

A study of the phonological processes of the articulation disordered children.

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This study was designed to analyze the phonological processes of the mild-, moderate-, and severe articulation disordered children and to analyze the relationships among each phonological process. Total of 60 Korean children who showed articulation problems were used in this study. They were tested with a picture articulation test and assigned to one of the three groups (mild, moderate, severe) by their scores from the articulation test. The consonant accuracy range for the three groups were 70%-84% (mild group), 50%-69% (moderate group), and 30%-49% (severe group). Their articulation errors including omissions, additions and substitutions were coded into phonological processes, using a phonological analysis sheet devised by the researcher.

Those phonological processes were discussed in several ways: syllable structure, place, manner, assimilation, tenseness, and aspiration of sounds. Data were analyzed by percentage of occurrence of each process (i.e., # of actual occurrence / # of possible occurrence x 100). The interrater reliabilities were calculated by the percentage of agreement between two judges for transcription and coding process. One-way ANOVA and Tukey's HSD Test were used to analyze the differences among the three groups. Also, Correlation Coefficients were calculated among the phonological processes.

Table 1. Characteristics of the subjects

groups		n	mean consonant accuracy	sex (m:f)	mean age	sensory or organic impairment	disorders
severity of articulat ion	mild	20	70%-84% (77.85%)	12 : 8	13.65 yrs	none	MR/LD
	moderate	20	50%-69% (59.95%)	14 : 6	11.83 yrs	none	MR/LD
	severe	20	30%-49% (40.57%)	12 : 8	12.48 yrs	none	MR/LD

Results showed that many processes were significantly different among the mildly-, moderately- and severely disordered groups. In the analyses of the disordered groups, postvocalic omission, nasal omission, alveolar omission, velar omission, palatal fronting, alveolar backing, and unaspiration were significantly different among the three subgroups (i.e., mild, moderate, & severe). More specifically, (1) between the mildly and moderately disordered children, 13 phonological processes (i.e., prevocalic-, postvocalic-, nasal-, liquid-, alveolar-, velar-, and glottal omissions and velar fronting, alveolar backing, alveolization, frication, glottalization, unaspiration, and vowel deviation) were significantly different and (2) between the moderately and severely disordered children, 14 phonological processes (i.e., postvocalic-, stop-, nasal-, bilabial-, alveolar-, palatal-, and velar omission and palatal fronting, alveolar backing, alveolization, frication, glottalization, unaspiration, and vowel deviation) were significantly different, and (3) between the mildly and severely disordered children, 24 phonological processes (i.e., all omission processes except glottal omission and palatal fronting, alveolar backing, velar backing, alveolization, glottalization, stopping, frication, nasalization, tensing, laxing, unaspiration, and vowel deviation) were significantly different.

From the analyses of the correlations among the phonological processes, several groups of processes were found to be significantly correlated. In terms of the omission processes, (1) fricative omission - glottal omission - prevocalic omission, (2) nasal omission - velar omission - postvocalic omission, and (3) liquid omission - alveolar omissions were significantly correlated. And, in terms of substitution processes, (1) palatalization - affrication - palatal assimilation - affricative assimilation - alveolar backing, and (2) liquidization - palatal assimilation were significantly correlated. In the analyses of the assimilation processes, bilabial, stop, nasal, velar, and aspirated sounds were significantly correlated with the corresponding assimilations.

Table 2. Percent of Occurrence by groups (%)

Phonological Process		severity			Total M (n=60)	F	Tukey's HSD Test ($p < .05$ level)		
		mild M (n=20)	moderate M (n=20)	severe M (n=20)			mild- moderate	moderate- severe	mild- severe
Omission and Addition	syllable reduction	1.40	4.82	9.71	5.31	4.06*			o
	prevoc omission	5.06	15.63	25.56	15.42	12.22**	o		o
	postvoc omission	44.70	71.58	97.12	71.13	19.77**	o	o	o
	addition	3.56	6.78	10.59	6.98	3.94*			o
	stop omission	14.18	18.97	28.15	20.43	12.46**		o	o
	fricative omission	2.84	10.42	16.57	9.94	8.67**			o
	nasal omission	26.56	45.51	68.78	46.95	20.15**	o	o	o
	liquid omission	24.75	45.92	44.08	38.25	6.35**	o		o
	bilabial omission	14.75	19.18	27.69	20.54	6.93**		o	o
	alveolar omission	15.81	28.29	38.48	27.52	19.07**	o	o	o
	palatal omission	0	3.13	12.97	5.36	13.64**			o
velar omission	25.04	47.32	70.83	47.73	23.98**	o	o	o	
glottal omission	11.83	31.66	29.32	24.27	3.76*	o			
Substitution by Place of Articulation	velar fronting	12.34	11.88	18.85	14.35	1.98			
	palatal fronting	6.25	17.59	33.95	19.26	11.16**	o	o	o
	glottal fronting	17.83	13.04	21.00	17.29	1.09			
	alveolar backing	4.59	17.46	15.59	12.55	8.48**	o	o	o
	palatal backing	0.63	3.84	5.09	3.18	3.13			o
	labialization	3.06	3.88	5.66	4.20	0.93			
	alveolization	11.29	16.12	24.50	17.30	7.58**		o	o
	palatalization	2.11	6.20	5.77	4.69	3.54*	o		
	velarization	3.50	8.66	7.77	6.64	3.57*	o		
glottalization	0.95	0.61	5.01	2.19	7.81**		o	o	
Substitution by Maner	stopping	5.02	12.34	20.55	12.64	7.87**			o
	frication	1.41	1.85	8.53	3.93	8.97**		o	o
	palatalization	1.93	6.03	5.37	4.44	1.93			
	liquidization	0.74	2.05	1.20	1.33	1.29			
	nasalization	4.53	5.96	9.11	6.53	3.24*			o
Assimila- tion	labial assim	2.89	3.30	4.20	3.46	0.32			
	alveolar assim	6.86	10.67	9.29	8.94	1.17			
	palatal assim	1.96	3.13	2.50	2.53	0.21			
	velar assim	2.03	8.37	5.54	5.31	6.59**	o		
	glottal assim	0	0	7.50	2.50	2.11			
	stopping assim	4.43	9.27	8.10	7.27	2.21			
	fricative assim	0.83	1.00	3.54	1.79	1.85			
	affricative assim	1.96	3.13	2.50	2.53	0.21			
	nasal assim	3.02	3.22	3.22	3.15	0.02			
	aspiration assim	3.50	4.56	0.50	2.85	1.55			
	tensing assim	1.25	3.54	2.43	2.41	0.94			
Tension	tensing	2.68	7.18	15.15	8.34	6.94**			o
	laxing	18.22	31.36	37.12	28.83	5.59**			o
Aspiration	aspiration	1.56	5.58	4.14	3.76	2.18			
	unaspiration	8.73	28.36	49.01	28.70	29.58**	o	o	o
Vowel	vowel deviation	10.90	19.10	38.95	22.98	17.14**		o	o
Total (Mean)		7.67	14.05	19.58	13.76	6.96	13	14	24

* : $p < .05$
 ** : $p < .01$

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