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CHILDREN'S ACCEPTABILITY JUDGMENTS OF MOTHERESE:
"DOES THE SHIFT-REGISTER?"

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CHILDREN'S ACCEPTABILITY JUDGMENTS OF MOTHERESE: "DOES THE SHIFT-REGISTER?"

BY

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ABSTRACT

CHILDREN'S ACCEPTABILITY JUDGMENTS OF MOTHERESE: "DOES THE SHIFT-REGISTER?"

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This study investigated the relationship between children's metalinguistic ability to consciously reflect upon and use the prosodic features of motherese in making acceptability judgments of socially appropriate language and chronological age. Subjects included forty normal developing children, ten at each of the following age groups; 5;0-5;6, 5;6-6;0, 6;0-6;6, and 6;6-7;0; ten adults comprised the fifth age group. The general design was one in which children were to listen to a series of commands on a tape recorder and indicate to whom each was directed, i.e., a child or an adult. One set of speech stimuli expressed the supra-segmental prosodic features of motherese while the other did not. Results indicated a significant difference between the mean performance of the adult group and the rest of the age groups. There were no other significant differences.

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Lastly, and certainly not least, to my parents and family, I wish to express my genuine love and appreciation for providing me with their invaluable love and continuous support when it was needed the most. "Yes, Mom, we did do it!"

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Introduction

In the past decade research in child language has broadened the understanding of the language acquisition process by focusing on the early social interactions between infants, children and their parents. Studies describing parent-child interactions have indicated that parents utilize communicative strategies which appear to influence their child's progress toward the development of an effective communication system (Cross, 1977; Garnica, 1977; Mahoney & Seely, 1976; Snow, 1977). Considerable attention has been directed towards the linguistic input addressed to children and the contribution of this experience to their language development.

A significant body of research has documented that mothers' speech to their young children possesses many special characteristics which distinguish it from adult-adult conversational patterns (Broen, 1972; Garnica, 1977; Newport, 1976; Newport, Gleitman & Gleitman, 1977; Sachs, Brown & Salerno, 1976; Snow, 1977). Many of these features have also been found in speech of young children addressed to even younger children (Sachs & Devin, 1976; Shatz & Gelman, 1973). This stylistic variance of adult

conversation, which is addressed to the beginning language-learner, has been termed "Motherese" by Newport (1976) and involves phonological, syntactic, semantic, pragmatic, and prosodic modifications. The following section describes these modifications and examines their possible causes and consequences.

Characteristics of Motherese

Phonological.

The phonological modifications which distinguish speech addressed to young children from that directed to adults include phonological simplifications, e.g., fronting, "da" for "the" and reduplications, "pwetty-pwetty", and sound substitutions, e.g., w for r (Ferguson, 1964). Moerk (1972) suggested that these phonological modifications simply reflect parents' imitations of their children's forms.

Syntactic.

Studies describing the syntactic modifications characteristic of motherese have been described mainly in terms of shorter utterance length (Newport, Gleitman & Gleitman, 1977; Snow, 1977), higher frequency of imperatives and questions (Broen, 1972; Newport et al., 1977), fewer instances of conjoined and embedded sentences and higher frequency of syntactically well formed

utterances (Newport et al., 1977). Chapman (1981) suggested that these modifications were a product of changes such as the content of the mothers' utterances, the reasons for which she speaks, and the child's ability to respond appropriately in context.

Semantic.

The lexical and semantic aspects of motherese which distinguish it from speech addressed to adults involve reduction in vocabulary diversity (Broen, 1972), increase in concreteness (Phillips, 1973), and more limited range of semantic relations (Snow, 1977). Chapman (1981) interpreted these modifications as reflecting the restricted topics of mother-child conversation, i.e., restrictions to the immediate, here-and-now context. Additionally, she stated that the causes and consequences of these modifications were unknown.

Pragmatic.

The pragmatic modifications found within motherese which distinguish it from speech addressed to adults have been described mainly in terms of illocutionary force and discourse features. Shatz and Gelman (1973) and Newport et al. (1977) reported that motherese contains more directives, imperatives and requests than does adult-adult conversation. Chapman (1981) suggested that the

higher frequency of such forms in speech addressed to young children may have reflected young children's relative lack of comprehension. Newport et al. (1977) and Cross (1977) indicated that mothers' repetitions of themselves, either exact or partial, were frequent in speech addressed to their young children. Additionally, these researchers reported that mothers' repetitions were negatively correlated with age. An equally important finding reported by Cross (1977) indicated that expansions of children's speech were frequent in mothers' speech addressed to children. Chapman (1981) suggested that mothers' expansions served the following three functions: 1) confirming the child's communicative intent, 2) modeling small additions to a child's production within the communicative context, and 3) allowing the child to control the conversational topics.

Prosodic.

Investigations describing the prosodic modifications of motherese have been characterized mainly in terms of higher overall pitch (Gleason, 1973), preference for certain intonational contours (Ferguson, 1964), and more instances of exaggerated stress (Sachs, Brown & Salerno, 1976). Garnica (1977) studied these modifications in a more precise and detailed manner by distinguishing prosodic

features of mothers' speech directed to adults, five-year-olds, and two-year-olds.

Fundamental frequency. Garnica's (1977) investigation revealed that the average fundamental frequency of mothers' speech to their two-year-old children exhibited a higher fundamental frequency (e.g., 267 Hz on the average) than the pitch of mothers' speech directed to adults and to five-year-olds (e.g., 200 Hz on the average). In addition, Garnica (1977) indicated that in speech to two-year-old listeners, the low end of the frequency range was relatively the same as in adult-listener situations. However, when talking to two-year-olds, mothers' frequency ranges were reported to range up to two octaves rather than the one-half to one octave range present in mothers' speech to adults. She also noted that this effect of exaggerated intonation contour was found to be similar in speech addressed to five-year-olds, but the increase in octave span was not as large. An equally important finding was that speech addressed to two-year-olds contained many instances of rising sentence final pitch terminals in sentences where the grammatical form would normally dictate a falling final pitch, e.g., imperative forms; this feature has been found to be absent in the speech addressed to the adult listener and to the five-year-old child.

Stress and duration. Garnica's (1977) study indicated that speech directed to two-year-olds contained many cases of more than one instance of primary stress. This effect has been found to be absent in speech addressed to adults and to five-year-olds. Additionally, she reported that the duration of certain content words was prolonged in speech directed to child listeners as compared to that addressed to adults. For example, when talking to their two-year-olds, mothers' verbs and color terms were prolonged in duration in commands such as "Push in the yellow one."; this effect was not observed in mothers' speech directed to adults.

Intensity. Garnica (1977) has noted the existence of whispered parts of sentences in mothers' speech addressed to two-year-olds. This feature was not observed in mothers' speech directed to adults and to five-year-old children.

Functions of the Prosodic Features of Motherese.

Based upon Garnica's (1977) findings, it appears that the speech directed to two-year-olds contains some prosodic characteristics which distinguish it from speech directed to adults and to five-year-olds. Garnica (1977) suggested that the various prosodic features of motherese serve at least two functions: analytic and social. She defined that analytic function as those features which assist

children in the analysis of linguistic material. These features included the tendency for speech directed to two-year-olds to contain longer durations and to exhibit the use of two primary stresses per sentence unit. Garnica (1977) proposed that the prolonged duration may have served to indicate the "key" words in a sentence and that the longer durations of "key" words most likely contributed to the perception of two primary stresses in sentences such as "Push in the red one." The function of two primary stresses has been interpreted by Garnica (1977) as a device that parents use to divide up a sentence perceptually into smaller units which may have aided the child's comprehension of the constituent parts of sentences.

The prosodic features of motherese reported to serve the social function described by Garnica (1977) were those that may have assisted the child's ability to communicate effectively. These were the higher pitched voice and the expanded pitch range. The reason for this was that these features allowed a message to be marked prosodically so that it may have attracted the child's attention to verbal material addressed to him and thus regulate the communication between mother and child. Finally, Garnica (1977) suggested that one feature which played a dual role (i.e., analytic and social) was that of the occurrence of rising pitch

terminals. This feature may be used to cue the child to the location of sentence boundaries (analytic function) and may be used to cue the child as to when he is expected to respond; and thus the rising final pitch terminals regulate conversation between the adult and the child (social function). Thus, it appears that the prosodic features characteristic of motherese, utilized by parents, may be a communicative strategy which may facilitate their child's development of an effective communication/language system.

Summary.

Based upon the above review of research, it appears that the speech addressed to beginning language-learners contains phonological, syntactic, semantic, pragmatic, and prosodic modifications which distinguish it from speech addressed to adults (See Table 1 for a summary of characteristics of motherese). Of primary importance to the present study are some of the prosodic features: a) higher fundamental pitch; b) greatly exaggerated intonation contour; c) rising final pitch terminals in imperatives; d) two primary stresses within one sentence unit; and e) prolonged duration of verbs (Garnica, 1977).

Table 1. Summary of the characteristics of Motherese.

Phonological	Syntactic	Semantic	Pragmatic	Prosodic
1. Phonological simplifications, e.g., fronting, frequent syllable reduplication.	1. Shorter utterence length.	1. Less vocabulary diversity.	1. Higher frequency of directives, imperatives, and requests.	1. Higher fundamental frequency.
2. Sound substitutions e.g., w for l w for r.	2. Higher frequency of imperatives, questions, and syntactically well formed utterances.	2. Increase in concreteness.	2. Repetitions- exact or partial.	2. Greatly exaggerated intonation contour.
	3. Fewer instances of embedded and conjoined sentences.	3. Limited range of semantic relations.	3. Expansions of children's speech.	3. Rising final pitch terminals in imperatives.
				4. Two primary stresses within one sentence.
				5. Prolonged duration of verbs.
				6. Whispered parts of speech.

Based on de Villiers and de Villiers (1978)

It has been suggested by Garnica (1977) that the above prosodic features may assist the child in analyzing linguistic material and also may regulate the social communication between adult and child.

Research has indicated that even young children make prosodic and segmental shifts when talking to younger children and baby dolls and when role playing babies (Sachs & Devin, 1976; Shatz & Gelman, 1973; Weeks, 1971). There is virtually no research investigating young children's ability to differentiate between speech addressed to younger children and speech directed to adults. The ability to make such a differentiation may be thought of as an indication of a child's pragmatic competence or knowledge of the social aspect of communication. Although this measure has not been investigated, there have been a number of attempts at assessing children's pragmatic competence. The following section will review that research.

Pragmatic Competence

Since the 1970's, the concerns of researchers in child language have broadened considerably by including children's development of pragmatic competence. Prutting (1982) has suggested that pragmatic competence can be viewed as social competence, for it involves the appropriate

use of language in varying contexts as well as the ability to make judgments of socially appropriate language. Numerous researchers have attempted to assess children's pragmatic competence by investigating the different dimensions of context in which language is used (Bloom, Rocissano & Hood, 1977; Dore, 1974; Gallagher, 1977; Shatz & Gelman, 1973). Increased attention has also been directed to children's developing comprehension of pragmatic aspects of communication, some of which include direct and indirect directives (Ervin-Tripp, 1977; Shatz, 1978); polite forms (Bates, 1976); and judgments of appropriate language use (Leonard & Reid, 1979).

Direct and Indirect Directives.

Ervin-Tripp (1977) has defined directives as speech-acts which make a request on the listener for services. The form they take indicates a speaker's sensitivity to the social context. Directives may take syntactic forms which specify the desired goal as in imperatives, e.g., "Sit down.", or may be expressed as indirect directives which do not mention the directive intent, e.g., "You may have to wait a long time." Comprehension of indirect directives relies on the listener's ability to interpret the speaker's intended message even when it is inconsistent with the sentence's literal meaning (Rees & Schulman, 1978).

The question of children's developing comprehension of direct and indirect directives has been raised by Ervin-Tripp (1977). Her discussion revealed that children were successful at comprehending a variety of directives which specified the agent, action, and object of the desired goal, e.g., "Give me a cup.", "I need a cup.", and "Could you give me a cup." However, she noted that children had difficulty interpreting the directive intent of directives which did not explicitly state the desired goal, i.e., question-directives, "Have you gotta cup?", and affirmative hints, "The cups are all gone." Ervin-Tripp (1977) has suggested that children's inability to comprehend the intended indirect meanings of question-directives and affirmative hints may have relied on children's inability to interpret the social information and social appropriateness of such directives. However, she noted that when children reached three years of age their comprehension of question-directives and affirmative hints had increased. Ervin-Tripp (1977) interpreted this developmental change as more social than linguistic, for children may have begun to develop this comprehension ability as they developed the capacity to take the perspective of others.

Shatz (1978), however, has noted that children as

young as two years of age were able to interpret the directive intent of question-directives during naturalistic dialogues with their mothers. Her data demonstrated that question-directives, i.e., indirect directives, were obeyed just as often as explicit directives, i.e., imperatives. Rather than granting children this comprehension ability, Shatz (1978) proposed an action-based comprehension theory which relied on the notion that children mapped their parents' speech onto the actions and objects within the immediate social context (setting) and thus responded by means they knew best--action responses. Even though Shatz' (1978) results differed from those discussed by Ervin-Tripp (1977), both authors have concluded that children's comprehension of indirect directives does not encompass the full range of sophisticated social and linguistic rules used by adults.

Polite forms.

An additional area of research which has attempted to assess children's pragmatic competence has been the investigation of their ability to recognize polite forms. Children's developing comprehension of polite forms has been analyzed and reported by Bates (1976). The general question addressed in her study was to determine if children's comprehension of polite forms preceded their

production. She administered a comprehension-production task to 60 Italian children ranging from three to seven years of age.

Bates' (1976) data revealed that children's comprehension abilities did precede their ability to produce polite forms. Children were found to differentiate between more polite forms before they were able to produce them. Additionally, Bates (1976) noted a developmental trend in children's comprehension abilities. Her results indicated that three-year-old-children demonstrated correct judgments on the presence or absence of "please" and soft versus harsh intonation. However, the ability to discriminate between conditional forms, i.e., "I would" versus "I want", and formal addresses did not reach significance until the children reached 5;6-6;0 years of age, and the recognition of imperatives versus interrogative forms was not significant for any age group. Bates' (1976) study revealed that three-year-old children have a notion of polite forms due to their ability to discriminate between the presence or absence of "please" and that the comprehension of more complex polite forms emerged as children increased in age. Bates (1976) did not assess children's ability to make judgments of politeness across various communicative partners; the experimental task

involved only an adult puppet which served as the listener. Thus, children's ability to interpret the social information of polite forms used in varying contexts was not addressed.

Judgments of Socially Appropriate Language.

The question of how children are able to make appropriate judgments of utterances used in various social contexts was raised by Leonard and Reid (1979). These researchers administered videotaped sequences depicting speakers in a variety of social contexts to 40 children ranging from three to six years of age. Of 56 videotaped sequences, 28 were constructed in such a manner that the speaker's utterance was appropriate in the social context in which it was used. The remaining 28 videotaped sequences were constructed in such a manner that the speaker's utterance was irrelevant to the social activity. The utterances expressed in the 56 sequences reflected seven of Searle's (1969) illocutionary acts, (e.g., assert, question, thank, indirect request, warn, congratulate, argue). Children were instructed to view the sequences and then determine if the speaker's utterance was appropriate ("made sense") or inappropriate ("did not make sense").

Leonard and Reid's (1979) data revealed that children's ability to judge the appropriateness of a speaker's utterance relied on operative bases which changed

developmentally. These researchers noted that at four years of age children based their judgments of appropriateness if utterances were verified by the social context in which they were used. However, this basis was not found to be present after children reached six years of age. Additionally, Leonard and Reid's (1979) data indicated that four-and five-year-old-children judged utterances as appropriate if they expressed a positive adjective, but showed a tendency to interpret appropriate utterances containing negative adjectives as inappropriate. As children reached six years of age, this tendency to consider utterances with negative adjectives as inappropriate lessened considerably; however, the data indicated that six-year-old-children still had difficulty judging the appropriateness of a speaker's utterance when negative adjectives were expressed in appropriate utterances. Only adults were found to make correct judgments of appropriateness in these conditions.

Leonard and Reid (1979) concluded that young children based their judgments of appropriateness on factors such as the social context in which language was used and the types of adjectives expressed in a speaker's utterance. Additionally, they indicated that although six-year-old children's judgments more closely resembled those made

by the adult group, their judgments were still found to be based on some of the operative bases used by younger children.

Summary.

The pattern of results obtained by Ervin-Tripp (1977), Shatz (1978), Bates (1976), and Leonard and Reid (1979), revealed that even quite young children have some nascent comprehension of some pragmatic aspects of communication. However, as these authors have suggested the children's comprehension abilities relied on bases which differed from that of adults. It appears that an important difference between children's and adults' comprehension abilities is that children may lack the capacity to interpret the social meaning of alterations made in the form, content, and use of a speaker's utterance. Thus, further research is warranted to determine what linguistic or nonlinguistic information children use to judge the social appropriateness of speech addressed to a listener, and to broaden the scope of research concerning children's social-linguistic competence.

Metalinguistic Awareness

It has become increasingly common in recent years for researchers in language development to explore children's awareness of specific linguistic features. This ability to treat language in such a manner stems from the

development of metalinguistic awareness. Van Kleck (1982) has described metalinguistic awareness as the ability to consciously reflect upon and evaluate the true nature and properties of language rather than merely using language as an automatic means for communicating. Numerous researchers have attempted to assess children's developing of metalinguistic awareness by investigating children's ability to deal with a variety of tasks involving judgments of acceptable language use (de Villiers & de Villiers, 1972; 1974; Gleitman, Gleitman & Shipley, 1972; Hakes, 1980; James & Miller, 1973; Leonard & Reid, 1979).

Processes Underlying Acceptability Judgments.

Hakes (1980) has suggested that the processes underlying acceptability judgments, (as well as other metalinguistic skills), while dependent upon comprehension processes, could be viewed as being distinct from both language comprehension and production processes. He proposed that this distinction relied on the notion that language comprehension and many aspects of production could be characterized as inherent automatic processes which become inaccessible to awareness. On the other hand, Hakes' (1980) discussion indicated that the processes underlying metalinguistic abilities could be characterized as controlled processes which could be slowed down and thus could become accessible to awareness.

Additionally, these metalinguistic processes were viewed as being optional, for the listener has to make a choice of whether or not to utilize such processes.

The general properties of the controlled processes used in completing an acceptability judgment initially require the listener's ability to interpret and retain the social, nonlinguistic, and linguistic information of an utterance. Additional processing is then needed to utilize this representated information in a decision process to determine the acceptability or appropriateness of the utterance. Thus, in addition to comprehension processing, making an acceptability judgment encompasses additional processing which is optional, not mandatory (Hakes, p. 21, 1980).

The majority of research investigating children's acceptability judgments has focused on whether or not an utterance was syntactically well formed (de Villiers & de Villiers, 1972; 1974; Gleitman, Gleitman & Shipley, 1972) or semantically coherent (Hakes, 1980; James & Miller, 1973). The pattern of results obtained by these researchers indicated that even though children gave evidence of comprehension and production of the linguistic features under investigation, they had difficulty making acceptability judgments of such features. Hakes (1980) noted that children's development of metalinguistic skills,

such as acceptability judgments, undergo striking development during middle childhood (i.e., four to eight years of age). He suggested that this developmental change relied on the notion that older children were becoming increasingly able to deliberately reflect and comment upon various properties of an utterance upon request rather than merely spontaneously commenting upon the properties of an utterance without particularily intending to do so. In sum, even though children give evidence of comprehension and production of specific aspects of language, one cannot assume that they will also be able to make acceptability judgments dealing with such aspects of language.

Recall that earlier research has indicated that the prosodic features characteristic of motherese have also been found in the speech of young children when talking to younger children and baby dolls and when role playing babies (Sachs & Devin, 1976; Shatz & Gelman, 1973; Weeks, 1971). There has, as yet, been few attempts, with exception of Leonard and Reid (1979), to investigate children's ability to evaluate and judge the social appropriateness of an utterance. It may be that even though children are capable of producing the prosodic features of motherese, they may lack the capacity to make acceptability judgments of such features. The purpose of this study was to observe

children's ability to consciously reflect upon and use the prosodic features of motherese in making acceptability judgments dealing with the social appropriateness of speech addressed to the beginning language-learner and further to investigate the relationship between judgment performance and chronological age. Specifically, the following questions were asked: Is there a significant difference in the acceptability judgments of motherese of children at four different age groups? Is there a significant difference between children's and adults' judgment abilities? What effect does the presence or absence of the prosodic features of motherese have on children's ability to make correct acceptability judgments dealing with the social appropriateness of speech addressed to either a child or an adult?

Method

The general design was one in which children were to listen to a series of commands on a tape recorder and indicate to whom each was directed, i.e., a child or an adult. The speech stimuli addressed to either the child or adult was of identical segmental construction, but varied with respect to supra-segmental aspects. One set of stimuli expressed the supra-segmental prosodic characteristics of motherese while the other did not.

Subjects.

Subjects included forty children; ten at each of the following age groups: 5;0-5;6; 5;6-6;0; 6;6-6;6; and 6;6-7;0. The characteristics of each age group were as follows: Group I (5;0-5;6) - 4 males, 6 females, age range from 5;1 to 5;6 with a mean of 5 years 2 months 18 days (SD 1.57 months); Group II (5;6-6;0) - 5 males, 5 females, age range from 5;6 to 5;10 with a mean of 5 years 7 months 24 days (SD 1.22 months); Group III (6;0-6;6) - 6 males, 4 females, age range from 6;0 to 6;4 with a mean of 6 years 1 month 27 days (SD 1.37 months); Group IV (6;6-7;0) - 3 males, 7 females, age range from 6;6 to 6;11 with a mean of 6 years 7 months 27 days (SD 1.59 months). Ten college-aged students comprised the fifth age group. Sex distribution for the adult group was 3 males and 7 females with a mean age of 19 years 6 months. None of the adults received formal or informal training in disciplines dealing with the subject matter of the study.

Each child attended either a normal pre-school, kindergarten, or first grade classroom serving the Grand Rapids, Michigan area. Subjects were identified as normal by their parents. This identification was confirmed through informal observations made by the examiner. The subjects had no observable sensory, motor, or intellectual deficits.

Additionally, all children achieved scores no more than 6 months below their chronological age on the Peabody Picture Vocabulary Test (Form M, Dunn, 1981). The mean age-equivalent scores on the Peabody Picture Vocabulary Test for each age group were as follows: Group I - 6 years 15 days (SD 13.4 months); Group II - 6 years 3 months 27 days (SD 10.1 months); Group III - 6 years 8 months 15 days (SD 7.48 months); Group IV - 7 years 4 months 21 days (SD 9.58 months). A descriptive summary of subjects is presented in Table 2.

Equipment and Stimulus Materials.

The following equipment and procedures were utilized in constructing the speech stimuli for the pre-test and experimental conditions. All speech stimuli were produced by the experimenter and were recorded in a double wall sound-treated booth using a Marantz C-202LP tape recorder and a Panasonic WM1151 microphone. These master stimuli were then transferred to various cassette tapes to construct the stimulus tapes for the pre-test and experimental conditions.

Table 2. Description of subject characteristics.

Group I (5;0-5;6)

Subject	CA	Sex	PPVT AE
1	5;1	M	4;8
2	5;1	F	6;11
3	5;1	F	7;10
4	5;2	F	5;0
5	5;2	F	5;6
6	5;3	M	7;0
7	5;3	M	5;3
8	5;3	F	7;4
9	5;4	M	5;9
10	5;6	F	5;2
$\bar{X}$	5;2:18		6;0:15
SD	1.57 months		13.4 months

Group II (5;6-6;0)

Subject	CA	Sex	PPVT AE
1	5;6	M	6;10
2	5;7	M	7;8
3	5;7	M	6;0
4	5;7	M	6;8
5	5;7	F	6;10
6	5;8	F	6;6
7	5;8	M	7;0
8	5;9	F	5;3
9	5;9	F	5;3
10	5;10	F	5;5
$\bar{X}$	5;7:24		6;3:27
SD	1.22 months		10.1 months

Table 2. Description of subject characteristics (continued).

Group III (6;0-6;6)

Subject	CA	Sex	PPVT AE
1	6;0	M	6;10
2	6;0	M	6;3
3	6;1	M	6;10
4	6;1	M	7;4
5	6;2	F	5;8
6	6;2	M	5;10
7	6;3	F	7;0
8	6;3	F	6;7
9	6;3	F	7;3
10	6;4	M	7;6
$\bar{X}$	6;1:27		6;8:15
SD	1.37 months		7.48 months

Group IV (6;6-7;0)

Subject	CA	Sex	PPVT AE
1	6;6	M	7;7
2	6;6	F	6;1
3	6;7	F	6;8
4	6;7	M	8;2
5	6;8	F	6;8
6	6;8	F	7;10
7	6;8	F	7;9
8	6;8	M	6;8
9	6;10	F	8;2
10	6;11	F	8;4
$\bar{X}$	6;7:27		7;4:21
SD	1.59 months		9.58 months

Table 2. Description of subject characteristics (continued).

Group V (Adults)

Subject	CA	Sex	PPVT AE
1	18	M	--
2	20	M	--
3	18	F	--
4	19	F	--
5	18	F	--
6	18	F	--
7	18	F	--
8	25	F	--
9	21	F	--
10	20	M	--
$\bar{X}$	19;6		
SD	2.22 years		

The 10 pre-test I stimuli expressed the early semantic relations Agent + Action + Object and were preceded by the words "Show me", e.g., "Show me the baby is eating the cookie." Pre-test I speech stimuli did not exhibit any of the prosodic modifications found within motherese. Two random lists of speech stimuli were constructed for the pre-test I condition (See Appendix A).

Ten pre-test II speech stimuli were constructed using vocabulary items from the pre-test I stimuli but were expressed via the syntactic construction "I like your (object)." The pre-test II stimuli did not exhibit any of the prosodic features of motherese. Two random lists of the pre-test II stimuli were constructed (See Appendix B).

For the experimental condition, two sets of 10 stimulus items consisting of the same structure and content were constructed using the vocabulary items of the pre-test conditions. One set of 10 stimulus items expressed the supra-segmental prosodic modifications of motherese (Garnica, 1977) and were referred to as the Baby Talk (BT) stimuli. The 10 remaining stimuli, containing identical linguistic content and structure found in the BT stimuli, did not exhibit the prosodic features of motherese and were referred to as the Adult Talk (AT)

stimuli. Four random lists of the 20 experimental stimuli were constructed (See Appendix C).

Before the 20-taped experimental stimuli were presented to individual children, they were presented to a group of 10 adult judges (i.e., the fifth age group) for independent evaluation of whether the BT stimuli were appropriate utterances to be addressed to young children and whether AT stimuli were appropriate utterances found in adult conversation. Total agreement was achieved between the experimenter and the group regarding the appropriateness of the experimental stimuli.

Procedures.

Individual children were visited in their homes. Immediately prior to the presentation of the experimental condition, the children were given two pre-tests. The purposes of the pre-tests were to insure that a) the children knew the vocabulary of the stimulus items and b) they understood the task.

Pre-test I. The purpose of pre-test I was to assess children's comprehension of the lexical items used in the experimental stimuli. The ten pre-test I stimuli were presented at a normal conversational level and did not exhibit any of the prosodic features of motherese. Each pre-test I stimulus expressed the early semantic relation

Agent + Action + Object and was preceded by the words "Show me", e.g., "Show me the baby is eating the cookie." During the administration of the pre-test I condition, individual children were expected to correctly manipulate objects demonstrating the content and the relational meaning of each stimulus. Prior to the administration of pre-test I, the experimenter randomly placed objects in front of individual children and presented the following information:

> Today we are going to play a fun game. First, I want to show you the toys we will be playing with (examiner placed objects in front of individual children and showed them the tape recorder). I want you to listen carefully because when I push this button, you will hear a lady's voice, and I want you to do what she says.

Criterion for the pre-test I condition was the achievement of 100% accuracy.

Pre-test II. The purpose of pre-test II was to insure that the children understood the dynamics of the task. That is, they had to indicate to whom the person on the tape was speaking. The 10 pre-test II stimuli contained vocabulary items of the pre-test I condition but were expressed via the syntactic structure "I like your (object)." Additionally, pre-test II stimuli were presented at a normal conversational level and did not exhibit any prosodic

features of motherese. Before the initiation of pre-test II, the experimenter presented the following instructions to individual children:

> Now we are going to play the game again, but this time we are going to use the little girl, the man, and the tree. I want you to listen carefully because this time you are going to have to tell me whom you think the lady is talking to. She is either talking to the little girl, the man, or the tree. If you think she is talking to the little girl, then point to the little girl. If you think she is talking to the man, then point to the man, and if you think she is talking to the tree, then point to the tree. Remember the lady is either talking to the little girl, the man, or the tree.

The speech stimuli for pre-test II were constructed in such a manner that the structure and content could only be addressed to either the child or adult. Individual children were presented with three objects: a little girl doll, an adult man doll, and a tree. The tree served as a foil item. These objects were placed in front of the child in a semi-circular fashion. Before each stimulus presentation, the examiner placed objects with either the man or the little girl doll, so that the concept of possession was represented. This contextual cue indicated to the children whether the stimulus (utterance) was being directed to the child or to the adult. For example, if the stimulus "I like your apple." was meant to be addressed to the little girl, the apple

would have been placed only on the girl's lap. If individual children had difficulty understanding the first stimulus item of the pre-test II condition, the examiner provided a direct model accompanied with the following explanation:

> The lady was talking to the girl/man because he/she is the only one who has a (object) and the lady said "I like your (object)" so the lady was talking to the girl/man.

After the examiner's explanation and direct model, the first pre-test II stimulus was readministered until individual children responded correctly. Criterion for participation on the experimental task was 100% accuracy on the pre-test II condition, following a readministration of pre-test II item one if necessary.

Experimental task. The purpose of the experimental task was to obtain data on children's ability to distinguish speech addressed to a child from speech directed to an adult. Two sets of 10 stimulus items consisting of the same structure and content were constructed using the vocabulary items of the pre-test conditions. Of these 20 experimental stimuli, 10 expressed the prosodic modifications characteristic of motherese (Garnica, 1977):

1. Higher fundamental frequency
2. Greatly exaggerated intonation contour
3. Instances of rising sentence final pitch terminals in imperatives
4. Double primary stress within one sentence
5. Prolonged duration of verbs

These ten experimental stimuli were referred to as the Baby Talk (BT) stimuli. The remaining 10 experimental stimuli, containing identical linguistic structure and content found in the BT stimuli, did not exhibit the prosodic features of motherese and were referred to as the Adult Talk (AT) stimuli.

During the administration of the experimental task, the little girl doll, the adult man doll, and the tree remained placed in a semi-circular fashion in front of individual children. Before each stimulus presentation, the examiner placed identical objects with the little girl doll, the man doll, and the tree. Additionally, after each stimulus presentation, the experimenter randomly rearranged the little girl doll, the man doll, and the tree. Before initiation of the experimental task, the examiner presented the following information:

> Now we are going to play the game again but this time you might have to guess whom the lady is talking to because I am going to put a toy with the little girl, the man, and the tree. Remember, listen carefully. If you think the lady is talking to the little girl, then point to the girl. If you think she is talking to the man, then point to the man; and if you think she is talking to the tree, then point to the tree.

Reliability.

The purposes of the following procedures were to a) determine inter-judge reliability during the administration of the pre-tests and experimental condition and b) determine individual children's reliability of performances across time.

Inter-judge reliability. The administration of the pre-tests and the experimental condition was independently observed by several adult judges on 10 randomly chosen occasions. The judges were instructed to obtain data on individual children's responses and their results were compared to those collected by the examiner. The percent of agreement was 100%.

Temporal reliability. The experimental task was readministered within seven days of its initial presentation to twelve children, i.e., three subjects chosen at random from each of the four age groups. Individual children's performances during the readministration of the experimental task were compared to their performances obtained during the initial presentation of the experimental task. Temporal reliability of these two observations of the 12 children was calculated. The resultant Pearson product-moment correlation was +.72.

Results

Individual children and adults were assigned three scores representing the number of correct responses out of the 20 trials as well as the number of AT and BT utterances on which their judgment was correct. These scores were subjected to a 5x2 analysis of variance design with repeated measures on one variable (i.e., talk condition). The first variable (chronological age) was between subjects, and the last variable (talk condition) was within subjects. Additionally, follow up tests for assessing significant levels of multiple comparisons were performed.

The AT and BT scores for Group I were as follows: AT scores ranged from 1 to 8 ($\bar{x}$ 4.5; SD 2.59); BT scores ranged from 2 to 10 ($\bar{x}$ 5.2; SD 2.48). Total scores for Group I ranged from 4 to 14 with a mean of 9.7 (SD 3.91). The scores for Group II were as follows: AT scores ranged from 2 to 7 with a mean of 4.4 (SD 1.71); BT scores ranged from 3 to 7 with a mean of 5.4 (SD 1.26); and total scores ranged from 7 to 14 with a mean of 9.8 (SD 2.39). The AT and BT scores for Group III were as follows: AT scores ranged from 2 to 7 ($\bar{x}$ 4.8; SD 1.87); BT scores ranged from 3 to 9 ($\bar{x}$ 5.5; SD 2.06). Total scores for Group III ranged from 6 to 13 with a mean of 10.3 (SD 2.16). The scores for Group IV were as follows: AT scores ranged from 3 to 10

with a mean of 4.7 (SD 2.11); BT scores ranged from 2 to 10 with a mean of 5.9 (SD 2.42); total scores ranged from 6 to 20 with a mean of 10.6 (SD 3.94).

All adults received a score of 10 for both AT and BT conditions giving a mean total score of 20 for the fifth age group. Children's overall mean total score on the experimental condition was 10 (SD 3.44). Table 3 is a summary of individual subjects' scores on the experimental condition. Table 4 is a summary of the various groups' performances.

Performance on the experimental task was analyzed via a two-way analysis of variance design (5x2) with repeated measures on one variable (i.e., talk condition) (Dixon & Brown, 1979; Kirk, 1968). A significant main effect for chronological age was observed ($F = 24.66$; 4;45; $p < .001$) the main effect of talk condition was not considered significant ($F = 4.17$; 1;45; $p > .01$). The interaction between chronological age and talk condition was not significant ($F = .33$; 4;45; $p > .05$). Table 5 is a summary of the ANOVA.

Given the significant main effect for chronological age a post hoc analysis comparing the combined means of the talk condition for the five age groups was carried out. The results of this analysis indicated a significant difference

between the mean performances of the adult group and the rest of the age groups (Newman-Keuls, $p < .01$). There were no other significant differences. Table 6 is a summary of the actual differences between the means of talk condition for the five age groups.

Table 3. Experimental scores of subjects. AT=Adult Talk, BT=Baby talk register.

Group I (5;0-5;6)

Subject	AT Score	BT Score	Total
1	5	2	7
2	1	5	6
3	7	7	14
4	8	6	14
5	1	5	6
6	6	5	11
7	3	3	6
8	7	7	14
9	2	2	4
10	1	10	11
$\bar{X}$	4.5	5.2	9.7
SD	2.59	2.48	3.91

Group II (5;6-6:0)

Subject	AT Score	BT Score	Total
1	6	7	13
2	4	4	8
3	6	6	12
4	2	6	8
5	5	5	10
6	4	5	9
7	7	7	14
8	5	3	8
9	3	6	9
10	2	5	7
$\bar{X}$	4.4	5.4	9.8
SD	1.71	1.26	2.39

Table 3. Experimental scores of subjects (continued).

Group III (6;0-6;6)

Subject	AT Score	BT Score	Total
1	4	6	10
2	2	4	6
3	5	3	8
4	7	5	12
5	7	4	11
6	6	4	10
7	4	5	9
8	3	9	12
9	3	9	12
10	7	6	13
$\bar{X}$	4.8	5.5	10.3
SD	1.87	2.06	2.16

Group IV (6;6-7;0)

Subject	AT Score	BT Score	Total
1	5	7	12
2	4	2	6
3	4	7	11
4	3	8	11
5	10	10	20
6	3	3	6
7	5	6	11
8	6	4	10
9	3	5	8
10	4	7	11
$\bar{X}$	4.7	5.9	10.6
SD	2.11	2.42	3.94

Table 3. Experimental scores of subjects (continued).

Group V (Adults)

Subject	AT Score	BT Score	Total
1	10	10	20
2	10	10	20
3	10	10	20
4	10	10	20
5	10	10	20
6	10	10	20
7	10	10	20
8	10	10	20
9	10	10	20
10	10	10	20
$\bar{X}$	10	10	20
SD	0	0	0

Table 4. Summary table of the groups' mean performance on the variance measures. BT=Baby talk condition, AT-Adult talk condition.

Group	N	AT $\bar{X}$	SD	BT $\bar{X}$	SD	PPVT $\bar{X}$ %ile
5;0-5;6	10	4.5	2.59	5.2	2.48	68.2
5;6-6;0	10	4.4	1.71	5.4	1.26	65.6
6;0-6;6	10	4.8	1.87	5.5	2.06	66.2
6;6-7;0	10	4.7	2.11	5.9	2.42	69.7
Adults	10	10.0	0	10.0	0	-

Table 5. Analysis of variance summary table.

Source	SS	DF	MS	F	P
Chronological age	394.74	4	98.68	24.66	$<.001$
Error	180.10	45	4.00	-	-
Talk Condition	12.96	1	12.96	4.17	$>.01$
Talk X CAge	4.14	4	1.03	0.33	$>.05$
Error	139.90	45	3.10	-	-

Table 6. Actual Differences between the means of the talk condition for the five age groups.

	Group I (5;0-5;6)	Group II (5;6-6;0)	Group III (6;0-6;6)	Group IV (6;6-7;0)	Group V (Adults)
Group I	---	0.1	0.6	0.9	10.3 *
Group II		---	0.5	0.8	10.2 *
Group III			---	0.3	9.7 *
Group IV				---	9.4 *
Group V					---

* $p < .01$ Newman-Keuls.

Discussion

Moravcsik (1969) has suggested that the knowledge of particular linguistic features cannot be granted to children until they have demonstrated the ability to make judgments dealing with the violations of these features. Likewise, Slobin (1974) proposed that the strictest criterion for attributing children with the knowledge of linguistic rules involved their ability to make grammaticality judgments dealing with the appropriateness of an utterance upon request. Developmental psycholinguistic research has indicated that even though children gave evidence of comprehending and producing specific aspects of language, they had difficulty in making acceptability judgments dealing with appropriate language (de Villiers & de Villiers, 1972; 1974; Gleitman, Gleitman & Shipley, 1972; Hakes, 1980; James & Miller, 1973; Leonard & Reid, 1979). The pattern of results obtained in this study lends support to these recent findings concerning children's metalinguistic ability to judge the appropriateness of an utterance. Recall, that children as young as four years of age have been found to produce the prosodic features characteristic of motherese when talking to even younger children and baby dolls, and when role playing babies (Sachs & Devin, 1976; Shatz & Gelman, 1973; Weeks, 1971). The findings of this

study clearly indicate that children's ability to interpret and use the prosodic features of motherese in making acceptability judgments dealing with the social appropriateness of speech addressed to young children emerges at a latter time than their reported ability to produce such features. Recall that, with exception to one child, children at each of the four age groups demonstrated difficulty in making correct acceptability judgments of motherese.

Hakes (1980) has proposed that children's development of metalinguistic abilities, such as acceptability judgments, undergo a striking development during middle childhood, i.e., four to eight years of age. The results of the present study do not completely support this proposal; for a significant difference was not noted for children's judgment abilities across the four age groups observed in the present study. The fact that the findings of the present research are not in complete agreement with Hakes' proposal may be related to the type of acceptability judgments that the children had to make, i.e., one based upon pragmatic socio-communicative knowledge; whereas Hakes' speculation is based on data which for the most part, if not entirely, are based on children's judgments of grammaticality.

Alternately, one could generalize from Hakes' (1980)

thesis that children's ability to correctly make judgments of acceptability increases during middle childhood (i.e., four to eight years of age) to the observation that youngsters of early elementary school age (i.e., four to eight years of age) would not have yet developed the metalinguistic abilities necessary for successful judgments of acceptability; and that children of late elementary school age (i.e., eight to twelve years of age) may indeed have such abilities. It is argued that the subjects of the present investigation be considered of early elementary school age; and therefore it is not surprising that they have performed in the manner that they did. The obvious research need is to study the phenomenon of judgments of register shifts with subjects of later elementary school ages.

It is of extreme interest to note that the age ranges mentioned, i.e., early elementary four to eight years of age and late elementary eight to twelve years of age, correspond to the Piagetian ordinal stages of preoperational and concrete operational cognitive development (Ginsburg & Opper, 1979). The transition from preoperational to concrete operational thought has been characterized mainly by a progressive increase in children's ability to decenter attention, i.e., to comment and reflect upon several aspects

of a situation at one time (Ginsburg & Opper, 1979). This cognitive performance of decentering enables children to develop alternative approaches for interpreting a situation which implies that a choice of approach is necessary (Hakes, 1980). In conservation tasks, for example, the concrete operational child, unlike the preoperational child, is able to systematically deal with relationships between several aspects of a situation and thus has alternative approaches available to make correct judgments of the effect of a transformation. Likewise, when children engage in metalinguistic activities, they must comment and reflect upon several aspects of a situation, that is, they must regard language not only as a tool for communication but also must consciously reflect upon language as an object in its own right (Cazden, 1975). Additionally, as in concrete operational abilities, metalinguistic performances involve slow, time-consuming, controlled processes which involve an element of choice of whether or not to utilize such processes. Further investigation of children's metalinguistic abilities as observed via judgments of acceptability should take into account the children's stage of cognitive development as another possible source of variance.

Conclusions

The findings of the experimental task clearly show that adults have developed the ability to interpret the prosodic features of motherese in making correct acceptability judgments of the social appropriateness of speech addressed to young children. Additionally, this study indicates that there is a significant difference between children's and adults' judgment abilities. These findings suggest that even though children have some nascent ability to make correct acceptability judgments of motherese, their ability to consciously reflect upon and use the prosodic features of motherese in making judgments of socially appropriate language does not reflect the judgment ability displayed by adults.

APPENDICES

APPENDIX A

Pre-test I Stimuli List A

1. Show me the man is kicking the ball.
2. Show me the baby is washing the cup.
3. Show me the baby is pushing the block.
4. Show me the baby is pulling the wagon.
5. Show me the man is eating the apple.
6. Show me the baby is drinking the milk.
7. Show me the man is eating the cookie.
8. Show me the baby is tickling the dog.
9. Show me the man is pushing the car.
10. Show me the man is cutting the paper.

Pre-test I Stimuli List B

1. Show me the man is eating the apple.
2. Show me the man is pushing the car.
3. Show me the baby is pulling the wagon.
4. Show me the man is cutting the paper.
5. Show me the baby is pushing the block.
6. Show me the man is kicking the ball.
7. Show me the baby is tickling the dog.
8. Show me the baby is drinking the milk.
9. Show me the baby is washing the cup.
10. Show me the man is eating the cookie.

APPENDIX B

Pre-test II Stimuli List A

1. I like your milk.
2. I like your block.
3. I like your car.
4. I like your apple.
5. I like your wagon.
6. I like your cup.
7. I like your paper.
8. I like your cookie.
9. I like your dog.
10. I like your ball.

Pre-test II Stimuli List B

1. I like your car.
2. I like your paper.
3. I like your dog.
4. I like your block.
5. I like your cookie.
6. I like your milk.
7. I like your apple.
8. I like your wagon.
9. I like your ball.
10. I like your cup.

APPENDIX C

Experimental Stimuli List A

1. Push the block. - AT
2. Eat the cookie. - BT
3. Wash the cup. - AT
4. Drink the milk. - BT
5. Eat the apple. - AT
6. Pull the wagon. - AT
7. Tickle the dog. - AT
8. Pull the wagon. - BT
9. Push the car. - AT
10. Drink the milk. - AT
11. Tickle the dog. - BT
12. Kick the ball. - BT
13. Cut the paper. - AT
14. Eat the apple. - BT
15. Eat the cookie. - AT
16. Kick the ball. - AT
17. Push the block. - BT
18. Push the car. - BT
19. Cut the paper. - BT
20. Wash the cup. - BT

Experimental Stimuli List B

1. Push the block. - BT
2. Eat the cookie. - AT
3. Push the car. - AT
4. Pull the wagon. - BT
5. Wash the cup. - BT
6. Push the block. - AT
7. Eat the apple. - BT
8. Cut the paper. - BT
9. Eat the cookie. - BT
10. Wash the cup. - AT
11. Tickle the dog. - BT
12. Drink the milk. - BT
13. Push the car. - BT
14. Drink the milk. - AT
15. Cut the paper. - AT
16. Kick the ball. - BT
17. Kick the ball. - AT
18. Eat the apple. - AT
19. Tickle the dog. - AT
20. Pull the wagon. - AT

Experimental Stimuli List C

1. Push the car. - AT
2. Eat the cookie. - AT
3. Pull the wagon. - BT
4. Eat the cookie. - BT
5. Tickle the dog. - AT
6. Cut the paper. - BT
7. Drink the milk. - BT
8. Cut the paper. - AT
9. Push the block. - BT
10. Wash the cup. - BT
11. Push the block. - AT
12. Wash the cup. - AT
13. Eat the apple. - BT
14. Pull the wagon. - AT
15. Kick the ball. - AT
16. Eat the apple. - AT
17. Kick the ball. - BT
18. Push the car. - BT
19. Tickle the dog. - BT
20. Drink the milk. - AT

Experimental Stimuli List D

1. Tickle the dog. - BT
2. Pull the wagon. - AT
3. Eat the apple. - BT
4. Tickle the dog. - AT
5. Eat the cookie. - AT
6. Drink the milk. - AT
7. Cut the paper. - BT
8. Push the block. - BT
9. Wash the cup. - AT
10. Eat the apple. - AT
11. Push the car. - AT
12. Drink the milk. - BT
13. Cut the paper. - AT
14. Kick the ball. - AT
15. Wash the cup. - BT
16. Pull the wagon. - BT
17. Kick the ball. - BT
18. Eat the cookie. - BT
19. Push the block. - AT
20. Push the car. - BT

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