

Vocabulary Comprehension and Usage of Preschool Cleft Palate and Normal Children

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Language development of cleft palate children has been studied (6, 9) utilizing language measures developed by McCarthy (5), Davis (1), and Templin (11). On the basis of these investigations, it could be concluded that a) cleft palate children appear to be delayed in most language skills when compared to available norms, b) the available norms do not always provide appropriate comparisons for cleft palate children on the various language measures, c) cleft palate children may perform differently on language measures requiring verbal output than on those measures not requiring verbal output, d) the development of language skills in cleft palate children has not been adequately measured in relationship to age, e) the effects of environmental variables shown to influence language development have not always been adequately controlled, and f) vocabulary measures have produced inconsistent results (6, 9). The language development literature clearly points up the need to control or account for the numerous determinants which affect language development (4, 11, 13); therefore, the variances in results of the reported studies may have been due to a lack of control of important environmental determinants or the effects of age upon the language indices used. This control of environmental determinants becomes particularly important when the heterogeneity of the cleft palate population is considered (10).

The present study was carried out to extend our knowledge of language development in preschool cleft palate children by studying specifically two dimensions of vocabulary development: vocabulary comprehension and vocabulary usage; at the same time attempting to control or account for as many variables as possible which have been shown to influence language development.

Method

SUBJECTS. Three classifications of 25 preschool children each, were studied: a) children with cleft lip and palate or cleft palate only, b) their noncleft siblings, and c) a group of normals.

SELECTION PROCEDURES. For all classifications no children were in-

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cluded whose history or evaluation revealed the following: a) evidence of mental retardation; b) neurological, physical, or severe medical problems (with the exception of the cleft condition); c) an average hearing loss of greater than 30 dB (ASA) in the better ear; d) institutionalization at any time; e) non-white population; f) raised in a bilingual home; g) adopted or foster child; h) nursery school attendance; and i) speech therapy.

The cleft palate classification excluded children with cleft lip only, clefts due to trauma, submucous clefts, unoperated clefts, clefts managed by prosthesis, and children who had undergone orthodontia. It could be presumed that the sibling group would be similar to the cleft palate group in terms of genetic background, socioeconomic background, amount and types of experiences, levels of motivation for learning, physical care, child rearing practices, other environmental factors, and level of intelligence. Therefore, siblings of the cleft palate children were used as one of the comparison groups. In addition, the normal group selection excluded children with a history of hospitalization other than at birth or the presence of clefts in the immediate family.

The subjects were grouped into five age levels: a) 34–39 months; b) 40–45 months; c) 46–51 months; d) 52–57 months; and e) 58–63 months. The midpoints of these age levels represent six-month age intervals.

VOCABULARY MEASURES. Vocabulary comprehension was measured with Form B of the Peabody Picture Vocabulary Test (PPVT). The standard administrative procedures were utilized (2).

An adaptation of the PPVT, Form B was utilized as a vocabulary usage test. The adaptation procedure required the child to look at the picture and produce the vocabulary word within a frame spoken by the examiner; for example, *This is a (kite)*, *This boy is (climbing)*, et cetera.

NONLANGUAGE MEASURES. Certain determinants that may influence language development were not under complete control as experimental variables. Information was obtained on all three classifications of children for socioeconomic status as measured by the Index of Status Characteristics (12), hearing level as measured by better ear average for 500–2000 Hz, mental age as measured by Form B of the PPVT, frequency of ear infection as reported by the parents, birth order, and number of siblings. They served as a basis for comparison among the classifications and as covariates where indicated.

Results

The mean scores for vocabulary comprehension and usage are reported in Table 1.

ANALYSIS OF VARIANCE. A repeated measures analysis of variance with five subjects per cell, each subject receiving both measures, was used to test the hypothesis that there were no significant differences between

TABLE 1. Vocabulary comprehension and usage means obtained by cleft palate children, siblings, and normals at five age levels.

<i>age level (months)</i>	<i>normals</i>		<i>siblings</i>		<i>clefts</i>	
	<i>comp.</i>	<i>usage</i>	<i>comp.</i>	<i>usage</i>	<i>comp.</i>	<i>usage</i>
A ₁ (34-39 mos.)	32.80	16.00	22.80	13.60	12.80	5.20
A ₂ (40-45 mos.)	46.60	25.80	21.60	10.20	26.60	12.60
A ₃ (46-51 mos.)	39.80	21.40	34.80	15.40	30.40	15.40
A ₄ (52-57 mos.)	52.00	29.00	45.60	26.20	36.20	19.20
A ₅ (58-63 mos.)	59.20	37.20	51.80	26.00	41.80	22.60
mean	46.08	25.88	35.32	18.28	29.56	15.00
SD	13.36	11.23	15.02	8.87	15.83	8.96

TABLE 2. Analysis of variance table for the evaluation of three classifications of children at five age levels on two vocabulary measures. (One asterisk indicates significance at the 5% level; two asterisks indicate significance at the 1% level.)

<i>source</i>	<i>df</i>	<i>ms</i>	<i>F</i>
classifications (C).....	2	2436.61	15.15**
ages (A).....	4	2395.58	14.89**
C × A.....	8	139.01	less than one
subjects /C-A (S/C-A).....	60	160.85	
measures (M).....	1	11180.17	274.70**
C × M.....	2	99.89	2.45
A × M.....	4	135.92	3.34*
C × A × M.....	8	20.74	less than one
M × subjects /C-A.....	60	40.70	
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the means for the main effects of classification (C), measures (M), and ages (A), nor for the interactions. As can be seen in Table 2, the *F* ratios for all the main effects were significant at the 1% level and the ages-by-measures interaction was significant at the 5% level.

Classifications. The mean values obtained by each of the three classifications over ages and measures revealed that selected normal children obtained higher vocabulary scores (35.98) than did siblings (26.80), and that siblings received higher scores than did cleft palate children. The *L* test (8) was calculated and revealed not only that the means were significantly different but are of the order: normals > siblings > clefts.

Ages. Age was a significant variable, and it interacted significantly with measures. As can be seen in Table 1, vocabulary comprehension and usage both increase as chronological age increases. The mean dif-

ferences between vocabulary comprehension and usage at each age level reveal the nature of the $A \times M$ interaction. The difference between the measures increases with age, which is related to the larger increases for vocabulary comprehension at each age level. The L test was calculated, and demonstrated at the 1% level that the age means differ significantly and are of the order: $A_1 < A_2 < A_3 < A_4 < A_5$. Thus, vocabulary as measured in this study increased with chronological age and the increments were significant when measured at six-month intervals.

Measures. Measures were a significant variable, and they interacted significantly with age as discussed above. The mean values obtained on the two measures over classifications and ages reveal that higher scores were obtained on vocabulary comprehension (36.99) than were obtained on vocabulary usage (19.72).

ANALYSES OF COVARIANCE. t tests of significance were done to determine which of the nonlanguage measures showed significant differences between the classification groups. Those reaching significance between the cleft palate and siblings were frequency of ear infections (5% level), and better ear average (1% level). Those reaching significance between the cleft palate and normal children were mental age (1% level), socioeconomic index (1% level), frequency of ear infections (1% level), and better ear average (5% level). Further, a significant difference in mental age (5% level) and socioeconomic index (1% level) was noted between the siblings and normal children. The nonlanguage measures of birth order and number of siblings in the family were not significant in any of the interclassification comparisons.

Analyses of covariance were then used to equate the groups with respect to mental age, socioeconomic index, and better ear average. All the analyses of covariance revealed that the main effects of classifications, ages, and measures which were significant in the analysis of variance remained as significant variables in the covariance procedures. One exception resulted; the age variable when mental age was used as a covariate became nonsignificant. Since the reported correlation between mental age and chronological age for the combined groups is .62 (7), the covariance adjustment for mental age presumably has removed a considerable portion of the variance related to chronological age, thereby making age nonsignificant.

Discussion

The results of this study indicate that the vocabulary measures utilized are sensitive indicators of vocabulary development for all the groups studied. It is further shown that the rate of this development is significant even at six-month age intervals. This finding supports Tempelin's (11) belief that language age norms need to be developed for narrower age intervals, if they are to be maximally sensitive to language growth.

Vocabulary comprehension and usage as measured in this study are significantly different. Regardless of age or classification, comprehension scores were significantly higher than usage scores. It is important to note that every child utilized in this study obtained higher comprehension scores than usage scores. The evidence from this study clearly revealed that vocabulary comprehension significantly exceeds vocabulary usage when the same words were used to measure both types of vocabulary. Lerea's (3) study demonstrates growth curves that reveal the two vocabulary measures as different, but no significance levels were determined.

Cleft palate children in this study developed both comprehension and usage vocabulary at a slower rate than did their siblings and normal children throughout the preschool age range. This confirms Morris' (6) findings that cleft palate children are retarded in vocabulary comprehension, rather than the finding of Spriestersbach, Darley, and Morris (9) of superior performance by cleft palate children on vocabulary comprehension. In regard to vocabulary usage, the present study supports the findings of retarded vocabulary usage in cleft palate children by both Morris (6) and Spriestersbach and associates (9) even though the vocabulary usage measures differed in the three studies.

Cleft palate children are significantly less proficient in vocabulary comprehension and usage than siblings or normals at all age levels studied. Even though siblings received lower scores than normals, they did obtain higher scores than their cleft palate siblings, suggesting that the cleft condition does have an effect upon vocabulary development. This study attempted to control many variables affecting language development, either by exclusion, comparison groups, or covariance analyses; however, not all the influence from these variables can be controlled, particularly the manner in which they interact with one another. There were other factors not controlled in this study, such as age at hospitalization, duration of hospitalization, frequency and extent of ear infection, and hearing loss; particularly mild hearing losses occurring throughout the early developmental years which need to be explored for their relationships to language delay in cleft palate children.

Summary

Vocabulary comprehension and usage of cleft palate children, their noncleft siblings and normal children were studied at five age levels (representing six-month age intervals) from 34 to 63 months. Vocabulary comprehension was measured with the Peabody Picture Vocabulary Test, and this author's adaptation of the PPVT was used to measure vocabulary usage. An attempt was made to control those variables shown to influence language development through subject selection (exclusion factors), use of comparison groups, and by covariate analyses. The results of this study showed that vocabulary comprehension and usage increase significantly as chronological age increases; $A_1 < A_2 < A_3 < A_4 <$

A₅. Vocabulary comprehension was significantly greater than vocabulary usage at all age levels. The classifications were significantly different on the vocabulary measures: normals > siblings > clefts. Higher scores were obtained on vocabulary comprehension than vocabulary usage by all children regardless of classification. The findings that siblings of cleft children performed differently on vocabulary measures than did the cleft children gives credence to the hypothesis that "cleftness" affects vocabulary development.

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