EFFECT OF SEX ORIENTATION OF STIMULUS OBJECTS ON
SEX DIFFERENCES IN LANGUAGE DEVELOPMENT

by

Cathy J. Walters

A thesis submitted in partial fulfillment
of the requirements for the degree
of
MASTER OF SCIENCE
in
Family and Child Development

UTAH STATE UNIVERSITY
Logan, Utah
1972
TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>ii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>iii</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>iv</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Statement of the problem</td>
<td>2</td>
</tr>
<tr>
<td>Definitions</td>
<td>2</td>
</tr>
<tr>
<td>Statement of the purpose</td>
<td>4</td>
</tr>
<tr>
<td>Hypotheses</td>
<td>5</td>
</tr>
<tr>
<td>REVIEW OF LITERATURE</td>
<td>6</td>
</tr>
<tr>
<td>Sex differences in language development</td>
<td>6</td>
</tr>
<tr>
<td>Proposed explanations for sex differences</td>
<td>20</td>
</tr>
<tr>
<td>Sex orientation of stimulus objects</td>
<td>25</td>
</tr>
<tr>
<td>METHODS AND PROCEDURES</td>
<td>28</td>
</tr>
<tr>
<td>Sample</td>
<td>28</td>
</tr>
<tr>
<td>Setting</td>
<td>28</td>
</tr>
<tr>
<td>Pilot study</td>
<td>29</td>
</tr>
<tr>
<td>Stimulus objects</td>
<td>31</td>
</tr>
<tr>
<td>Administration and collection of data</td>
<td>32</td>
</tr>
<tr>
<td>Analysis of data</td>
<td>34</td>
</tr>
<tr>
<td>FINDINGS</td>
<td>36</td>
</tr>
<tr>
<td>Sex differences</td>
<td>37</td>
</tr>
<tr>
<td>Differences between stimulus categories</td>
<td>44</td>
</tr>
<tr>
<td>Acceptance or rejection of hypotheses</td>
<td>47</td>
</tr>
<tr>
<td>Related findings</td>
<td>48</td>
</tr>
<tr>
<td>DISCUSSION</td>
<td>52</td>
</tr>
<tr>
<td>Sex differences</td>
<td>52</td>
</tr>
<tr>
<td>Differences between stimulus categories</td>
<td>54</td>
</tr>
<tr>
<td>Discussion of related findings</td>
<td>57</td>
</tr>
<tr>
<td>Section</td>
<td>Page</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td><strong>SUMMARY AND CONCLUSIONS</strong></td>
<td>65</td>
</tr>
<tr>
<td>Summary</td>
<td>65</td>
</tr>
<tr>
<td>General conclusions</td>
<td>67</td>
</tr>
<tr>
<td>Suggestions for further study</td>
<td>68</td>
</tr>
<tr>
<td><strong>APPENDIXES</strong></td>
<td>69</td>
</tr>
<tr>
<td>Appendix A</td>
<td>70</td>
</tr>
<tr>
<td>Appendix B</td>
<td>102</td>
</tr>
<tr>
<td>Appendix C</td>
<td>103</td>
</tr>
<tr>
<td><strong>LITERATURE CITED</strong></td>
<td>104</td>
</tr>
<tr>
<td><strong>VITA</strong></td>
<td>109</td>
</tr>
</tbody>
</table>
ACKNOWLEDGMENTS

I wish to thank and express my appreciation to Dr. Carroll Lambert, my major professor, for her direction and support; to Dr. Don C. Carter and Dr. Jay Monson for their helpful suggestions; to the head teachers in the Child Development Laboratories for their cooperation; and to the children who participated in the study. I wish to express a special thank you to my husband for patience and encouragement given me while working on this study.

Cathy J. Walters

Cathy J. Walters
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Multiple analysis of variance for number of words</td>
<td>37</td>
</tr>
<tr>
<td>2.</td>
<td>Number of words produced in response to objects in the three stimulus categories</td>
<td>38</td>
</tr>
<tr>
<td>3.</td>
<td>Multiple analysis of variance for number of expression units</td>
<td>39</td>
</tr>
<tr>
<td>4.</td>
<td>Number of expression units produced in response to objects in the three stimulus categories</td>
<td>41</td>
</tr>
<tr>
<td>5.</td>
<td>Multiple analysis of variance for mean length of expression units</td>
<td>42</td>
</tr>
<tr>
<td>6.</td>
<td>Mean length of expression units produced in response to objects in the three stimulus categories</td>
<td>43</td>
</tr>
<tr>
<td>7.</td>
<td>Planned comparison of number of words produced by the total group of subjects in response to stimulus categories</td>
<td>44</td>
</tr>
<tr>
<td>8.</td>
<td>Planned comparison of number of expression units produced by the total group of subjects in response to stimulus objects in the three stimulus categories</td>
<td>46</td>
</tr>
<tr>
<td>9.</td>
<td>Subjects' sex designation of stimulus objects</td>
<td>49</td>
</tr>
<tr>
<td>10.</td>
<td>Mean length of response in spoken language in six investigations</td>
<td>51</td>
</tr>
</tbody>
</table>
The objective of this study was to aid in discovering whether or not the sex differences in language development are at least partially a result of the differential effect of the environment on the two sexes by determining whether the sex orientation of stimulus objects presented to preschool children would influence the quantity and quality of verbal responses emitted by the children. Twenty preschool children, 10 boys and 10 girls, were each presented with neutral, masculine oriented, and feminine oriented stimulus objects and were asked to respond to them in the form of a story. Quantity of verbal responses was measured by the number of words and number of expression units produced by the subjects in response to the stimulus objects. Quality of language was measured by the mean length of expression units produced in response to the stimulus objects. No significant sex differences were found in the quantity or quality of verbal responses to
stimulus objects in the three stimulus categories. There was a significant difference in the quantity of language produced by the total group of subjects in response to stimulus objects in the three stimulus categories, the quantity of language produced in response to the masculine oriented stimulus objects being greater than that produced in response to neutral or feminine oriented stimulus objects. The quality of language produced by the total group of subjects in response to stimulus objects in the three stimulus categories showed no significant differences.
INTRODUCTION

In the past five decades there has been an increasing interest in language development. Until recently one of the most consistent findings to come out of studies of language development in white American children is a slight difference in favor of girls in all aspects of language that have been studied. This difference is seldom significant, but it appears in studies conducted by various experimenters, employing diverse techniques, dissimilar subjects, and sampling unlike geographical populations. The difference seems to appear whenever groups of boys and girls being studied are well matched on factors thought to influence language development and the testing situation does not tend to favor the interests of one sex over the other. More recent studies, however, have reported findings in conflict with those of earlier research and have rendered the question of sex differences in language development unresolved.

The determining factor in this sex difference has not been established. It may be due to inherent qualities of the sexes, the differential influence of the environment on the two sexes, or a combination of the two factors. This study will investigate one environmental factor, the sex orientation of the stimuli used to evoke verbal
responses, which may be involved in the sex differences found in studies of language development.

Statement of the Problem

If the sex orientation of objects used to evoke verbal responses is a factor contributing to the sex differences found in studies of language development, perhaps this difference could be reduced by careful selection of stimulus objects used in these studies. If this should be the case, such a finding would suggest the possibility that the sex differences found in language development are due at least partially to environmental factors and further that they could be reduced through manipulation of the environment. Such a finding would also have implications for the structuring and equipping of the early childhood classroom since it is at a very early age that the sex differences in language development begin to appear.

Definitions

Following is a list of terms and their definitions as used in this study:

1. Stimulus objects - toys presented to the subjects for them to respond to.

   a. masculine oriented stimulus objects - those stimulus objects that are more appropriate for males than for females. The particular ones used in the
following study were a car, a motorcycle, and a gas pump.

b. feminine oriented stimulus objects - those stimulus objects that are more appropriate for females than for males. The particular ones used in the following study were a baby doll and a baby bottle.

c. neutral stimulus object - a stimulus object that is equally appropriate for both sexes. The particular one used in the following study was a dragon puppet.

2. Stimulus category - a group of stimulus objects all having the same sex orientation. Within each of the three stimulus categories in this study, masculine, feminine, and neutral, there are one or more stimulus objects. Example: The masculine stimulus category contains three stimulus objects, a car, a motorcycle, and a gas pump.

3. Expression unit - refers to a cluster of words that may but does not necessarily have to be a grammatically complete sentence. Examples: "Down the hill up." "Once there was a little baby named Kerry." "Later he had a -- some Doug, a Doug, he has a -- a boy named Doug." "This, this one -- old -- this old story -- that a lot of stories."

See appendix C.

4. Number of words - one of the quantitative measures used in this study. It refers to the number of words produced in response to stimulus objects. See appendix B.
5. Number of expression units - one of the quantitative measures used in this study. It refers to the number of expression units produced in response to stimulus objects. See appendix C.

6. Mean length of expression units - the qualitative measure used in this study. It refers to the average length in words of expression units.

7. Treatment - refers to the presentation of objects in the three stimulus categories. Treatment one is the presentation of the object in the neutral stimulus category. Treatment two is the presentation of objects in the masculine stimulus category. Treatment three is the presentation of the objects in the feminine stimulus category. Each subject in this study received each of the three treatments.

Statement of the Purpose

It is the purpose of this study to determine whether the sex orientation of stimulus objects presented to preschool children will influence the quantity and quality of the verbal responses emitted by the children. The results of this study will aid in determining whether or not the sex differences in language development are at least partially a result of the differential effect of the environment on the two sexes.
Hypotheses

1. There will be no significant difference between male and female groups in the quantity and quality of verbal responses to neutral, masculine oriented, and feminine oriented stimulus objects as measured by number of words, number of expression units, and mean length of expression units. Significance level is .05.

2. The verbal responses of the total group of subjects to neutral, masculine oriented, and feminine oriented stimulus objects will show no significant difference in quantity or quality as measured by number of words, number of expression units, and mean length of expression units.
Sex Differences in Language Development

A sex difference in favor of girls has been found in a large number of studies of language development in white American children. There is little agreement concerning the degree of this sex difference; reported differences vary with age of the subjects being tested, method of testing, and the aspect of language development being studied. Schreiber (1957, p. 53) says that speech development is "just another of many fields in which girls mature earlier." West, Ansberry, and Carr (1957, p. 58) tell us that "language habits develop more rapidly in girls than in boys. Moreover, fewer girls than boys exhibit defects of speech."

While different approaches to instruction, different reading materials, and different teacher attitudes, each or all, may favorably affect boys' language development, the fact remains that girls achieve better than boys and that sex differences in language development and reading achievement vary, depending upon the skill or ability tested. (Stanchfield, 1970, p. 5)

Templin sums up her findings on sex differences in language development by saying:

When the performance of boys and girls is compared over the entire age range, girls tend to receive higher scores more frequently than boys, but the differences are not consistent and are only infrequently statistically significant. (Templin, 1957, p. 145)
Prelinguistic differences

Karelitz and Fisichelli (1962), in a study of cry thresholds of infants, found no significant sex differences. It was suggested that there may, however, by sex differences in other features of infants' cries. In a study of cry latencies Fisichelli and Karelitz (1963) found no statistically significant sex differences. A study of attention in human infants by Kagan and Lewis (1965), which involved presenting the infants with several different stimuli, showed no sex difference in the amount of vocalization for all stimuli combined.

In a discussion of the meaning of behavior, Kagan (1969) refers to vocalization data in infants pointing out that vocalization responses in the two sexes seem to have different meanings. In the first half year nonfretful, nonmorphemic vocalization to visual and auditory stimuli appears to be associated with the excitability that accompanies information processing in girls. In boys these vocalizations seem to be associated more with the excitability that accompanies boredom or motor restlessness than with the processing of information. There were no sex differences found in the mean vocalization time or variability in vocalization at any age, but the patterns of correlates of the vocalization responses were clearly different for the two sexes. Differentiated use of vocalization was also found in six-month-old girls but
not in six-month-old boys. Vocalization was also more stable across ages for girls than for boys.

Two interpretations of this sexual dimorphism for infant babbling are offered. The first interpretation suggests that the tendency to accelerate the cognitive development of their infant differs in mothers and that this tendency leads the mother to initiate different actions with daughters than with sons. It is proposed that this differential treatment by sex will more likely lead a mother who tends to accelerate her infant's cognitive development to engage in frequent, reciprocal vocalizations with her daughter than with her son causing the infant daughter to develop a stronger disposition to babble when excited by interesting events. Mothers of daughters show greater variability in patterns of reciprocal vocalization and stimulation of vocalization during the time the child is processing information than mothers of sons do.

A second interpretation proposes that there is a difference in the basic organization of the central nervous system of the two sexes. Kagan (1969, p. 1131) says "it is possible that vocalization is a more prepotent reaction for girls than for boys when the infant is in the state of arousal created by processing information." This explanation assumes that the state of "stimulus excitement" results in differing preferred reactions by the two sexes, the infant girl being more likely to vocalize and the infant boy being more likely to react with motor quieting or with
skeletal motor discharge. These two interpretations, the first emphasizing environmental factors and the second emphasizing hereditary factors, are complementary. Sexual dimorphism for infant babbling, like many behaviors, may be the result of a combination of environmental and hereditary factors.

Irvin and Chen (1946) studied phoneme types and frequencies in infants and found that although the two sexes begin with an equal endowment of sound types, the rate of development for the sexes changes and girls use more phoneme types after the age of 26 months. Boys had a higher phoneme frequency in spite of the fact that girls develop at a faster rate. McCurry and Orvis (1953) found no significant difference between the means for boys and girls 19 to 22 months of age in the type and frequency of words attempted.

Mead (1913), using the questionnaire method, Terman (1926), using mothers' reports to physicians, and Morley (1957), using an interview procedure, all reported that girls speak their first word earlier than boys. Definition of first word was to use a word intelligently or associate the idea with the object for two of the studies and to use a word with meaning for the other study. Reported ages for the appearance of the first word for girls ranged from 10.7 months to 15.5 months and for boys ranged from 11.6 months to 16.5 months depending on the method of data collection. Darlye and Winitz (1961), in a review of 15 studies
reporting the age of first word, concluded that there is not sufficient evidence to indicate that girls begin to speak at an earlier age than boys do. They found no significant sex differences in studies for which sufficient data were available to submit results to statistical tests.

**Linguistic differences**

**Productivity.** Goodenough (1930) found no sex differences in talkativeness for children from 27 to 59 months of age. Olson and Koetzle (1936), Jersild and Ritzman (1938), and Young (1941) found that girls excel boys in number of words spoken. These three studies covered ages ranging from 30 to 65 months. Olson and Koetzle (1936) also noted that although girls surpass boys in amount of speech, boys tend to talk at a slightly more rapid rate. Smith (1970) studied the effect of communication patterns (dyad, triad, small group, and role-playing triad) and sex on the speech of four-year-olds and found no difference in the amount of speech produced by girls and boys regardless of communication conditions. McCarthy (1930) found that at lower age levels the mean number of words used by girls is greater than the mean number of words used by boys, but this tendency is less marked at higher age levels. O'Donnell (1967) recorded oral responses to two short films of kindergarten, first, second, third, fifth, and seventh graders and found that the compositions of boys were longer at all grade levels except grade five. A study by Entwisle
(1969), based on spontaneous conversation, narrative material during sessions of simulation games, and stories written to pictures, reported that fifth, sixth, and ninth grade girls produced more words per story than boys of the same grade level.

**Articulation.** Davis (1937) found that at 5½ years of age a greater percentage of girls than boys had perfect articulation. Templin (1957) found that it takes boys approximately one year longer than girls to reach essentially adult articulation. Templin (1953) found no consistency from age to age in either boys or girls receiving the higher score on a screening test of articulation in children from three to eight years of age. From 4½ years on girls tended to accelerate in articulation development, but the difference between the sexes was significant only at seven years of age. Girls at seven years of age approximated mature articulation; boys did not approximate mature articulation until eight years of age. Winitz (1959) found that girls are slightly ahead of boys in articulation skills but the differences were not significant. Wellman, Case, and Mengert (1931) reported that girls gave more consonant elements correctly at ages three, four, and five than boys did; boys gave more consonant elements correctly at ages two and six. No sex difference was found in correctness of vowel sounds. Williams, McFarland, and Little (1937) reported a tendency for girls to score higher than boys when data were analyzed for speech sounds.
A skill that is closely related to articulation skills is that of sound discrimination. Templin's (1957) results on speech sound discrimination indicate that this skill follows a pattern similar to that for articulation skills. At the oldest ages tested, age eight, the mean speech sound discrimination score for boys was about equal to that of girls one year younger.

**Comprehensibility.** McCarthy (1930) found that between the ages of 18 and 54 months, girls had a greater percentage of comprehensible responses at all age levels except 33 months where the discrepancy was attributed to sampling. Fisher (1932) found that at all age levels between 22 and 60 months of age, boys used a higher percentage of incomprehensible remarks than girls did. Part of this difference was accounted for by a greater tendency on the part of boys to indulge in dramatic play which involves shouting and jungle-like sounds.

**Length of response.** Davis (1937) reported that in children from five to 10 years of age the mean length of response was slightly greater for girls than for boys; variability of sentence length was greater for girls than for boys, girls using more single-word expressions and also more long remarks than boys. Young (1941) found that girls 30 to 65 months of age surpassed boys of the same age in sentence length. Smith (1970) found that in all four communication patterns studied (dyad, triad, small group, role-playing triad), the means for four-year-old females
for amount of speech per response, eliminating repetitions, was greater than the means for males of the same age, but these differences were not significant. Winitz (1959) found a significant difference in favor of girls for the mean length of the five longest responses and the mean standard deviation but found no significant sex difference in favor of girls on mean length of all responses. McCarthy (1930) found a sex difference in favor of girls on mean length of response. The difference was not significant but was consistently in the same direction. The difference was greatest at the younger age levels when language development is the most rapid and tapered off at the older age levels tested when the rate of development decreases. It is suggested that this indicates that girls go through the developmental cycle more rapidly than boys, but boys reach approximately the same level of development at the end of their developmental cycle. Templin (1957) found few significant sex differences in length of response for children from ages three to eight, and the differences that were found were not consistent from age to age. O'Donnell, Griffin, and Norris (1967), using a transformational analysis of oral responses of kindergarten, first, second, third, fifth, and seventh graders to two short films, found the length of minimal terminable syntactic units of boys to be longer than those of girls at all levels except grade five.

**Parts of speech.** McCarthy (1930) found that at 18 months of age, the age at which nouns as first words are
being acquired, girls use a larger proportion of nouns than do boys, perhaps indicating a more advanced stage for girls than for boys at this age. By 24 months of age girls began to show a decrease in the proportion of nouns that is the characteristic trend with increase in age while boys at this age level reached their maximum proportion of nouns. Young (1941) supported these results. Young (1941) and McCarthy (1930) both reported no significant sex difference in the proportion of pronouns used. David (1937) found the mean number of personal pronouns used, which increases with age, to be greater for girls than for boys. McCarthy (1930) found that girls excel in the use of adjectives and adverbs at the younger age levels but that the sexes are about equal by 30 months of age. Young (1941) supported McCarthy's findings concerning adjectives. Entwisle (1969), studying fifth, sixth, and ninth graders, found that the proportion of adjectives to total number of words is generally higher for females than for males and mentioned that these differences persist in adult samples. Young (1941) reported that at most ages boys surpass girls in proportion of adverbs used, and girls surpass boys in the use of conjunctions, which increases with age. McCarthy (1930) supported this finding concerning use of conjunctions up to the age of 42 months but reported that the sexes appear about equal after this age level. No consistent sex differences were found in use of prepositions by McCarthy (1930) while Young (1941) reported that although the
differences vary at the several age levels, girls tend to surpass boys in this area. McCarthy (1930) found that at younger age levels boys use a greater proportion of interjections than girls do, but the difference disappears at older age levels. Davis (1937) and Young (1941) reported that girls surpassed boys in the use of infinitives. Davis (1937) also indicated that the use of auxiliary verbs is slightly greater for girls than for boys. The differences in the findings of McCarthy (1930) and Young (1941) concerning the sex differences in use of several parts of speech may be partially due to the differing methods used in the two investigations, McCarthy using responses to a collection of toys and picture books and Young using spontaneous speech in four different settings.

Sentence structure. Templin (1957) found no essential sex difference in the use of various types of sentences in children from three to eight years of age. Winitz (1959) reported no sex differences in structural complexity of sentences and Davis (1937) said only that sex differences in structural analysis were very slight. According to Fisher (1932), girls used a greater proportion of structurally complete sentences in their total speech than boys did and when structurally complete sentences were analyzed, girls showed consistently superior language at all age levels. McCarthy (1930) stated that there is a decrease in the relative amount of functionally complete but structurally incomplete sentences with age, and at 24 months of
age girls had fewer of these responses than boys did, probably because at this age girls are dropping many one-word sentences and word combinations are beginning to appear in their speech. At upper age levels, the sex differences on this measure decrease because of the increase in the number of answers, which are more numerous in girls than in boys. Girls were found to be superior to boys in the number of simple sentences used at the younger age level, but at the upper age levels when girls are acquiring more complex sentence forms, the proportion of conversation which consists of simple sentences is about equal for the two sexes. Girls were found to use the simple sentence with a phrase earlier than boys and maintained their superiority in proportion of simple sentences with a phrase used until 54 months of age. No sex differences were found in the proportion of complex or compound sentences used. Elaborated sentences appeared earlier in girls than in boys and girls maintained a slight superiority on this measure.

Smith (1933) found no consistent sex differences in number of grammatical errors after two years of age. According to Davis (1937) grammatical errors are more common in boys than in girls.

Several studies which have analyzed children's language using Chomsky's transformational model of syntactic structures have reported sex differences in their findings. Menyuk (1964), analyzing the language of nursery and first grade children, found few significant sex differences in
the usage of all syntactic structures but did find that significantly more females than males did not always use the pronoun restriction in conjunction and conjoining sentences. No significant sex differences were found in the usage of transformations. Menyuk (1963) found no sex differences in the usage of syntactic structures by kindergarten children. O'Donnell (1967) found boys to use grammatically incomplete structural patterns more frequently than girls at grade levels one, two, and three, but found no overall significant sex differences. Boys excelled in length of terminable units and in use of nominal and coordinate constructions and it is proposed that this suggests that the language of boys may be somewhat more structurally complex than that of girls.

Vocabulary. Davis (1937) and Jersild (1938) found that girls used more different words than boys at all ages tested. Girls exceeded boys in mean number of different words used in McCarthy's (1930) study, the sex differences being more marked at the younger age levels when the rise in vocabulary is more rapid and when girls seem to be going through the developmental cycle faster than boys. Winitz (1959) found no significant sex difference in number of different words used. Ammons (1949) and Templin (1957) found no significant sex differences in the recognition vocabulary of preschool children. Templin (1957), however, did find a consistent but not significant difference in favor of boys from ages six through eight in recognition vocabulary.
Templin (1957) found no significant difference in vocabulary of use for males and females. Williams, McFarland, and Little (1937) found a general tendency for girls to score higher than boys in vocabulary development. In an analysis of variety of speech content (number of different common and proper nouns used), Moore (1947) found no significant sex differences. Rubin and Barlow (1968) found no significant sex differences in pre-kindergarten and first grade children on the word meaning subtest of the Metropolitan Readiness Test.

**Functional analysis.** McCarthy (1930) found that girls used a larger proportion of emotionally toned responses, which show a decrease in relative importance with increase in chronological age, than boys do at younger age levels but that the sexes are about equal in this respect at older age levels, indicating that this type of response falls off more rapidly among girls than among boys. Davis (1937) reported that girls made more emotionally toned responses than boys at the age levels studied (5½, 6½, and 9½ years). McCarthy (1930) found no consistent sex differences in the proportion of egocentric responses used. Davis (1937) reported a small but steady increase with age in the percentage of adapted information (exchanging thoughts with others, either by telling him something that will interest him, influence his actions, or by actual interchange of ideas, adapting the point of view of the hearer) for boys and definite fluctuation for girls. McCarthy (1930) found
girls superior in the amount of speech that was of the adapted information type which is said to constitute one half of the conversation of older children. It is suggested that this seems to be another indication that girls go through the developmental cycle faster than boys, both arriving eventually at about the same level. Davis (1937) found that the percentage of questions is higher for boys and variability in number of questions used is greater for girls. McCarthy (1930) reported that the proportion of answers (all elicited responses) used shows a steady increase with age and is a larger proportion of girls' speech than of boys' speech at most age levels. Girls used a greater percentage of answers at the 5½ and 9½ year age levels in Davis's (1937) study but not at the 6½ year age level. It is proposed that this may be an indication of the more rapid linguistic development in girls at early ages and at later ages may be due to the greater tractability of girls in all social situations.

Sex differences in non-white samples and at varying socio-economic levels

Davis (1937) and Young (1941) found sex differences in children of lower socio-economic levels to be more marked than those in children from upper socio-economic levels. Fisher (1934), using highly selected subjects, found very small sex differences. Petrie (1970), in a comparison of Ango-migrant and Anglo-resident children,
found consistent differences in language development favoring males over females in both groups of children.

Anastasi and D'Angelo (1952), in comparing language development of Negro and white children five years of age, found that among Negroes the boys surpassed the girls in mean sentence length, while among whites the girls excelled. This same reversal of sex differences in favor of boys was found in the Negro group when analyzing sentence structure. The reversal of sex differences was more pronounced in the unmixed Negro group than in the mixed Negro group. In a study of the sentence structure of kindergarten children in low socio-economic urban areas, Thomas (1962) reported that Negro boys tended to be more accurate while girls tended to speak in longer sentences. These differences were not found for the white groups in this study. In a study of Puerto Rican preschool children, Anastasi and DeJesus (1953) found that this group resembled neither Negro nor white groups that had been studied. No sex differences were noted in the group of preschool Puerto Rican children. According to Quijana (1968) no sex differences were found in the vocabularies of Spanish, American, and Spanish American children at the first grade level.

Proposed Explanations for Sex Differences

McCarthy (1953) suggested some possible explanations for sex differences found in language development. Sex
differences in favor of girls seem to appear at about the age of onset of true language as opposed to prelinguistic utterances. Although these sex differences are small, McCarthy (1953) stated that they are cumulative. It is suggested that the environmental situation in our culture is different for boys and girls. Because the earliest speech model is the mother, early language experiences may be more satisfying for girls than for boys because the girl identifies more readily with the mother. This same kind of environmental factor may be present when the child enters school with a female teacher. Kagan (1964) supports this suggestion noting that it is usually a female teacher who mediates a child's introduction to school. Once in the school environment, a premium is placed on a number of values and activities that are more appropriate for girls than for boys (obedience, inhibition of aggression and restless motoricity). Kagan (1964) concludes that because of these environmental factors it might be expected that most children would view the school situation as more feminine than masculine. McCarthy (1953) proposed that this may be a factor in the sex differences favoring girls in language development.

A second hypothesis by McCarthy (1953) suggests that sex differences in language development may be due to differential parental attitudes toward the two sexes. One example of this is the different kinds of play the two sexes are encouraged to do. Ervin-Tripp (1966) also
indicated the importance of considering social factors, such as home factors and types of play, in looking at sex differences in language development. It is proposed that these social factors may be a partial explanation for the varying sex differences found when varying populations are studied (Anastasi and D'Angelo, 1952; Anastasi and De'Jesus, 1953; Petrie, 1970). Templin's (1957) proposed explanation for why the sex differences in language development in her study were somewhat less pronounced than sex differences frequently reported involves these same social factors. It is suggested that the sex differences in language development literature may have been overemphasized in the past, but it is also suggested that the less pronounced sex differences in her study may be due to the fact that over the years the differences in language ability of the two sexes may have become less pronounced as a result of the shift toward a single standard in child care and training in the few decades between Templin's study and earlier studies.

Schuell (1947) suggests that many of the sex differences in regard to speech may be cultural. The family, school, and social situations offer more security for girls than for boys. Girls are more sheltered, allowed to be more dependent, receive less severe punishment and are praised more. Boys of the same age group are encouraged to be competitive and are handled more severely, even though they are less mature physically, mentally, and socially. At the same time they are punished for aggressive behaviors that are required of
them in order to compete with girls in the school situation and to keep up with other boys. Entwisle and Garvey (1969) state that speech is a major factor in the socializing process and that it is only reasonable to assume that sex differences in speech behavior would be associated with dimensions of early socialization such as those mentioned by Schuell. Kagan (1964) points out another socialization factor, sex-typing, that may have an influence on sex differences in language development. It is noted that many sex-typed responses girls acquire are dependent upon reactions from others; determining whether she is attractive, socially poised or passive is difficult without interaction and feedback from the social environment. Many of the sex-typed behaviors boys acquire are learned while alone and require solitary practice for which the boy requires no interaction with the social environment in order to assess when he has mastered the skill. The difference in amount of social interaction required for the two sexes to learn appropriate sex-typed responses may require differing amounts of verbalization in the two sexes which may in turn have differential effects on the growth of language in the two sexes.

Entwisle and Garvey (1969) state that sex differences in many studies are suppressed by severe constraints these studies impose on the type of language behavior sought. It is proposed that sex differences in language development are easily obscured when only a small language sample is
used. Not only the size of the language sample studied, but the method by which the sample is obtained seems to be a relevant factor in studies reporting sex differences in language development. There are some indications that the stimuli used to evoke responses in studies of language development have an effect on findings concerning sex differences. Davis (1937), using stimuli objects that were described as being of greater interest to boys than girls, found fewer sex differences in favor of girls than studies using supposedly neutral stimuli. Petrie (1970) contributed the consistent sex differences in favor of boys in his study to the types of stimuli used, the stimulus materials having considerably more meaning for males than for females, even though the pictures used were supposed to be culturally free (pictures were selected from Davis-Eels Games - Form A, Level I). Cowan, et. al. (1967), analyzing the mean length of spoken response as a function of stimulus, experimenter, and subject, found that the stimulus effect was a main effect. It was suggested that different stimulus content may elicit sentences of different complexity, and the length may follow from the complexity.

Most of the studies mentioned in this review support the idea that there are sex differences in language development. Some of them suggest possible explanations for these differences, most of the explanations involving one or more environmental factor as playing a part in the sex difference. However, much of the research offering information about sex
differences in language development did not have as its main objective the discovery of these differences or of factors that influence these differences. The main objective of this study is the discovery of a selected factor that may have influenced the sex differences found in previous studies. This study is an attempt to investigate the influence of sex orientation of stimulus objects used to evoke responses on sex differences on several measures of language development.

Sex Orientation of Stimulus Objects

If the sex orientation of a stimulus affects the quality and quantity of language elicited from the subject as several studies suggest (Davis, 1937; Petrie, 1970; Cowan, et. al., 1967), the stimulus used must be looked at in terms of their sex orientation as perceived by the subjects. DeLucia (1963), administering a toy preference test, found that boys consistently make more appropriate choices than do girls. Hartup and Zook (1960) reported a sex difference in degree of appropriate sex-role preferences in three and four-year-old children. Boys preferred the stereotyped masculine role more than girls preferred the stereotyped feminine role. Rosenberg and Sutton-Smith (1960) studied masculine-feminine differences in play activities and results showed that boys had fewer games that differentiated them from girls than did girls have games that differentiated them from boys. Cars was one of the items
chosen significantly more frequently by boys; dolls was one of the items chosen significantly more frequently by girls. The study indicated that there was a trend in the direction of increasing preference by females for what were formerly perceived as male items and proposed that possibly girls are continuing to show interest in their own games and at the same time are encroaching upon more masculine games. There seems to be an expansion of the female role perception and a contraction of the male role perception. Verner and Weese's (1965) study of preschool children's perceptions of adult sex-linked cultural objects indicated that fewer errors were made on identification of female appearance and task items than were made on male appearance and task items, and sex-linkage of female items appeared to be more readily perceived than that of male items. It is suggested that in American society today there are fewer items that are distinctly masculine than there are items that are distinctly feminine. Girls made less than half as many errors as boys made on the female appearance items.

Kagan (1964) states that boys are aware of activities and objects culturally defined as masculine as early as three years of age while girls preferences are variable up to none or 10 years of age. It is unusual to find a boy between the ages of three and 10 who prefers feminine activities, but it is rather common to find girls between these ages who strongly prefer masculine games, activities, and objects. It seems that middle-class girls are much
freer to express interest in toys of the opposite sex than are middle-class boys. According to Kagan (1964) research on games and toy preferences indicates that boys choose objects related to sports, machines, aggression, speed, and power roles. Girls tend to select objects associated with the kitchen and home, babies, personal attractiveness, and fantasy roles in which they have a subordinate relation to a male. Young children seem to be clearly aware of sex roles and like to feel that their actions and attitudes are congruent with appropriate sex-role standards.

According to the above studies, a stimulus object perceived by young children of both sexes as masculine would be more difficult to find than would be a stimulus object perceived as feminine by young children of both sexes. The stimulus objects used in the following study were selected with the abover considerations in mind.
METHODS AND PROCEDURES

Sample

The data in this study were gathered from 20 children, 10 boys and 10 girls, enrolled in the Child Development Laboratories at Utah State University spring quarter 1972. It is assumed by the investigator that due to a twenty-five dollar per quarter fee for each child in the lab and the fact that the program is University controlled, the children in this study are middle-class children. Selection of a child for testing was determined by the availability of the child during a free play session on the days the testing was being done. The first 10 boys and the first 10 girls to comply with the procedures of the study were included in the sample. It was necessary to test 46 children, 23 boys and 23 girls, to obtain the data for this study. The average age for the boys included in the sample is four years six months. Average age for girls included in the sample is four years five months.

Setting

The Child Development Laboratories at Utah State University are open to all children between the ages of three and five who are able to pay a twenty-five dollar per quarter fee. All applicants are placed on a waiting
list and are admitted to the laboratory when an opening is available. At the present time during the regular school year there are five groups of preschool children that meet Monday through Thursday for 2½ hours a day. Two of the preschool classrooms are presently housed in the Family Life Building. Each of these classrooms accommodates a morning and an afternoon group of children. Another preschool classroom is operated at the Woodruff Elementary School and has only a morning group of children. Each group consists of 20 children, approximately 10 boys and 10 girls, a head teacher, and four student teachers. Each child is allowed to attend the laboratory for two quarters. Only in special cases are children allowed to remain in attendance for longer than two quarters.

Pilot Study

The procedures used in the pilot study were the same as those used in the actual study up to the point where the first stimulus object was presented. Six stimulus objects, two neutral objects, two male oriented objects, and two female oriented objects, were employed in the pilot study. As the first stimulus object was presented, the subject was given the following instructions:

I have some toys for you to play with. I will give you the toys one at a time. I want you to tell me about the toys as you play with them.

The first toy was then placed in front of the subject and the following instruction was repeated:
I want you to tell me about this toy.

The first time after the presentation of a toy the subject did not verbalize for a period of 30 seconds, the researcher employed the following procedure:

1. The subject was presented a first probing question.
2. The first time after the presentation of the first probing question the subject did not verbalize for a period of 10 seconds, the investigator asked the subject a second probing question.
3. The first time after the presentation of the second probing question the subject did not verbalize for a period of 10 seconds, the investigator asked the subject the final question.
4. The first time after the presentation of the final question the subject did not verbalize for a period of 10 seconds, the toy was removed.
5. When the conditions in step four were met and the investigator had removed the toy from the table and from the subject's sight, the investigator presented the next toy in the series with the following instructions:

   You may play with this toy now. I want you to tell me about this toy as you play with it.

This procedure was followed for the presentation of toys two through six in the series.

6. The investigator followed procedural steps one through five at the appropriate time (the first time after the presentation of the toy the subject did not verbalize for a
period of 30 seconds) after the presentation of each toy.
7. When the final toy in the series was removed, the subject was returned to the classroom.

The preceding pilot study procedure was modified to eliminate two particular problems that arose. The subjects played with the toys presented them but did not verbalize about them in the allotted amount of time. The time restriction appeared to be too restrictive. When the time restrictions and questions were eliminated, there was some verbalization on the part of the subjects, but it appeared that the subjects either did not understand or did not remember the instruction to tell the investigator about the toy as they played with it. The procedure was then further modified to what it is in the present study. Instead of instructing the subject to tell the investigator about the toy as the subject played with it, the subject was instructed to tell the investigator a story about the toy. The modification in number of groups of stimulus objects from six to three was made due to the extreme length of each interview which resulted in the subject's loss of interest and inattentiveness.

**Stimulus Objects**

Three categories of stimulus objects, neutral, masculine, and feminine, were used in this study. The neutral stimulus object used was a dragon puppet; the masculine
oriented stimulus objects used were a small car, a small motorcycle, and a gas pump; the feminine oriented stimulus objects consisted of a doll wearing a dress, coat, and shoes, and having a baby bottle beside her.

Administration and Collection of Data

The data were gathered during a three week period beginning April 3, 1972, and ending April 30, 1972. The investigator entered the classroom during free play and selected a child not engaged in a particular activity at that time. The investigator had previously spent time in each of the classrooms in fulfillment of a requirement for an internship class and was acquainted with the children in each of the classrooms. Upon selecting a child, he was approached and asked to come with the investigator to play a story telling game. Only one child asked refused this request.

All testing was done in a small room near the Child Development Laboratory. Each child tested was taken directly to the testing room from the classroom and was tested individually. All testing was done by the investigator. Each child's verbalizations were recorded on a tape recorder.

Upon entering the testing room, the child and investigator were seated on opposite sides of a small table. The stimulus objects were not visible to the child. When seated, the investigator asked the child a few questions about general topics (the weather, child's age, an article
of the child's clothing) to establish a verbal relationship with the child. The child was then told that he would be given some toys and was to tell the investigator a story about the toys. The toys were presented to each child in the same order: neutral toy, masculine oriented toys, and feminine oriented toys. The place of the neutral toy was set by the investigator and her committee. The places of the other two categories of toys were established randomly.

At this point the investigator turned the tape recorder on and told the child that the microphone was being turned on so our voices would be recorded on a tape. The child was then shown the first toy and was asked what it was. The child's first answer was approved by the investigator. The child was then asked to tell the investigator a story about the toy and was told that he could tell either a real or a pretend story. In asking the child to tell the story, the investigator identified the toy by the label given it by the child. If the child indicated verbally that he could not or did not wish to tell the investigator a story about the toy, he was thanked for coming with the investigator and returned to the classroom.

For the children who complied with the investigator's request to tell a story, any question directed at the investigator during the time the child was verbalizing about the toy was answered directly. When the child quit verbalizing and indicated that he was finished telling his story either verbally or by giving the toy to the inves-
tigator, the second group of toys was presented to him. The toys in the second group, the masculine oriented toys, were labeled for the child by the investigator as car, motorcycle, and gas pump. The toys in the feminine oriented group were labeled for the child as baby doll and baby bottle. The procedure used for the masculine and feminine groups of toys was the same as that for the neutral toy with the exception of the labeling of the masculine and feminine oriented toys by the investigator.

The recordings were transcribed by the investigator the same day they were recorded. To aid in correct transcription of the recorded material, brief notes were made on each child's recording immediately after each child was tested. Number of words and number of expression units were determine by the investigator for each child's stories. To insure reliability of measurement, Dr. Carroll Lambert, the investigator's major professor, determined these measures using the recordings and transcripts for five of the twenty subjects. Dr. Lambert and the investigator established a 96% agreement on these measures.

Analysis of Data

A multiple analysis of variance was used to determine if there was a significant difference in quantity or quality of language between the sexes or between the
responses of the total sample to stimulus objects in the three stimulus categories. Quantity of language was measured by number of words and number of expression units. Quality of language was measured by mean length of expression units. A planned comparison test was used to determine between which stimulus categories a significant difference in the quantity and quality of the responses by the total group of subjects appeared.
FINDINGS

A multiple analysis of variance was used to determine if there was a significant difference in number of words, number of expression units, and mean length of expression units between the sexes and between the responses of the total sample to the three stimulus categories. A planned comparison test was used to determine between what stimulus categories a significant difference in quantity of responses of the total group of subjects occurred.

No significant sex differences were found in the quantity or quality of verbal responses to stimulus objects in the three stimulus categories. There was a significant difference in the quantity of language produced by the total group of subjects in response to stimulus objects in the three stimulus categories, the quantity of language produced in response to the masculine oriented stimulus objects being greater than that produced in response to neutral or feminine oriented stimulus objects. The quality of language produced by the total group of subjects in response to stimulus objects in the three stimulus categories showed no significant differences.
Sex Differences

Number of words

Results of the analysis of number of words showed no significant difference between the sexes at the .05 significance level (Table 1).

Table 1. Multiple analysis of variance for number of words.

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Degrees of freedom</th>
<th>Mean squares</th>
<th>F test value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>1</td>
<td>3,808.1</td>
<td>0.38</td>
</tr>
<tr>
<td>Individual/sex</td>
<td>18</td>
<td>12,692.0</td>
<td></td>
</tr>
<tr>
<td>Treatments</td>
<td>2</td>
<td>36,456.9</td>
<td>7.07*</td>
</tr>
<tr>
<td>Sex X treatment</td>
<td>2</td>
<td>4,301.0</td>
<td>0.83</td>
</tr>
<tr>
<td>Experimental error</td>
<td>36</td>
<td>5,157.5</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>8,465.3</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at .01 level.

Although no significant sex difference was found in number of words produced, the total number of words produced by boys exceeded the total number of words produced by girls, total production of words in response to the neutral stimulus object being greater for girls than for boys and total production of words in response to masculine oriented and feminine oriented stimulus objects being greater for boys than for girls (Table 2, p. 38). The
Table 2. Number of words produced in response to objects in the three stimulus categories.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Age in years and months</th>
<th>Sex orientation of stimulus objects</th>
<th>Neutral</th>
<th>Masculine</th>
<th>Feminine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jonathon</td>
<td>4 - 0</td>
<td></td>
<td>75</td>
<td>64</td>
<td>45</td>
</tr>
<tr>
<td>Bart</td>
<td>4 - 0</td>
<td></td>
<td>60</td>
<td>284</td>
<td>104</td>
</tr>
<tr>
<td>Gary</td>
<td>4 - 1</td>
<td></td>
<td>54</td>
<td>53</td>
<td>27</td>
</tr>
<tr>
<td>Rulon</td>
<td>4 - 5</td>
<td></td>
<td>37</td>
<td>53</td>
<td>27</td>
</tr>
<tr>
<td>Ralph</td>
<td>4 - 5</td>
<td></td>
<td>36</td>
<td>155</td>
<td>65</td>
</tr>
<tr>
<td>Benjimen</td>
<td>4 - 9</td>
<td></td>
<td>85</td>
<td>513</td>
<td>159</td>
</tr>
<tr>
<td>Michael</td>
<td>4 - 9</td>
<td></td>
<td>131</td>
<td>215</td>
<td>227</td>
</tr>
<tr>
<td>David</td>
<td>4 - 10</td>
<td></td>
<td>61</td>
<td>78</td>
<td>68</td>
</tr>
<tr>
<td>Kevin</td>
<td>4 - 11</td>
<td></td>
<td>115</td>
<td>112</td>
<td>11</td>
</tr>
<tr>
<td>Alan</td>
<td>4 - 11</td>
<td></td>
<td>36</td>
<td>198</td>
<td>46</td>
</tr>
<tr>
<td>All boys</td>
<td>4 - 6</td>
<td></td>
<td>690</td>
<td>1725</td>
<td>779</td>
</tr>
<tr>
<td>Monique</td>
<td>4 - 0</td>
<td></td>
<td>86</td>
<td>344</td>
<td>56</td>
</tr>
<tr>
<td>Michelle</td>
<td>4 - 0</td>
<td></td>
<td>25</td>
<td>43</td>
<td>27</td>
</tr>
<tr>
<td>Jeanie</td>
<td>4 - 1</td>
<td></td>
<td>50</td>
<td>38</td>
<td>41</td>
</tr>
<tr>
<td>Lisa</td>
<td>4 - 4</td>
<td></td>
<td>32</td>
<td>90</td>
<td>32</td>
</tr>
<tr>
<td>Stephanie</td>
<td>4 - 4</td>
<td></td>
<td>121</td>
<td>92</td>
<td>95</td>
</tr>
<tr>
<td>Theresa</td>
<td>4 - 4</td>
<td></td>
<td>26</td>
<td>28</td>
<td>33</td>
</tr>
<tr>
<td>Shireen</td>
<td>4 - 6</td>
<td></td>
<td>175</td>
<td>100</td>
<td>108</td>
</tr>
<tr>
<td>Melissa</td>
<td>4 - 6</td>
<td></td>
<td>37</td>
<td>314</td>
<td>204</td>
</tr>
<tr>
<td>Julie</td>
<td>4 - 7</td>
<td></td>
<td>45</td>
<td>31</td>
<td>18</td>
</tr>
<tr>
<td>Charlotte</td>
<td>5 - 2</td>
<td></td>
<td>125</td>
<td>148</td>
<td>152</td>
</tr>
<tr>
<td>All girls</td>
<td>4 - 5</td>
<td></td>
<td>722</td>
<td>1228</td>
<td>766</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>1412</td>
<td>2953</td>
<td>1545</td>
</tr>
</tbody>
</table>
least discrepancy between the sexes in number of words produced was found in the responses to feminine oriented stimulus objects. The most discrepancy between the sexes in number of words produced was found in the responses to masculine oriented stimulus objects.

**Number of expression units**

Table 3 presents the results of the analysis of number of expression units. No significant difference between the sexes was found on this measure.

Table 3. Multiple analysis of variance for number of expression units.

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Degrees of freedom</th>
<th>Mean squares</th>
<th>F test value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>1</td>
<td>5.4</td>
<td>0.02</td>
</tr>
<tr>
<td>Individual/sex</td>
<td>18</td>
<td>269.8</td>
<td></td>
</tr>
<tr>
<td>Treatments</td>
<td>2</td>
<td>717.4</td>
<td>6.62*</td>
</tr>
<tr>
<td>Sex X treatment</td>
<td>2</td>
<td>29.4</td>
<td>0.26</td>
</tr>
<tr>
<td>Experimental error</td>
<td>36</td>
<td>108.3</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>59</strong></td>
<td><strong>175.3</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at .01 level.

Results on sex differences in number of expression units produced are similar to the results on sex differences in number of words produced. Total number of expression units produced by boys exceeds that of girls, total number
of expression units in response to neutral and feminine oriented stimulus objects being greater for girls and total number of expression units in response to masculine oriented stimulus objects being greater for boys (Table 4, p. 41). Results for number of words and number of expression units produced by the two sexes in response to feminine oriented stimulus objects differ, boys excelling girls on the first measure and girls excelling boys on the second measure. However, the count for boys and girls on both of these measures is very close. The least discrepancy between the sexes on number of expression units occurred in response to the neutral stimulus object. The greatest discrepancy between the sexes on this measure occurred in response to the masculine oriented stimulus objects. The quantity of language produced by the two sexes as measured by number of words and number of expression units therefore shows rather small and somewhat inconsistent differences, boys excelling girls and girls excelling boys on an equal number of subtotals.

Mean length of expression units

Table 5 (p. 42) presents the results of the analysis of mean length of expression units. There was no significant difference between the sexes on this measure. Although sex differences in mean length of expression units were slight, boys excelled girls on this measure in response to stimulus objects in each of the three stimulus categories (Table 6, p. 43).
Table 4. Number of expression units produced in response to objects in the three stimulus categories.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Age in years and months</th>
<th>Sex orientation of stimulus objects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Neutral</td>
</tr>
<tr>
<td>Jonathon</td>
<td>4 - 0</td>
<td>13</td>
</tr>
<tr>
<td>Bart</td>
<td>4 - 0</td>
<td>11</td>
</tr>
<tr>
<td>Gary</td>
<td>4 - 1</td>
<td>7</td>
</tr>
<tr>
<td>Rulon</td>
<td>4 - 5</td>
<td>4</td>
</tr>
<tr>
<td>Ralph</td>
<td>4 - 5</td>
<td>6</td>
</tr>
<tr>
<td>Benjimen</td>
<td>4 - 9</td>
<td>13</td>
</tr>
<tr>
<td>Michael</td>
<td>4 - 9</td>
<td>12</td>
</tr>
<tr>
<td>David</td>
<td>4 - 10</td>
<td>9</td>
</tr>
<tr>
<td>Kevin</td>
<td>4 - 11</td>
<td>15</td>
</tr>
<tr>
<td>Alan</td>
<td>4 - 11</td>
<td>5</td>
</tr>
<tr>
<td>All boys</td>
<td>4 - 6</td>
<td>95</td>
</tr>
<tr>
<td>Monique</td>
<td>4 - 0</td>
<td>18</td>
</tr>
<tr>
<td>Michelle</td>
<td>4 - 0</td>
<td>4</td>
</tr>
<tr>
<td>Jeanie</td>
<td>4 - 1</td>
<td>7</td>
</tr>
<tr>
<td>Lisa</td>
<td>4 - 4</td>
<td>3</td>
</tr>
<tr>
<td>Stephanie</td>
<td>4 - 4</td>
<td>18</td>
</tr>
<tr>
<td>Theresa</td>
<td>4 - 4</td>
<td>5</td>
</tr>
<tr>
<td>Shireen</td>
<td>4 - 6</td>
<td>19</td>
</tr>
<tr>
<td>Melissa</td>
<td>4 - 6</td>
<td>7</td>
</tr>
<tr>
<td>Julie</td>
<td>4 - 7</td>
<td>6</td>
</tr>
<tr>
<td>Charlotte</td>
<td>5 - 2</td>
<td>15</td>
</tr>
<tr>
<td>All girls</td>
<td>4 - 5</td>
<td>102</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>197</td>
</tr>
</tbody>
</table>
Table 5. Multiple analysis of variance for mean length of expression units.

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Degrees of freedom</th>
<th>Mean squares</th>
<th>F test value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>1</td>
<td>1.4</td>
<td>0.19</td>
</tr>
<tr>
<td>Individual/sex</td>
<td>18</td>
<td>7.2</td>
<td></td>
</tr>
<tr>
<td>Treatments</td>
<td>2</td>
<td>2.6</td>
<td>1.43</td>
</tr>
<tr>
<td>Sex X treatment</td>
<td>2</td>
<td>0.3</td>
<td>0.16</td>
</tr>
<tr>
<td>Experimental error</td>
<td>36</td>
<td>1.8</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>3.4</td>
<td></td>
</tr>
</tbody>
</table>
Table 6. Mean length of expression units produced in response to objects in the three stimulus categories.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Age in years and months</th>
<th>Sex orientation of stimulus objects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Neutral</td>
</tr>
<tr>
<td>Jonathon</td>
<td>4 - 0</td>
<td>5.77</td>
</tr>
<tr>
<td>Bart</td>
<td>4 - 0</td>
<td>5.45</td>
</tr>
<tr>
<td>Gary</td>
<td>4 - 1</td>
<td>7.71</td>
</tr>
<tr>
<td>Rulon</td>
<td>4 - 5</td>
<td>9.25</td>
</tr>
<tr>
<td>Ralph</td>
<td>4 - 5</td>
<td>6.00</td>
</tr>
<tr>
<td>Benjimen</td>
<td>4 - 9</td>
<td>6.54</td>
</tr>
<tr>
<td>Michael</td>
<td>4 - 9</td>
<td>10.92</td>
</tr>
<tr>
<td>David</td>
<td>4 - 10</td>
<td>6.78</td>
</tr>
<tr>
<td>Kevin</td>
<td>4 - 11</td>
<td>7.67</td>
</tr>
<tr>
<td>Alan</td>
<td>4 - 11</td>
<td>7.20</td>
</tr>
<tr>
<td>All boys</td>
<td>4 - 6</td>
<td>7.33</td>
</tr>
<tr>
<td>Monique</td>
<td>4 - 0</td>
<td>4.78</td>
</tr>
<tr>
<td>Michelle</td>
<td>4 - 0</td>
<td>6.25</td>
</tr>
<tr>
<td>Jeanie</td>
<td>4 - 1</td>
<td>7.14</td>
</tr>
<tr>
<td>Lisa</td>
<td>4 - 4</td>
<td>10.67</td>
</tr>
<tr>
<td>Stephanie</td>
<td>4 - 4</td>
<td>6.72</td>
</tr>
<tr>
<td>Theresa</td>
<td>4 - 4</td>
<td>5.20</td>
</tr>
<tr>
<td>Shireen</td>
<td>4 - 6</td>
<td>9.21</td>
</tr>
<tr>
<td>Melissa</td>
<td>4 - 6</td>
<td>5.29</td>
</tr>
<tr>
<td>Julie</td>
<td>4 - 7</td>
<td>7.50</td>
</tr>
<tr>
<td>Charlotte</td>
<td>5 - 2</td>
<td>8.33</td>
</tr>
<tr>
<td>All girls</td>
<td>4 - 5</td>
<td>7.11</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>7.22</td>
</tr>
</tbody>
</table>
Differences Between Stimulus Categories

Number of words

Results of the analysis of number of words showed a significant difference between number of words produced by the total group in response to the stimulus objects in the three stimulus categories at the .01 level. (See Table 1, p. 37.) To determine between which stimulus categories the significant difference occurred, a planned comparison test was used and indicated that there were significantly more words produced in responses of the total group of subjects to masculine oriented stimulus objects than there were in responses to feminine oriented or neutral stimulus objects (Table 7).

Table 7. Planned comparison of number of words produced by the total group of subjects in response to stimulus objects in the three stimulus categories.

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Degrees of freedom</th>
<th>Mean squares</th>
<th>F test value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatments</td>
<td>2</td>
<td>36,456.9</td>
<td>7.07*</td>
</tr>
<tr>
<td>Trt. 1 vs. trt. 2</td>
<td>1</td>
<td>395,780.2</td>
<td>52.88*</td>
</tr>
<tr>
<td>Trt. 1 vs. trt. 3</td>
<td>1</td>
<td>2,948.2</td>
<td>.39</td>
</tr>
<tr>
<td>Trt. 2 vs. trt. 3</td>
<td>1</td>
<td>330,410.7</td>
<td>44.15*</td>
</tr>
<tr>
<td>Experimental error</td>
<td>57</td>
<td>7,483.1</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>8,465.3</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at .01 level.
The least number of words produced by the total group of subjects was produced in response to the neutral oriented stimulus object. (See Table 2, p. 38.)

**Number of expression units**

Results of the analysis of number of expression units showed a significant difference between number of expression units produced by the total group in response to the stimulus objects in the three stimulus categories at the .01 level of significance. (See Table 1, p. 37.) To determine between which stimulus categories the significant difference could be found, a planned comparison test was utilized. This test showed that there were significantly more expression units produced by the total group of subjects in response to masculine oriented stimulus objects than there were in response to feminine oriented or neutral stimulus objects (Table 8, p. 46). The difference was significant at the .01 level. The least number of expression units produced by the total group of subjects was produced in response to the neutral stimulus object. (See Table 4, p. 41.)

**Mean length of expression units**

No significant differences were found in the mean length of expression units produced by the total group of subjects in response to neutral, masculine oriented, and feminine oriented stimulus objects. (See Table 5, p. 42.) The mean length of expression units was longest for the
Table 8. Planned comparison of number of expression units produced by the total group of subjects in response to stimulus objects in the three stimulus categories.

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Degrees of freedom</th>
<th>Mean squares</th>
<th>F test value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatments</td>
<td>2</td>
<td>717.4</td>
<td>6.62*</td>
</tr>
<tr>
<td>Trt. 1 vs. trt. 2</td>
<td>1</td>
<td>7,704.0</td>
<td>49.23*</td>
</tr>
<tr>
<td>Trt. 1 vs. trt. 3</td>
<td>1</td>
<td>37.5</td>
<td>.24</td>
</tr>
<tr>
<td>Trt. 2 vs. trt. 3</td>
<td>1</td>
<td>6,600.0</td>
<td>42.17*</td>
</tr>
<tr>
<td>Experimental error</td>
<td>57</td>
<td>159.5</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>175.3</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at .01 level.
total group's responses to masculine oriented stimulus objects and was shortest for the total group's responses to the neutral stimulus object. (See Table 6, p. 43.)

Acceptance or Rejection of Hypotheses

The first hypothesis stated that there would be no significant difference between male and female groups in quantity and quality of verbal responses to neutral, masculine oriented, and feminine oriented stimulus objects. Statistical analysis showed no sex differences at the .05 level of significance on any of the measures used. The first hypothesis therefore cannot be rejected.

The second hypothesis stated that the verbal responses of the total group of subjects to neutral, masculine oriented, and feminine oriented stimulus objects would show no significant difference in quantity or quality. Statistical analysis showed that there was a significant difference on the quantitative measures at the .01 level, there being significantly more words and expression units produced by the total group of subjects in response to masculine oriented stimulus objects than in response to neutral or feminine oriented stimulus objects. The second hypothesis therefore cannot be accepted.
Subjects' sex designation
of stimulus objects

It is interesting to note the sex designation the subjects gave the stimulus objects in the three stimulus categories (Table 9, p. 49). Eleven subjects, six boys and five girls, referred to the neutral stimulus object with a masculine pronoun. Two subjects, one boy and one girl, referred to the neutral stimulus object with a neuter pronoun. One boy used a feminine pronoun to refer to the neutral stimulus object. Two girls and one boy used neuter and masculine pronouns interchangably in referring to the neutral stimulus object. Two subjects, one boy and one girl, did not give the neutral stimulus object any sex designation. Although half of the female subjects referred to the neutral stimulus objects with a masculine pronoun, results showed that girls excelled boys in number of words and number of expression units produced in response to the neutral stimulus object.

Sex designation of the masculine oriented stimulus object by the subjects has been classified in a slightly different manner. Since vehicles are not of one sex or the other and few subjects referred to them as being of a particular gender, sex designation of characters referred to in connection with the vehicles was determined. Thirteen subjects, six boys and seven girls, had only male characters in their stories or responses to the masculine
<table>
<thead>
<tr>
<th>Subject</th>
<th>Age in years and months</th>
<th>Sex orientation of stimulus objects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jonathon</td>
<td>4 - 0</td>
<td>masculine masculine masculine</td>
</tr>
<tr>
<td>Bart</td>
<td>4 - 0</td>
<td>masculine masculine &amp; neutral</td>
</tr>
<tr>
<td>Gary</td>
<td>4 - 1</td>
<td>feminine masculine feminine</td>
</tr>
<tr>
<td>Rulon</td>
<td>4 - 5</td>
<td>masculine masculine feminine</td>
</tr>
<tr>
<td>Ralph</td>
<td>4 - 5</td>
<td>neutral feminine feminine</td>
</tr>
<tr>
<td>Benjimen</td>
<td>4 - 9</td>
<td>masculine masculine feminine</td>
</tr>
<tr>
<td>Michael</td>
<td>4 - 9</td>
<td>masculine masculine &amp; neutral</td>
</tr>
<tr>
<td>David</td>
<td>4 - 10</td>
<td>masculine masculine feminine</td>
</tr>
<tr>
<td>Kevin</td>
<td>4 - 11</td>
<td>masculine masculine &amp; feminine</td>
</tr>
<tr>
<td>Alan</td>
<td>4 - 11</td>
<td>masculine masculine feminine</td>
</tr>
<tr>
<td>Monique</td>
<td>4 - 0</td>
<td>masculine masculine masculine feminine</td>
</tr>
<tr>
<td>Michelle</td>
<td>4 - 0</td>
<td>masculine masculine feminine</td>
</tr>
<tr>
<td>Jeanie</td>
<td>4 - 1</td>
<td>masculine masculine masculine</td>
</tr>
<tr>
<td>Lisa</td>
<td>4 - 4</td>
<td>masculine masculine masculine</td>
</tr>
<tr>
<td>Stephanie</td>
<td>4 - 4</td>
<td>masculine masculine masculine</td>
</tr>
<tr>
<td>Theresa</td>
<td>4 - 4</td>
<td>masculine masculine &amp; neutral</td>
</tr>
<tr>
<td>Shireen</td>
<td>4 - 6</td>
<td>neutral neutral neutral</td>
</tr>
<tr>
<td>Melissa</td>
<td>4 - 6</td>
<td>masculine masculine feminine</td>
</tr>
<tr>
<td>Julie</td>
<td>4 - 7</td>
<td>masculine masculine feminine</td>
</tr>
<tr>
<td>Charlotte</td>
<td>5 - 2</td>
<td>masculine masculine feminine</td>
</tr>
</tbody>
</table>

*Sex designation in this stimulus category refers to the sex designation of characters included in responses to the stimulus objects in this category.*
oriented stimulus objects. Three boys included male and female characters in their responses. One boy referred to only a female character in his responses. The remaining three subjects were girls who referred to characters in their stories or responses only as "they" or "you".

Results indicated that half of the boys and half of the girls referred to the feminine oriented stimulus object, the baby doll, with feminine pronouns. One boy and one girl referred to the baby doll with a neuter pronoun. One boy used "it" and "he" interchangably and one boy used "it" and "she" interchangably in referring to the baby doll. One girl referred to the baby doll as both "he" and "she". Two girls used only masculine pronouns in referring to the baby doll. Two boys and one girl gave the baby doll no sex designation and referred to it simply as a baby.

Discrepancies between mean length of expression units reported in this study and those reported in earlier studies

There was a considerable discrepancy between the mean length of expression units for subjects in this study and that of subjects in previous studies that indicated this measure for subjects the same age as the average age of the subjects in the present study (Table 10, p. 51), the mean length of expression units for subjects in this study being somewhat longer.
Table 10. Mean length of response in spoken language in six investigations.*

<table>
<thead>
<tr>
<th>Author and type of study</th>
<th>Date</th>
<th>Group</th>
<th>Age</th>
<th>Mean length of response</th>
</tr>
</thead>
<tbody>
<tr>
<td>M. E. Smith</td>
<td>1926</td>
<td>Boys</td>
<td>4½</td>
<td>4.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Girls</td>
<td>4½</td>
<td>4.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All</td>
<td>4½</td>
<td>4.7</td>
</tr>
<tr>
<td>McCarthy</td>
<td>1930</td>
<td>Boys</td>
<td>4½</td>
<td>4.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Girls</td>
<td>4½</td>
<td>4.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All</td>
<td>4½</td>
<td>4.6</td>
</tr>
<tr>
<td>Fisher</td>
<td>1934</td>
<td>Boys</td>
<td>4½</td>
<td>10.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Girls</td>
<td>4½</td>
<td>8.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All</td>
<td>4½</td>
<td>9.5</td>
</tr>
<tr>
<td>M. E. Smith</td>
<td>1935</td>
<td>Boys</td>
<td>4½</td>
<td>5.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Girls</td>
<td>4½</td>
<td>4.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All</td>
<td>4½</td>
<td>4.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All with adult</td>
<td>4½</td>
<td>6.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All with child</td>
<td>4½</td>
<td>4.6</td>
</tr>
<tr>
<td>Young</td>
<td>1941</td>
<td>Boys</td>
<td>4½</td>
<td>5.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Girls</td>
<td>4½</td>
<td>5.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All</td>
<td>4½</td>
<td>5.2</td>
</tr>
<tr>
<td>Templin</td>
<td>1957</td>
<td>Boys</td>
<td>4½</td>
<td>5.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Girls</td>
<td>4½</td>
<td>5.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All</td>
<td>4½</td>
<td>5.4</td>
</tr>
</tbody>
</table>

*Revised and updated version of Table 5, p. 546 in McCarthy (1954).
DISCUSSION

Sex Differences

Quantity of verbal responses

Literature cited concerning language productivity indicated disagreement among different studies. Of the studies cited, two reported no sex differences in productivity (Goodenough, 1930; Smith, 1970); five reported that girls excelled boys in language productivity (McCarthy, 1930; Olson and Koetzle, 1936; Jersild and Ritzman, 1938; Young, 1941; Entwisle, 1969); and one study (O'Donnell, 1967) reported that boys excelled girls in language productivity at all except one age level tested. The findings of this study therefore do not agree with the majority of the studies cited.

One possible factor in the discrepancy between the findings in the present study and those of earlier studies could be the effect that laboratory attendance may have had on the subjects in this study. It is the investigator's opinion that the Child Development Laboratories at Utah State University encourage verbalization and do so equally for boys and girls. Several studies (DeLucia, 1936; Hartup and Zook, 1960) indicated that boys prefer more specifically masculine things more often than girls prefer specifically feminine things. Another study (Kagan, 1964)
indicated that middle-class girls are much freer to express interest in toys of the opposite sex orientation than are middle-class boys. Boys and girls in the labs, however, are encouraged to participate in all activities and play in all areas of the lab and with all equipment in the lab whether it be masculine oriented or feminine oriented. Perhaps this equal encouragement of verbalization for both sexes regardless of the sex orientation of the situation or equipment has an equalizing effect on language productivity of the children in the labs and resulted in the fact that no sex differences in quantity of language were found in this study. It also seems possible that if there is an equalizing effect it may be specific to the lab environment. Although both sexes may learn to feel free and uninhibited about engaging in activities, using equipment, and verbalizing about things of an opposite sex orientation while in the lab, they may remain somewhat inhibited about displaying that same behavior in other environments that have not encouraged that type of behavior.

Quality of verbal responses

It is a possibility that lab attendance had an equalizing effect on the quality of language produced by the two sexes as well as on the quantity. There may also be some relationship between the quality of language produced by the two sexes and the familiarity of the stimulus objects the subjects were asked to respond to.
It is the investigator's opinion that the stimulus objects used in this study were very likely of equal familiarity to both sexes and therefore may have had an equalizing effect on the quality of language produced by the two sexes in response to them.

**Differences Between Stimulus Categories**

**Quantity of verbal responses**

One possible explanation for the findings concerning number of words and number of expression units produced by the total group of subjects in response to the stimulus objects in the three stimulus categories involves the familiarity of the stimulus objects apart from their sex orientation. The neutral stimulus object used in this study was a dragon puppet. Perhaps the unfamiliarity of dragons to the subjects tested resulted in the production of fewer words and expression units in response to it than in response to other stimulus objects. The proposal that the dragon puppet was an unfamiliar object is supported by the fact that the subjects labeled the object as several different things (dragon, alligator, crocodile, sea monster, frog) and by the fact that several subjects questioned the label they had attached to the object. One subject, after labeling the object a dragon and briefly describing the dragon, reported that he had never heard of a dragon before. Also, many of the stories in response to the neutral stimulus object were "make believe" stories.
whereas the stories in response to stimulus objects in the other stimulus categories seemed to contain more realistic and factual information. It was also noted that in addition to being unfamiliar with a dragon, the children seemed to be less familiar with a puppet as a toy than they were with the toys in the other stimulus categories. The toys in masculine and feminine stimulus categories seemed to be more readily played with as the children told their stories than did the toy in the neutral stimulus category.

The explanation involving the familiarity of the stimulus objects apart from their sex orientation may also apply to a certain degree to the masculine oriented and feminine oriented stimulus objects. Although the masculine oriented vehicles and the feminine oriented baby doll are all familiar objects, there is a possibility that vehicles are involved in more situations and activities familiar to or engaged in by the subjects than are baby dolls. Thus, when asked to relate a story about these stimulus objects, the subjects may have had a larger number of experiences relating to vehicles to draw upon than they had experiences relating to baby dolls.

An additional possible explanation for the differences that occurred in the quantity of language produced by the total group in response to stimulus objects in the three stimulus categories involves the awareness of the two sexes of things culturally defined as masculine and feminine. Kagan (1964) stated that boys are not only aware of
activities and objects culturally defined as masculine or feminine at an earlier age than girls are, but middle-class boys are also much less free to express interest in toys of the opposite sex orientation than are middle-class girls. In support of Kagan's statement, the feminine oriented toys seemed to be handled less by boys than were the masculine oriented toys handled by the girls. One boy in this study displayed his awareness of the fact that a baby doll and baby bottle are culturally defined as feminine objects. When presented with the baby doll and baby bottle, his first response was, "Girls -- oh boys don't play with babies." Another boy in this study was totally reluctant to express any interest he may have had in the baby doll and baby bottle. When he was presented with these objects, he responded with, "I just have two dolls. And I never play with them." He touched the objects only long enough to shove them across the table and return them to the investigator. Perhaps girls in this study felt equally free to verbalize in response to masculine oriented and feminine oriented stimulus objects while boys in this study felt more free to verbalize in response to masculine oriented stimulus objects than in response to feminine oriented stimulus objects resulting in the significantly larger number of words and expression units produced by the total group of subjects in response to masculine oriented stimulus objects.
Quality of verbal responses

The fact that there was no significant qualitative differences in the responses of the total group of subjects to stimulus objects in the three stimulus categories suggests that quality of language is not effected by the sex orientation of stimulus objects as the quantity of language seems to be. It also suggests that the factors that may have played a part in the significant differences found in the quantity of language produced by the total group in response to stimulus objects in the three stimulus categories did not have an effect on the quality of language produced in response to these same objects. If this is the case, perhaps quality of language is more stable than quantity of language in response to various kinds of stimulus objects.

Discussion of Related Findings

Subjects' sex designation of stimulus objects

Since only one boy referred to the neutral stimulus object with a feminine pronoun while seven girls referred to it using a masculine pronoun, this may be an example of a case in which middle-class girls feel free to express interest in toys of the opposite sex orientation while boys do not, as suggested by Kagan (1964). The fact that only one boy referred to the neutral stimulus object with a feminine pronoun may indicate that referring to the
neutral stimulus object with a neuter or masculine pronoun allowed the boys to feel more free to show interest in and verbalize in response to the object.

The results for subjects' sex designation of stimulus objects in the masculine stimulus category again seem to support Kagan's (1964) statement that middle-class girls feel free to express interest in masculine oriented objects. Although four boys included female characters in their responses to objects in the masculine stimulus category, none of the four included more than one female. The fact that four boys but no girls included female characters in these responses may be an indication that boys relate the masculine oriented stimulus objects used in this study to a wider variety of situations than do girls and not that boys perceive these stimulus objects as more feminine than do girls.

In view of the literature cited, it was concluded that a stimulus object perceived by young children of both sexes as masculine would be more difficult to find than would be a stimulus object perceived as feminine by young children of both sexes. The present study does not support that conclusion since 13 subjects included only masculine characters in their response to the masculine oriented stimulus objects while only 10 subjects referred to the feminine oriented stimulus object with only feminine pronouns, although three additional subjects did use a feminine pronoun interchangably with a pronoun of another
gender in referring to the feminine oriented stimulus object. Perhaps one of the reasons this conclusion is not supported by the data is that both the masculine and feminine oriented stimulus objects used in this study are very familiar to preschool children of both sexes. It has been assumed that a car, motorcycle, and gas pump have a masculine orientation and that a baby doll and baby bottle have a feminine orientation. In actuality, preschool children may perceive these objects as less strictly masculine or feminine than was assumed they would by the investigator. There may be an inverse relationship between the familiarity of an object to both sexes and the perception of that object as being either strictly masculine oriented or feminine oriented. If this is the case, it would be a most difficult task to discover objects to be used in studies such as this that would be familiar enough to both sexes to keep from eliminating responses on the basis of unfamiliarity with the stimulus objects and at the same time keep the stimulus objects from being so general or familiar that they are not perceived as having a definite or strict sex orientation.

Discrepancies between mean length of expression units reported in this study and those reported in earlier studies

McCarthy (1954, p. 544) stated that "one of the most objective and easily determined indices of language growth is the increase in length of response which has been reported
by most investigators." It appears that this may be more true if one is concerned with longitudinal studies than if one is concerned with cross sectional studies, for there are discrepancies on this measure as reported by different studies.

McCarthy (1954, p. 544) concluded that "children appeared to use somewhat longer sentences when alone with an adult than when engaged in conversation with other children." The subjects in this study were alone with the investigator while the language sample was being collected. In addition, the investigator was acquainted with all the subjects and had engaged in conversation with them one or more times prior to data collection. Familiarity with the investigator may have been an additional factor in increasing the mean length of expression units produced by subjects in this study.

Another possible factor effecting the mean length of expression units in this study is the influence of attendance at the Child Development Laboratory. Not only are children in the labs encouraged to verbalize, the student-teacher ratio is such that the children have many opportunities to engage in a one to one conversation with an adult, a situation similar to the testing situation. Perhaps the fact that the subjects had had previous experiences in talking to an adult other than a parent on a one to one basis played a part in increasing the mean length of expression units in the present study.
Children in the Child Development Laboratories are provided with language models who are conscious of the fact that they are acting as models and therefore are aware of the quality of their language. It is therefore possible that hearing language of a high quality has had an effect on the quality of language produced by the subjects in this study.

Frequently in the labs flannel-board story characters are made available for use by the children to retell a familiar story or to invent their own story. It is therefore possible that some of the subjects in this study had prior to the time of data collection engaged in story telling activities. If the task, telling a story, was familiar to and had been performed by some of the subjects previously, it seems that this could have been a factor in the greater mean length of expression units found in this study.

The testing method used in the present study may also have effected an increase in mean length of expression units produced by the subjects. Three of the studies cited in Table 10 (M. E. Smith, 1926; Fisher, 1934; Young, 1941) collected language samples of children at play. One study (M. E. Smith, 1935) included language samples from both child-child situations and adult-child situations. Two of the studies cited (McCarthy, 1930; Templin, 1957) collected language samples consisting of the child's responses to adults. The testing method used in the present study is
most similar to that of the studies that collected language samples consisting of the child's responses to adults. However, the testing method used in this study differs in that rather than recording the subject's spontaneous responses to stimulus objects, the subject was asked to respond to the stimulus objects in a particular way, to tell a story, and these responses were recorded. Perhaps the fact that the subjects were given more specific instructions as to how to respond to the stimulus objects or the particular instructions themselves resulted in a greater mean length of expression units.

It can be noted from Table 10 that Fisher (1934), using a sample consisting of gifted children, reported mean response lengths considerably greater than those of other studies included on the table and somewhat greater than those reported in the present study. Information concerning any kind of intelligence scores was not available for subjects in this study. It may be a possibility that the greater mean length of expression units reported in this study was partially the result of using a sample consisting of children who are of above average intelligence. Because only those children who could comply with the investigator's request to tell a story in response to the stimulus objects could be included in the sample, the possibility that the sample may have contained some of the more advanced children attending the labs at the time the sample was selected appears very real to the investigator.
Considering the several possible explanations for the greater mean length of expression units that occurred in the present study as compared to other studies, the investigator feels that the greater mean length of expression units found in this study is a result of one or more of the above mentioned factors rather than a result of any error in determining the mean length of expression units.
SUMMARY AND CONCLUSIONS

Summary

Until recently one of the most consistent findings to come out of studies of language development in white American children is a slight difference in favor of girls in all aspects of language that have been studied. Recent studies, however, have reported findings in conflict with earlier findings and have rendered the question of sex differences in language development unresolved. Furthermore, the determining factors in this sex difference have not been established. The difference may be due to inherent qualities of the two sexes, differential effect of the environment on the two sexes, or a combination of the two factors.

The objective of this study was to aid in discovering whether or not the sex differences in language development are at least partially a result of the differential effect of the environment on the two sexes by determining whether the sex orientation of stimulus objects presented to preschool children would influence the quantity and quality of verbal responses emitted by the children.

From this objective, two hypotheses were formed:
1. There would be no significant differences between male and female groups in the quantity and quality of verbal
responses to neutral, masculine oriented, and feminine oriented stimulus objects as measured by number of words, number of expression units, and mean length of expression units. Significance level is .05.

2. The verbal responses of the total group of subjects to neutral, masculine oriented, and feminine oriented stimulus objects would show no difference in quantity or quality as measured by number of words, number of expression units, and mean length of expression units. Significance level is .05.

Twenty children, 10 boys and 10 girls, were included in the study. Each child was presented with a neutral stimulus object (dragon puppet), masculine oriented stimulus objects (car, motorcycle, and gas pump), and feminine oriented stimulus objects (doll wearing dress, coat, and shoes, and having a baby bottle), and was asked to tell a story in response to each of the categories of stimulus objects. Each child's responses were recorded and transcribed. Quantity and quality of the responses were determined by using the measures of number of words, number of expression units, and mean length of expression units. A multiple analysis of variance was applied to the data to determine if there was a significant difference between sexes or between the responses of the total sample to the stimulus objects in the three stimulus categories.
General Conclusions

This study leads to the conclusion that boys and girls at age four and younger appear to respond to objects which have a particular sex orientation as individuals rather than as masculine or feminine beings. This suggests that either sex role significance is learned and is attached to objects associated with sex roles at an age later than four or that if children at the age of four are aware of sex role significance and do attach it to objects associated with sex roles, their behavior is not yet bound by their awareness of sex role significance.

A second conclusion which may be drawn is that our society appears to be a masculine oriented one and children reflect this orientation in their language. In conjunction with this conclusion, it appears that girls are not inhibited from expressing interest in masculine oriented things while boys seem to be inhibited from expressing interest in feminine oriented things. This conclusion supports that of Kagan (1964). Perhaps because so much in our society does seem to have a masculine orientation, in order for a girl to function successfully in the society, it is necessary for her to relate to a number of things the society may label as masculine. The society, realizing the girl's predicament, therefore does not attempt to inhibit her from expressing interest in things it labels as masculine.
Suggestions for Further Study

1. Data in the present study were collected by a female investigator. This study could be replicated using a male researcher to collect the data.

2. Children of different ages could be employed in a study of the same design and purpose.

3. A study of the same scope could be carried out employing children from different socio-economic backgrounds and different cultural groups.

4. A similar research project using different stimulus objects in each of the three stimulus categories could be done.

5. Since there is a possibility that Child Development Laboratory attendance was a factor in the results of the present study, a similar study comparing children who have not been in the labs with those who have would allow some insight into the effect lab attendance may have had on results reported in the present study.

6. A study could be done comparing the quantity and quality of urban children's responses to neutral, masculine oriented, and feminine oriented stimulus objects to those of rural children.

7. A larger sample could be used in a study identical to the present one to determine if the same results would be found when various sized samples are used.
APPENDIXES
Appendix A

Subjects' Responses

Subject: Jonathon
Age: 4 years 0 months
Stimulus Orientation: Neutral

Down the hill up. Hey what -- where's his eyes? Now can I get his -- ? Looky, his hands aren't moving. Do you know -- do you know why animals have big teeth? 'Cuz they're -- 'cuz they live over the mountains. It's a funny one. Hey, what is this, a dragon? Is it a dragon? Oh, a dragon.
This is what dragons have. Let's see how much he weighs. He weighs clear to the 0.

Stimulus Orientation: Masculine

Stimulus Orientation: Feminine
My mom has a doll. It's a baby. And it's a real one. And she feeds -- feed it at -- at -- she feeds it. And when she feeds it he cries. He has a -- just milk. I don't want to do any more now.
Subject: Bart
Age: 4 years 0 months
Stimulus Orientation: Neutral

It's a puppet. Look. He can go like this and bite it.
He's pretty. Look, white teeth. And -- and alligators
bite. And I know a song about alligators. It goes like
this. A alligator likes to swim. And sometimes he opens
his mouth really wide. And when he sees me on the shore down
under water he hides.

Stimulus Orientation: Masculine

That's a gas thing. I'll -- I'll drive the -- drive to the
gas thing and show you the gas thing. There's gas somewhere.
And you know what? Once the -- someone was awful but was a
ambulance car. And you know what? The baby ate a mama's
pill. And my dad went and -- and they took a baby to the
hospital. Once we were on a motorcycle. We been on a
motorcycle before. And do you know what happened once?
There was a wreck. And somebody was a man. And he was a --
really late. And he was -- . And when we were sleeping,
our dad and mom and us, the siren rang. And you know what
happened? The man wrecked his car or something. And you
know what -- how I can see you it's a ambulance? He had --
they had big flashlights. Look. And -- and you know what
happened once? The dad was in the truck. Then he had --
saw some cars but wasn't even watching the road. And my
dad honked at him. And when he honked at him first after
he honked at him he got up in front of him. And you know
what? We were to the gas station once. And you know what? When we were to the gas station we put gas in the car. And you know what the then time? We just -- went running in the gas station. And just my dad and Ollie did. And -- and do you know what he brought out? Some -- some gum. And you know what color the gum was? Just black. And we chewed it. They do this. They do. And this could bend up like this.

Stimulus Orientation: Feminine

Look. There's a baby bottle. Looky. It goes there. Looky at here. It's numbers. We feed babies. They don't -- and they don't have a mouth right here so we do that -- squirt that in their eyelash like this. Looky. I'm gonna take the rubber shoes off. And I'm gonna -- look. They can leave them off. I don't think I can put it back on. That's all. Here's her baby bottle. I have to snap it back up and put -- and put it right there so it won't fall. And if you put it right here it's bad.
Subject: Gary  
Age: 4 years 1 month  
Stimulus Orientation: Neutral

Once there was a little alligator called Misserela. And she liked to -- to eat so good black bugs. And she ate. And once she was swimming in the water. And she found a black bug. And she ate it all up. And she wanted to eat it all up 'cuz they're so good.

Stimulus Orientation: Masculine

I just want to just do it. I want to play with the motorcycle. Once there was a little motorcycle and a little car named -- . And the -- and the man was Joseph and -- and Mary -- and the other man was a policeman named Jesus. And they were riding. And pretty soon they crashed.

Stimulus Orientation: Feminine

Once there was a little baby named Kerry. And she just was tired. And she just slept and all night and all day and didn't wake up.
Subject: Rulon  
Age: 4 years 5 months  
Stimulus Orientation: Neutral

Once upon a time there was a little alligator. And he -- and he lost his mom one day. And he -- and he -- one day he found his -- his mom again. And his mom ate him all up.

Stimulus Orientation: Masculine

Once upon a time there was a little -- a little racing car. And it never winned a race. And all of a sudden it went -- it came to a gas station. And it -- and it -- and it filled him up. And all of a sudden he got -- he won the race every day.

Stimulus Orientation: Feminine

Once upon a time there was a little baby. And she couldn't walk. And pretty soon -- and she drank so much milk that she could walk again.
Subject: Ralph  
Age: 4 years 5 months  
Stimulus Orientation: Neutral

It's breathing fire. That's part of dragon. It looks like more like a frog. But it has four things on it that are sharp. It's a dragon. I never heard of a dragon.

Stimulus Orientation: Masculine

They drive. Rrrrrr like they do. Hey Carla have a automobile. Ya. And look these little balls turns around. And it gets gas. They'll go really fast, don't they? I can tell you about them a lots because I'm just going somewhere. Rrrrr to go to get some gas. It's going to the gas station. Hey now where do you put the gas? In here. Well I'll just put it -- maybe I'll just put some in the lights. Get ready. Here's the ball. Turn around the ball. Gas. I'm just gonna --. Here I'll guess I'll pretend that there's a hole in there and put --. I think -- I'm gonna put it in the -- in the -- in the wheel. Okay? Let's see. Let's make a hole in here. So let's make it right there. No not quite as sharp now. Then the gas.

Stimulus Orientation: Feminine

It needs milk. And it needs some food. And it needs to have some sleep. And it needs to have some rest too. I'll tell you what else it needs to have. It has to have some baby food like mashed potatoes and -- and sauce and beans -- and beans. Ya. I think it needs some milk. I better get some. There -- oops -- there. Okay.
Subject: Benjimen
Age: 4 years 9 months
Stimulus Orientation: Neutral

Well, I saw -- saw one at -- one at Gregory's, at my friend's. And -- and -- and it -- it didn't have a dragon. It wasn't like this one. It was a man that moved. It was a magic man. And it had a -- had this sticking out that way. And then he went in the boat. And oh they sailed along fast. Then oh they fell into the water when he tipped it over -- the boat. Then -- . Then -- . Let me see. A -- a -- that -- that's all.

Stimulus Orientation: Masculine

Hey let me see if they -- . Where does the gas come out? Hey, how do you do this? How do you do this? Dumb thing. Oh, you put it in that hole and get it out, don't you? Oh ya. I don't know how you do that back again. Well Larry and his dad have a motorcycle. And he was out of the gate. And do you know what? One day -- oh he knocked the gate over with his motorcycle. This is kind of like Larry's car. Kind of. But he has a -- a trailer and a car like this. Not the same it has a ceiling over it. Maybe if we turn this on -- . This story -- . Maybe we'll turn this on like that. So on back. Okay now. Later he had a -- some Doug, a Doug, he has a -- a boy named Doug. And he goes outside to play. His mother doesn't look for him very well -- careful. And, let me see, Larry takes Davy in his car. It's kind of like this one. And Larry's dad came home. And
He had to get some gas. And he got some gas all silly like this. And he got under the gas and got some gas upside down. Then Larry's daddy got some gas and leaved the gas on the floor. Then he ran away to wait. Then Larry drove the car. Then Larry was starting his car. Then -- then Rrrrr. Then beep beep beep, Rrrrrrr, bang. Then -- then Larry got some gas in his car again. And while the gas was doing time and time and time and time. And both of them were doing this -- this strange thing. Then he got some gas and rided back. Would you help me put this in? Then -- then Larry just runned right -- right ahead. And then Larry said -- and Larry's daddy said, "You put that car back."

Then he put the car back and parked. Then while Larry got back in the house his motorcycle was standing by the door. That's where he puts his motorcycle. Then over here he climbed on again. And while Larry was driving his dad's motorcycle and he said, "Where is my motorcycle?" I think I'll use the car then. And he used the car but it ran out of gas. Then Larry's dad was coming with his motorcycle while Larry was hiding in the car. And he -- he goes like this. Beep beep beep beep he drived over the gas. Then he fell boom by the car that was -- car parked by the gas station. Did you ever see a dumb car park by a gas station? Then Larry just drived over and said, "Where is my motorcycle?" It's over at the store. Then he walked over at the store. Then he got on it and Rrrrrrrrr. Then he had to get some gas and put some gas in. And he poured the gas
back. Oh what. And when he was all through he went back home. That was the end of the story.

Stimulus Orientation: Feminine

Once upon a time there was a mommy. And she had a baby doll. She was feeding it for Rockabye Baby. Rockabye baby la la la la. Then she put her in bed with her bottle. And she put some water and spilled it. Then she said, "I don't want my bottle mommy." Then she put it away on the desk. Then fold -- fold her dolly away. Then the garbage man came in and said, "Where is that dolly?" And she said, "(scream) baby." She fell on the floor. And she got her shoes off like this -- her shoes off like that. The other one. And two. And she went in bed and got her coat off. And then she went back to sleep. And her mommy put her shoes on while she was -- she was -- she was going to sleep. Then she pushed that on. Then -- then she put her shoes on. And that's the end of the story of the dolly.
Subject: Michael
Age: 4 years 9 months
Stimulus Orientation: Neutral

Once upon a time there was a sea monster. And there was five daughters in the king's family. And he said -- and he said -- one of the king's daughters came out and said, "Puppy, puppy!" And he said -- and he roared and the dragon warned her better not do that. And he said Grrrrrr. And he just growled at them. And he tried to bite them except -- except -- except the -- except the king's daughter ran away. And he said, "No, no, I'm a dragon," he -- the dragon said. And then he said Grrrrrr. And then the -- and her father -- he was a -- he was a sea monster except she was a dragon. And he also -- he thought -- and the king's daughter thought he was a -- a -- a king. Except he wasn't.

Stimulus Orientation: Masculine
Okay. Once be time there was a -- a motor and a car. And they was stopping for gas. And one car ran out of gas. And the motor bike ran off of gas. And the -- then these -- then the car's man said, "Fill it up with regular." And he did fill it up with regular. And he went right off into the -- the forest to look for bears. And he said, "Okay, fill it up with tiny gas." And he filled it up with tiny gas. And he -- then he hanged up. And he always got it all turned around in a little while. And then they didn't see where they were going so they smashed right into us and they had a wreck. And then the police came and -- and had
to give them a ticket. So when they did they still was in a wreck. And somebody got hurt. And -- and the motor bike crashed backwards. And then -- and then the people in the car crashed on the four wheel. And that's almost the end of the story but there's one more part to it. And then the -- the motor bike laughed -- the motor bike man laughed and laughed and went around the gas station lots of times. And that's the end.

Stimulus Orientation: Feminine

Girls -- oh boys don't play with babies. Once be time there was a little doll who was -- who said goo goo gaa gaa until he -- her was tired while the day. And so her got -- her got bigger and bigger and her got bigger then -- before her got to two. And what her did her was -- was walking with it and -- and her -- her wanted a baba. And so her wants -- her wants to drink and drink and drink and it was all gone. And her fell asleep. And then -- and then the mom came back up. And her fell asleep and fell asleep. And her started crying and her started crying. And the mom give her some more water and got water on her thing. And so her had to take off her -- off her robe. I think this -- this is a robe. And so her was taking off her coat. And her did. And her did this -- that coat off. And her -- and -- and her took off to take her -- and change her diapers. And then I have to try to get this. And then her did it. Her tried to and tried to. And -- and then her --
then her took off her shoes. And then -- and then --
and then her started walking barefooted and started walking.
Her was walking and walking. Then that's the end.
Subject: David  
Age: 4 years 9 months  
Stimulus Orientation: Neutral

Once there was a alligator. And he was in the water. And he didn't like that. He wanted to get out of there. So one time he walked out and got something. And ate him up. And then the hunter came and killed the alligator. And then another alligator came and ate the other alligator. And that was the end.

Stimulus Orientation: Masculine

Once there was a motorcycle and a car. And the motorcycle was going as fast as he can. And the car was going as slow as he could. And -- and the motorcycle came and bashed into the car. And then he got ahead and went to the gas station and got some gas. And then the police came while he was getting gas and got the motorcycle guy and arrested him for crashing. And that's the end.

Stimulus Orientation: Feminine

Once there was a baby. And she was just born. And one day it was time to get ready for church. And they were gonna give her a blessing. And they brought the bottle in case she got thirsty. And then they were at church now and had to go up to the stand taking the baby. And then they gave her a blessing. That's the end.
Subject: Kevin
Age: 4 years 11 months
Stimulus Orientation: Neutral

I think I'll talk about the one about Agatha. And that one's a real real long one. It's a -- it's about a fifteen minutes. Let's see first. I can't think of any one. Let me think. But a -- but a dragon doesn't dragon. It wouldn't be a long story if I told you about the dragon. It would just be about a two minute one. How long would it take? Once upon a time there was a ditch. And the princess was out picking flowers. And then dragon came out blowing his smoke. And they came out to chop his -- the dragon's head off. That was a very short one.

Stimulus Orientation: Masculine

I can't -- I don't think I could -- . But maybe I could tell you one about they were driving and ran out of gas. First they have to start driving. This is -- is this how these fit underneath? Why? What are these for? This one that one little pedals. He has to stop to fill up gas. Now he's filled up in there. Now he -- he gets -- more can come out before he can even gets off. Now he has to get off and lay his motorcycle down. Then the lady goes here and stops for gas. And then she gets -- I mean -- . And that's all I can tell you.

Stimulus Orientation: Feminine

I just have two dolls. And I never play with them.
Subject: Alan
Age: 4 years 11 months
Stimulus Orientation: Neutral

Alligators can eat people. Alligators sometime chase people.
Alligators swim in the water. Alligators are big and have
big mouths -- very big mouths and a whole bunch of teeth.
Alligators like to -- to save their babies.

Stimulus Orientation: Masculine

My dad has a Honda. He has a Honda I can ride on. And --
and it goes fast down hills. One day he rided -- then he
gave Roger a ride on his Honda too. Roger is my brother.
And watch out for cars when you ride on your bikes. And I
watch out for cars when I ride on my bike. And -- and --
and I play with one of my firends. His name Chad. And that
Chad is six. And -- and -- and I have another firend I'll
tell you his name. His name is Kenneth. You don't know
Kenneth. He -- he -- he lives by the end of the road. And
there's different kinds of cars. And our car has two doors.
And this car has two doors too. And -- and -- and trains
go on tracks. But motorcycles go on roads and so do cars
go on roads. And sometimes they have a wreck. And my --
and my dad has a truck and a car. Cars go all to places.
And -- and the cars and motorcycles go to stores. And --
and -- and that's all. And they need gas to go. And so
do Hondas and motorcycles.

Stimulus Orientation: Feminine

We stand little babies. And take card of them. And -- and
-- and -- and we feed them food. And -- and they suck bottles. And they -- the babies grow -- grow up to walk. Babies go in high chairs to eat. And -- and babies -- and babies -- babies take naps.
Subject: Monique
Age: 4 years 0 months
Stimulus Orientation: Neutral

A alligator likes to swim. And a alligator likes to eat. And drink. He drank me. He ate you. Can't get out. Have to stay in his throat. Now he got you in the mouth. He ate the mouth. Now he ate your nose. Now he ate your eye. Now he ate your arm. You ain't got a body. And he ate your head. And he got you. This alligator likes to swim. A alligator likes to drink. And he likes to swim in the water.

Stimulus Orientation: Masculine

A motorcycle runs. And it runs -- runs and it turns like this. And then like this and then it does like this. 'Cuz it turns like this and then he rides. So now what should I do to this car? I have to blow it up. Which one this one fits? He took out. I'm putting gas in it -- in his car so he doesn't use all his gas. This man don't stand up. The man won't stand up, doesn't he? Put some gas in there. That's oil gas. Now he's gonna drive. He's gonna pick up somebody. The motorcycle needs some gas. I'm pulling this out. Now put this up. Put that one up. Put it up and then he's gonna drive. Going up the hill and another hill. Going back. He needs some gas. Alright. He needs some oil. He needs the oil kind. Where is the oil tank? Here's the oil tank. Put the oil in. This is oil for him. Right in here. Put some oil in there. That's how he runs. He didn't get you. Crashed. He got back up. Okay. Gotta
open up the door. Right here. And he -- and he gets in the car. And he -- and the people drive him. 'Cuz you know why? 'Cuz his motorcycle broked when he got in a crash. And he was driving his motorscooter. Then he got into the car. Will you -- will you stop by Cane's? Get the motorcycle down so it will run by itself. Start on the motor. Hey you don't drive right. Quit it guy. He's riding all over the road. He bumped the car. He bumped the car. But not this guy didn't get bumped 'cuz he got bumped in. Now the motorcycle got broken. Now the car got broken. I got broken again. This don't break. What is it? Hey, it's metal. That's why it don't break. This is glass and this breaks. This is all broke and now he can't ride it.

Stimulus Orientation: Feminine
Doll likes to drink. He likes to drink milk. He likes -- and he likes to drink water. He likes to -- and he likes to sleep. If I stand her up she'll open -- her eyes will open. Her eyes opened. Now drink this. Hey bottle. And a doll likes to sleep. That's the end now.
Subject: Michelle  
Age: 4 years 0 months  
Stimulus Orientation: Neutral  

Well, well, well this is kind of a flying dragon. He got killed. I mean a man came and killed him. And that's all.

Stimulus Orientation: Masculine  
Well, well this motorcycle was zooming backwards. And then he crashed into a car. A policeman came driving by him and said, "You naughty man for crashing into this car." And the -- and the -- then the other man got him in his car.

Stimulus Orientation: Feminine  
Once the mother was feeding the -- a baby. And then the baby went to sleep. And then she snored so hard it woke -- the house tipped over.
Subject: Jeanie
Age: 4 years 1 month
Stimulus Orientation: Neutral

Maybe this is a dragon. This, this one -- old -- this old story -- that a lot of stories. Like crocodiles or dragons. Once a crocodile had -- didn't have a -- a baby. And he wanted a baby so bad. And then -- so he waved his magic wand with his mouth. A baby.

Stimulus Orientation: Masculine

Once a motorcycle and a car didn't have much gas. So they went to the gas station to get some gas. And then the motorcycle found that he couldn't have any gas because his motorcycle was broked again.

Stimulus Orientation: Feminine

Baby. It's a wug. I can put this back sometime. 'Cuz once a baby was crying and he -- and he didn't have a bottle. So he can get hisself out and get his own stuff. And wanted to do.
Subject: Lisa  
Age: 4 years 4 months  
Stimulus Orientation: Neutral

Once upon a time a alligator got out of the water and looked all around for a dog. He was a dog right there. And then he eated it all up.

Stimulus Orientation: Masculine
What are these things for? Once upon a time a car was gonna pass a motorcycle. Then the -- the car ran out of gas right here and got right there then pshshshshsh. And then it put it back in. And then he started to go. Then the motorcycle got out of gas so he came -- came right here. And then he got out. And then he went pshshshsh got some gas. And then he put it back in. And now he went driving the car behind. He crashed. That's all.

Stimulus Orientation: Feminine
Once upon a time a baby screamed and screamed 'cuz he was tired. So his mom gave his his bottle. Then he went right to sleep. And she put him in bed.
Let's see. Let's see. It could bite people. Okay? About it being nice? Then I'll have a story called the alligator's gonna bite people. Okay? What -- what are these? Gonna bite ya. It got a hole in it too, see. Should I think about a better story about the alligator? Let's hear a story about it swinging on a bar. Once there was a alligator that was hanging by bars. Hanging and hanging and hanging and hanging and hanging and he has to let go. Then he decided to get off. And then he bounced off and hurt him. And he -- and then he just took a nap. I told a story about one of these.

Stimulus Orientation: Masculine

Once there was a motorcycle and a car and some gas station. And the car was getting filled up first. It won't -- . I'll fix this for you, okay? And then the motorcycle comes. Then he got gas. Then it filled up the gas. Then he closed it. Oh he forgot to close his. He'll have to drive back and get it. There. Then he had to get some more. Look at. Silly motorcycle. Then it filled up some more. And then he closed the gas thing. That's how it ends.

Stimulus Orientation: Feminine

Once upon a time there was a little baby. And she sucked onto her bottle and then she really really really sucked on it. With her shoes with grapes on. And then she woke
up and didn't go back to sleep. Then she wanted to get out of bed. Then she did. And then she had clothes under. This is her -- her night gown right here. And then she -- and this is her robe, huh? Then she -- she just snapped -- snapped her --. She's sleeping and drinking her bottle. Okay, that's all it is.
Subject: Theresa
Age: 4 years 4 months
Stimulus Orientation: Neutral

They swim in the water. And they bite. And they swim in water. And they --. I don't know anything -- I don't know anything else about them.

Stimulus Orientation: Masculine
They get gas. And they ride. And wagons they do too. If they don't ride good they have to have gas. I don't know anything about any more.

Stimulus Orientation: Feminine
You feed them in babas. And they go to bed in cribs. And they have -- and they wear clothes. And they build a house with dollies. I don't know anything about any more.
Subject: Shireen
Age: 4 years 6 months
Stimulus Orientation: Neutral

I don't know about alligators. They just bite. They just bite and they just -- they just -- they just eat people up. Then they -- then they just go take a rest. That's what alligators do. Then they -- then they go get up and eat some more people. Then they go in bed again. Then they go eat some more people. Then they go in bed again. Well they bite -- they bite with their sharp teeth. Then they -- then they just go in their bed in their -- where all the alligators are. That's what alligators do. They just -- they just bite people. 'Cuz I seen a alligator once on our TV 'cuz I had a show on it. And -- and I saw it biting people. Then the -- then the people and even the little kids had to be ate up too. And then the alligator was real big. 'Cuz it was a teeny one when -- when the mother said to catch its own food and it did. So it grewed big 'cuz it ate people.

Stimulus Orientation: Masculine

When -- when somebody needs gas they -- they can't go 'til they need gas. So when you need gas you just turn that and it -- . You need that little hose to put in your car. Then ya have to wait 'til it gets a lot. Then it goes. Then -- then when a car goes it -- it has to have gas too. Then you just turn these two little things. Then it makes you go again. That's how -- that's how cars go. Motorcycles too.
Stimulus Orientation: Feminine
Sometimes little girls and boys like to get their little baby doll and go in their living room. And -- and they like to show their mommy and daddy what they get for Christmas. When -- when the little babies go to sleep you just rock it. Then you just put it in its little baby crib and feed it. And when it wakes up you have to feed it again. Then you let little -- little kids play with it. Then -- then the little baby wakes up again. Then it -- then it has to eat again. Then it goes back to bed. Then it wakes up and you feed it.
Subject: Melissa
Age: 4 years 6 months
Stimulus Orientation: Neutral

It could bite you. I don't know no more about him. He's trying to bite my hand. He's asleep. Now we can put our hands back. Look what he's doing. He's trying this.

Stimulus Orientation: Masculine

A motorcycle only has two -- two wheels. And this car has -- has a -- has only four wheels. This motorcycle is like this. This thing isn't like this -- like this. You know why? 'Cuz it -- 'cuz -- 'cuz this thing right here goes into this. But this doesn't have a hole. So that has to go in here in this hole like that. Then this car comes. And the men get out like that -- like this. One's up to tell him which color to get. He'll get orange. Where is -- where is his hole, huh? Where's his hole? I know where the motorcycles have their hole. Right under there. And the car drives away. You drive the car and I'll drive the motorcycle. Then turn which color he's getting. Orange. Right under there it goes. Some motorcycles have a -- a glass right here, huh? Now you can -- can do it. This looks like a mailman, huh? He's gonna fall off a cliff. Now he's driving back up the cliff. How can he get up? There's no cliff there. Scary. Now he takes it to a gas station. Now he has to -- . This is the motorcycle one and this is the car one, right? Here motorcycle. He already has a arm. Put it right there. Just pretend
gas, huh? Well the -- now the -- the man leaves his motorcycle right there. Puts his thing on the -- that. He lays his motorcycle. He gets off. Puts it in there. Drives away. Here comes the car back. Motorcycle comes to the car then Rrrrrr. He pounded both of their heads in there. He doesn't know how to get the gas out. You have to wind this thing up. It comes out. Now -- now nobody gets the car. 'Cuz the cars are -- now are both driving away to their own house. There's his house.

Stimulus Orientation: Feminine

Take her coat off take her coat off. How do you take this coat off? She got big hands and a new dress to play. Oops, there go those shoes. Her shoes come off, huh? Didn't she have no socks on? Does she? I wanted socks on her. Try and do it right like that. This -- this baby's mother is gone. And -- and -- and this baby is a boy. But his big sister is gonna feed this. The night. Take her shoes off. Take that off, huh? Her dress, huh? These are wrong foot, huh? Take this. Night gowns don't have these, do they? Morning. Now her -- now her mother's here 'cuz she was gone for a trip to Wyoming. That's where my mama went -- to Wyoming. Snap her dress up. There's only one snap, right? Put her -- her shoes back on. Put her shoes back on. And I'll -- . She wants to walk out the door. She's only playing in -- in her house. But now she has to put her coat on. This is the right -- . Was this coat like this,
huh? Was it? Does it fit this little baby? We got a top one too. She look cute?
Subject: Julie  
Age: 4 years 7 months  
Stimulus Orientation: Neutral

I don't know a -- a -- a story about a alligator. You know what? I had a story for family evening about a wise boy. Should I tell a wise alligator one? There was a alligator who -- who -- who couldn't swim. That's all I know.

Stimulus Orientation: Masculine

They go on the road. And they have gas. There's a gas station. The gas station gave the motorcycle some gas. That's all I know about the gas station.

Stimulus Orientation: Feminine

I have a baby doll at home. And -- and I can play with her. And that's all.
Subject: Charlotte
Age: 5 years 2 months
Stimulus Orientation: Neutral

Once upon a -- . Oh, I can't get it in there -- right there. Once upon a time there lived an old alligator.
And he had no friends. But one time a bear came along and went -- and they both played with each other. But they saw another bear, another alligator. And they all played with each other. Nothing happened. They kept on playing and playing until they got hungry. And so they went to the woods river. And they swam into the sea. And then they found some little tiny bugs that were called sea snails. And they ate 'em all up. And then they were so sleepy they swam back to the river and took their own nap. And they lived happily ever after.

Stimulus Orientation: Masculine

Once upon a time two men were driving down the road. Now I got the car the wrong way. Once upon a time there were two men driving on the road. Hey man, you better watch out where you're going. Hey man, you better watch out where you're going too. I think we need some more gas. So they went to the gas station. And then the first man -- . Hey, do these balls go around in here? Howcome? And then -- then he gave him some gas. And then he drove off to his little house. And then he got off and waited for his other man. Another car came by so he could get some gas. And then he went back where he was and got out of the car. And
then one day they both went back by together. And they lived happily ever after.

Stimulus Orientation: Feminine

I don't want it buttoned. 'Cuz I need to snap it. I can do snaps, I can do snaps. There. Oops. This is hard. I guess we won't need to snap it. Once there was a little baby who cried and cried for her mother. But there was a big -- the big sister was taking care of her and putting her to bed. And -- . And she cried and she cried. She wanted her mother. But the big sister just put her to bed. And she also fed her some -- some milk and then to bed. The little baby went right to sleep. And she put the bottle beside the little baby. And then the baby woke up and saw mother was home. And then she said, "Sister, did you take good card of her?" And sister said, "Yes." But there's one problem. Sister almost forgot something. She forgot she wasn't home.
Appendix B

Rules for Counting Number of Words

1. Contractions of subject and predicate like "it's" and "we're" were counted as two words.
2. Contractions of the verb and negative such as "can't" were counted as one word.
3. Each part of a verbal combination was counted as a separate word: thus "have been playing" was counted as three words.
4. Hyphenated and compound nouns were counted as one word.
5. Expressions which function as a unit in the child's understanding were counted as one word. Thus "oh boy" and "all right" were counted as one word, while "Christmas tree" was counted as two words.
6. The expressions "gonna," "huh," and "oops" were counted as one word.
Appendix C

Rules for Counting Number of Expression Units

1. An expression unit was considered finished if the subject came to a complete stop, either by letting the voice drop, giving interrogatory or exclamatory inflection, or otherwise clearly indicating that he did not intend to complete the sentence.

2. When one grammatically complete simple sentence was immediately followed by another with no pause for breath, they were recorded as two expression units unless the second sentence was clearly subsidiary to the first, i.e., contained the same information as the first sentence.
LITERATURE CITED


VITA

Cathy J. Walters

Candidate for the Degree of

Master of Science

Thesis: Effect of Sex Orientation of Stimulus Objects on Sex Differences in Language Development

Major Field: Child Development

Biographical Information:

Personal Data: Born at Sioux Falls, South Dakota, 1949, daughter of Jacob L. and Marianne Hofer; married Richard L. Walters June 5, 1971.

Education: Attended elementary school in Freeman, South Dakota; graduated from Freeman High School in 1967; received the Bachelor of Arts degree from Hamline University, St. Paul, Minnesota, with a major in psychology, in 1970; began graduate work in child development at Utah State University in 1971; completed requirements for Master of Science degree in child development at Utah State University in 1972.