1976). Maternal speech to children during language acquisition. In Raffler-Engel, W. and Lebrun, Y. (Eds.) Baby talk and infant speech. Amsterdam: Swets & Zeitlinger, B.V.

Ringler, N. (1978). A longitudinal study of mother's language. In N. Waterson and C. Snow (Eds.) The development of communication. New York: Wiley & Sons.

Sachs, J. and Devin, J. (1976). Young children's use of age-appropriate speech styles in social interaction and role-playing. Journal of Child Language, 3, 81-98.

Schaffer, A.R., Hepburn, A., and Collis, G.M. (1983). Verbal and non-verbal aspects of mother's directives. Journal of Child Language, 10, 337-355.

Schiefflin, B.B. and Ochs, E. (1983). A cultural perspective. In R.M. Golinkoff (Ed.) The transition from prelinguistic to linguistic communication. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Schnur, E. and Shatz M. (1984). The role of maternal gesturing in conversations with one year olds. Journal of Child Language, 11, 29-41.

Seitz, S. and Marcus, S. (1976). Mother-child interactions: a foundation for language development. Exceptional Children, 42, 445-449.

Shatz, M. and Gelman, R. (1973). The development of communication skills: modifications in the speech of young children as a function of listener. Monographs of the Society for Research in Child Development, No. 152.

Smith, C.E. (1988). The effect of infant gender on language used by adolescent mothers. Unpublished Master's Thesis, University of Tennessee, Knoxville, TN.

Snow, C.E. (1977). The development of conversation between mothers and babies. Journal of Child Language,4, 1-22.

Snow, C.E. (1977). Mother's speech research: from input to interaction. In C. Snow and C.A. Ferguson (Eds.) Talking to children. London: Cambridge University Press.

Snow, C., Arlman-Rupp, A., Hassing, Y., Jobse, J., Joosten, J., and Vorster, J. (1976). Mother's speech in three social classes. Journal of Psycholinguistic Research,5, 1-20.

Snow, C. (1972). Mothers' speech to children learning language. Child Development,43, 549-565.

Stark, R.E. (1980). Stages of speech development in the first year of life. In G.H. Yeni-Komshian, J. F. Kavanagh, and C.A. Ferguson (Eds.) Child phonology volume 1: production. New York: Academic Press.

Stern, D.N., Sspieker, S., Barnett, R.K., and MacKain, K. (1983). The prosody of maternal speech: infant age and context related changes. Journal of Child Language,10, 1-15.

Sullivan, J.W. and Horowitz, F.D. (1983). The effects of intonation on infant attention: the role of rising intonation contour. Journal of Child Language,10, 521-534.

Sylvester-Bradley, B. and Trevarthen, C. (1978). Baby talk as an adaptation to the infant's communication. In N. Waterson and C. Snow (Eds.)The development of communication. New York: Wiley & Sons.

Wills, D.D. (1977). Participant deixis in English and baby talk. In C. Snow and C.A. Ferguson (Eds.) Talking to children. London: Cambridge University Press.

White, B.L. (1981). Should you stay home with your baby? Young Children, 37, 11-17.

U.S. Bureau of Census (1976). Statistical abstract of the United States (96th ed.). Washington D.C.: U.S. Government Printing Office.

VanderGeest, T. (1977). Some interactional aspects of language acquisition. In C. Snow and C.A. Ferguson (Eds.) Talking to children. London: Cambridge University Press.

APPENDIXES

APPENDIX A

SUBJECT INFORMATION

Name_____

Date of Birth_____

Marital Status_____

How many children do you have?_____

What are the ages of your children?_____

Did you graduate from high school? Yes_____ No_____

If not how many years of education have you had?___

Have you had any child care classes or training? If so explain._____

_____

What is your occupation?_____

How many years experience do you have in your present occupation?_____

What is your husband's occupation?_____

INFANT INFORMATION

Mother's name_____

Date of infant's birth_____

Were there any medical problems during pregnancy or birth?_____

Has your child had any unusual illnesses or extremely high fevers? If so explain_____

_____

Has your child had several ear infections? or do you suspect any hearing loss?_____

Check the following:

At what age did your child sit up___, pull up___, walk holding on___, and/or walk alone___?

Does your child enjoy listening to stories____and imitating you____?

Does your child use sounds in ways that sometimes seem like he/she is really talking?____

Is your child using any understandable words____, and trying to imitate words____?

Does your child seem to understand simple questions like "Where's the ball?"_____

APPENDIX B

TRANSCRIPTION OF UTTERANCES

Nonfluencies, grammatical reformulations and repetitions which result from word-finding problems are deleted from the final sentence structure. Ex: Then (the...the...) the little girl (uh...sat..I mean...) laid in (the baby...) the baby's bed. Nonfluencies, reformulations and repetitions which result from word-finding problems should be enclosed in parentheses.

Use intonational cues as to where a run-on sentence is separated into different utterances.

Only one "and" conjunction is allowed per sentence when the "and" connects two independent clauses. Ex: 1) I came home and my dad was there...2) and....

The conjunction "and" used in a series, a compound subject or predicate does not require the sentence to be broken up. Internal conjunctions other than "and" do not require the sentence to be broken up. Yet the clinician should use discretion when a conjunction is overused in connecting several clauses in a run-on sentence.

A sentence fragment is scored as an utterance if it is characterized by a complete intonation pattern.

CLASSIFICATION OF UTTERANCES

Classify only those utterances which seem to be addressed to the child and not those that seem to be addressed to adults in the environment.

Imperatives are those utterances which are statements with no subject which have a command intonation; utterances with the subject "you" which have a command intonation Ex: You better go pick that up!; negatives such as no-no, huh-uh, etc.; use of the child's name with a command intonation such as when trying to forbid the child, get the chid's immediate attention, or reprimand the child; and imperative interjections such as Look!, Come here! etc.

Declaratives are those utterances which are statements with downward intonation and which have a subject present in the grammatical form; use of child's name with a downward intonation which cannot be interpreted as commanding or directive in nature; one word naming of objects with downward intonation present on the end of the word named.

Interrogatives are those utterances which are wh-questions, subject-verb inversion form, yes-no questions, statements or one word naming with question or upward intonation, and statements with a tag question Ex: You are going, aren't you?; use of the

child's name with question intonation; and utterances such as hmm?, huh? which are used to prompt the child to repeat or answer.

Other includes those utterances which are unintelligible; exclamations Ex: ah!, Oh!, good girl!; utterances consisting of verses, songs, sound play, imitation of baby's babbling; and exhortations Ex: Thank you!, good!, etc.; as well as incomplete utterances not characterized by complete intonation.

VITA

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