Articles Section

THE EFFECTIVENESS OF ARTICULATION THERAPY UTILIZING PARENT PARTICIPATION AND HOME THERAPY MATERIAL

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To determine the effects of having untrained parents accompany their children in articulation therapy and the utilization of home practice materials on these children, four groups of nine subjects each were compared. Statistical analyses revealed that subjects, accompanied in therapy by their parents, and who completed pre-determined home therapy materials, demonstrated significant ($p < .05$) gains over those in therapy groups consisting of different treatment conditions. Therapy groups without parent accompaniment but with prescribed homework materials, and the one group undergoing traditional therapy procedures also made significant gains across the treatment period. All groups exceeded changes reflected by the controls.

Afin de déterminer les effets, d'une part, d'avoir des parents sans formation qui accompagnent leurs enfants dans la pratique thérapeutique de l'articulation et, d'autre part, de l'utilisation au foyer de matériel pratique par ces enfants, on a procédé à une comparaison de quatre groupes de neuf sujets. Les analyses statistiques ont révele que les sujets qui étaient accompagnés par leurs parents en thérapie et qui avaient pratiqué au foyer des exercices predeterminés avec un materiel thérapeutique acquéraient des gains considérables ($p < .05$) sur les sujets des groupes therapeutiques soumis à des conditions de traitement différentes. Les groupes de thérapie non accompagnes des parents et devant effectuer un travail prescrit à la maison et le groupe soumis à des méthodes thérapeutiques traditionnelles ont également fait des progrès considérables durant la période de traitement. Les changements reflétés par les méthodes de contrôle ont été à l'avantage de tous les groupes.

Among the key problems encountered by many public school speech-language pathologists are caseload selection and scheduling. Often caseloads are too large and there is insufficient time for treatment (Fudala, et al., 1972; Tufts and Holliday, 1959). One possible solution for these issues is the use of school age clients' parents as paraprofessionals.

There is ample evidence that even without special training, one or both parents of a child with a speech/language disorder can be effective in the therapy process. Several investigations reveal that parents may help remediate speech-language problems more rapidly, and with more relative permanence, than may be accomplished through traditional means of intervention and that they will also make valuable contributions to home practice and carryover functions (Tufts and Holliday, 1959; Engel, et al., 1966; Bush and Bonachea, 1973; Wing and Heimgartner, 1974).

McCroskey and Baird (1971) and Fudala (1973) have also corroborated findings that parents given specific assignments and time to observe therapy can be useful in aiding the correct articulation process for their child. They discovered that parents willing to assist their

children produced better results for them than did those parents who were dissociated with the therapy routine. Research by Sommers, et al. (1959), Sommers (1962), and Fudala, et al. (1972) has suggested that the simultaneous training of parents and their children with functional articulation impairments resulted in more rapid improvement than did a program where preparation was not provided for the parents.

The purpose of this study was to determine if parental presence in therapy sessions and participation in home carryover activities improved speech performance of elementary school children (K-7) demonstrating defects of articulation. The research questions asked were: (1) Does the presence of one parent in their articulation impaired child's therapy session produce significantly better gains than does a conventional strategy including only therapist and child? and (2) Does the utilization of parents in home carryover activities produce significantly greater gains for articulation impaired children than does traditional management including only therapist and child?

PROCEDURE

Subject Selection

The subjects, 36 elementary school children (K-7), 21 boys and 10 girls with functional articulation disorders, ranged in age from four years, nine months to twelve years, 0 months, with a mean age of seven years, two months (see Appendix A). They were identified through formalized speech and language screening procedures and teacher referrals. All children were attending regular elementary school classes in Surrey, British Columbia, Canada, and according to student files, demonstrated intelligence and achievement test scores within normal limits. All were determined to have normal hearing as assessed by a Sweep test at 20 dB, ASA, and impedance screening. Physical dysfunctions concomitant with impaired articulation were ruled out through complete oral-peripheral examinations.

Selection Criteria

To be selected for the study, each child was required to score at or above age norms for the Word Finding Vocabulary Scale (Renfrew, 1972) and the Washington Speech Sound Discrimination Test (Prather and Addicott, 1971). A subject's speech fluency was evaluated by the Knepflar: Profile for Young Stutterers (Knepflar, 1978) and by a comparison of the child's language skills with established age norms (Trantham and Petersen, 1976). Articulation proficiency was assessed by the Weiss Comprehensive Articulation Test (Weiss, 1978).

Method

The Surrey Speech Therapy Program requires that one or both parents be involved in their child's therapy program and that they provide transportation to and from the base school; consequently the subjects were assigned to one of four groups on the basis of parental preference and/or convenience. Therefore, true randomness may not have been achieved since subjects were assigned to groups by the rigid demands of parents' transportation schedules.

The groups were developed as follows:

Group I (N=9): Subjects were accompanied by parents in therapy sessions and received material for home practice.

Group II (N=9): Subjects received therapy but were not accompanied by a parent, or provided material for home practice.

Group III (N=9): Subjects received therapy without parental accompaniment and were assigned material for home practice.

Group IV (N=9): Control; subjects were randomly selected from the waiting lists which are legally permissable in Canada.

Pre- and post-experimental assessments of each subject's articulation proficiency were established with the Weiss Comprehensive Articulation Test (Weiss, 1978). By chance, phoneme errors consisted of substitutions and distortions only (See Appendix A). All experimental subjects received individualized therapy by one of the writers utilizing traditional articulation therapy techniques (Van Riper, 1972). The therapy procedures included the remediation of misarticulated phonemes in isolation, syllables, words, phrases, sentences, structured speech, and spontaneous evocation. Advancement to higher levels of proficiency was contingent upon 90 percent correct production in the preceding phase. Elevation of the subject to the next level of therapy was symbolized by an arrow ascending a ladder; each step on the ladder signified a gain in therapy. Upon reaching spontaneous speech production or conversational speech, the child was provided reinforcement by allowing him/her to move the arrow to the top of the ladder and to choose one prize from a selection of books, cars, bubbles, and stickers.

The study was implemented between October, 1980 and June, 1982. During that time, the experimental subjects were seen once weekly for one-half hour sessions. Those who received material for home practice were required to return their therapy workbooks so that lessons could be checked to insure acceptable practice procedures; additional homework material was then dispersed for the next week. By design, the home practice activities, for a majority of the subjects, were too difficult to complete without parental assistance; therefore, a built in monitor was available to determine parents' involvement in the home lessons.

Parent participation within a therapy session consisted simply of having either parent sit in with the child. They were not required to engage in drills or to intervene in any way; and although they were informed that comments or questions were permissable, few exercised the privilege. In a strict sense, they were passive agents whose role was more motivational than participatory.

RESULTS

To assess differences between the treatment groups, a Duncan's Multiple Range Test (1955) was employed. Statistical analyses revealed that subjects in Group I, where the parents accompanied the children in therapy, demonstrated the greatest change across the treatment period. The difference in performance between this group and the next most effective treatment groups, III and II respectively, was significant at the .05 level. However, no significant difference

(p .05) was found between Group II and Group III (see Table 1).

Table 1.

Comparison of means computed by Duncan's Multiple Range Test.

Group Comparison	$\bar{x} - \bar{x}$ Values	Value Differences
Gp. I vs Gp. II	7.74 - 3.54	4.20*
Gp. I vs Gp. III	7.74 - 4.21	3.53*
Gp. III vs Gp. II	4.21 - 3.54	.67

*.05 level significant

To determine if a difference existed between Group II, which reflected the lowest mean score for all groups, and the control (Group IV), a t-test was utilized. The results indicated a significant difference (t=2.42, df, 24; p .05) in favor of Group II.

To assess the differences between Groups I, II, and III regarding attendance and homeowrk material compelted, mean percentage scores were computed (see Table 2). Group I, with parental involvement and home study materials, showed higher mean percentage scores for attendance than did Group II, which did not have parental involvement or home materials, and Group III, which was given home study materials only. Group I also presented a 39% higher homework completion record than did Group III, which recorded a 6% lower attendance record than Group II (see Table 2).

Table 2.

Group attendance and homework completion; mean percentage scores.

Group	Attendance	Material Completed
I	80%	88%
II	72%	no material
III	66%	49%

The effectiveness of the various groups is summarized as follows: Group I consisting of both parent and home study material produced the greatest changes; Group III consisting of home study materials only was next most effective; and Group II, which did not utilize parent involvement or home study materials, was third. The control group (IV) reflected the least potent conditions for learning correct sound production (see Table 3).

Table 3.

Pre-post test mean difference scores and total group mean scores for all groups.

Group I	Group II	Group III	Group IV
4.71	1.15	3.17	0
8.09	8.32	0	0
15.16	7.36	1.51	0
5.36	3.64	1.83	0
10.96	4.47	7.92	0
5.37	1.56	7.74	0
.25	.56	2.31	0
9.75	.10	6.13	.56
10.03	4.71	7.28	0
$\bar{x}$=7.74	$\bar{x}$=3.54	$\bar{x}$=4.21	$\bar{x}$=.06

To assess the discrepancies in improvement between the different phoneme errors, mean percentages were calculated for changes across treatments for all groups (see Table 4). For the phonemes /s/, /r/, and /θ/, Group I evidenced more change (41%, 76% and 59% respectively) than did Group II. This group also revealed better performance (17%, 39%, and 84% respectively) than did Group III for the same phonemes. For the phonemes /s/ and /r/, Group III yielded better results than Group II (29% and 61%): however, for the /θ/ phoneme, Group II outperformed Group III by 62%. This was the only instance throughout the study in which Group II reflected more change in any dimension than did Group III. The control group (IV) was compared only to Group II, the lowest performing unit, and the results indicated vast differences (98%, 100% and 100% respectively) between the two conditions.

Table 4.

Mean percentage score changes for specific phonemes between group treatments.

Group	Pre-Post Differences /s/	$\bar{x}$ % Differences /s/	Pre-Post Differences /r/	$\bar{x}$ % Differences /r/	Pre-Post Differences /θ/	$\bar{x}$ % Differences /θ/
I	6.12	41%>Gp.II	10.05	76%>Gp.II	10.76	59%>Gp.II
II	3.59	29%<Gp.III	2.40	61%<Gp.III	4.44	62%>Gp.III
III	5.05	17%<Gp.I	6.13	39%<Gp.I	1.67	84%<Gp.I
IV	.08	98%<Gp.II	.00	100%<Gp.II	.00	100%<Gp.II

DISCUSSION

The results of the study indicate that by having parents accompany children in therapy sessions and by providing parent monitored home study materials for the children, that an effective means of Public School Speech Therapy can be expected. Those children whose parents were involved in therapy demonstrated significantly ($p < .05$) better progress and attendance records than did those in the two other groups with different independent variables. However, the subjects without parent participation or home study material (Group II) and those without parent participation but with home study materials (Group III) also produced positive changes in articulation performance.

In a subjective sense, it appeared that the subjects in Group I revealed a more positive attitude regarding therapy and that they indicated they were receiving preferential attention, because mother or dad attended therapy. Additionally, the children accompanied by their parents appeared to be less ill at ease than did the subjects in the other therapy settings.

In general, the parents who attended therapy voiced approval for the opportunity to participate in learning about management techniques for different speech problems and the variety of materials and games available for intervention. They became aware of target behaviors, the rates of progress to expect during therapy, and with pleasant relief, the realization that their child's problem was not unique. The parents also began to grasp more thoroughly the importance of verbal communication and its relationship to other aspects of academic and social development. Concurrently, they experienced the satisfaction of knowing that they had the ability to help a member of their family manage a communication problem conjointly with the classroom teacher and the speech-language pathologist.

This type of service delivery system involving parents directly appeared to have an excellent public relations value for the school district. The parents expressed more interest in their child's school and the school district programs; they became more aware of special services and were more attuned to its policies and teachers and their child's position in the school's mission. Likewise, the children verbalized more interest in school, perhaps because they believed their parents were more concerned about general school functions and academic and social achievement.

Communication between the teacher, parent, speech-language pathologist, and other professionals was evident and welcomed by all concerned. Parents and professionals planning and working together articulated many positive feelings about the children and the therapy program. The classroom teachers associated with the project began to note that the parents were expressing a realization that their children were not constantly compared to the non-speech impaired. Also, the teachers expressed pleasure with the increased amount of patience and understanding connoted by parents regarding their children's successes and failures. In many cases, teachers indicated that spelling and reading skills of the older children also improved because of demonstrated parental interest.

From a clinician's point of view, this type of program should obligate less time for drill activities and more time for teaching articulatory concepts. Also, this procedure may permit the speech-

language pathologist to accommodate larger numbers of students throughout the academic year.

The salient disadvantage in implementing this service delivery system was the coordination of schedules to accommodate parents and transportation. However, this impediment has to be recognized as slight in comparison to the gains the children made when their parents participated in the home and therapy settings.

A major implication of this investigation is that parents, without receiving direct and supplemental training, can enhance the progress of their children in therapy. Obviously, not all children will perform better with the parent present in therapy, but from the results of this investigation, it appears that the most favorable results will be obtained when the parent participates even passively in the intervention process. It is suggested that further research on this topic be initiated with larger treatment groups and with different types of communication disorders.

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APPENDIX

SUBJECTS' AGE, PHONEME ERRORS AND PHONEMES TREATED

Group I. Subjects age, phoneme errors, and phonemes treated.

Subject	Age	Phoneme Errors	Phonemes Treated
1	5.0	/k/ /g/ /l/ /ʃ/ /tʃ/ /dʒ/	/k/ /g/ /l/
2	7.1	/s/ /z/ /ʃ/	/s/ /z/ /ʃ/
3	5.0	/k/ /f/ /r/ /θ/	/f/ /k/ /θ/
4	6.6	/θ/ /k/ /g/	/θ/ /k/ /g/
5	7.4	/r/ /ʒ/	/r/ /ʒ/
6	5.0	/k/ /g/ /θ/ /ʃ/ /l/ /tʃ/ /dʒ/	/k/ /g/
7	6.4	/s/ /z/ /tʃ/ /ʃ/	/s/ /z/ /tʃ/ /ʃ/
8	5.0	/l/ /v/ /f/ /θ/ /r/ /ʒ/	/l/ /v/ /f/
9	7.3	/s/ /z/ /r/ /ʒ/	/s/ /z/ /r/ /ʒ/

Group II

Subject	Age	Phoneme Errors	Phonemes Treated
1	9.1	/r/ /ʃ/	/r/ /ʒ/
2	7.5	/s/ /z/ /θ/	/s/ /z/ /θ/
3	7.1	/s/ /z/	/s/ /z/
4	7.4	/dʒ/ /l/ /r/ /ʒ/ /s/ /z/ /tʃ/ /ʃ/	/s/ /z/ /r/
5	6.4	/k/ /g/ /tʃ/ /ʃ/ /dʒ/ /ʒ/ /l/	/k/ /g/
6	7.3	/s/ /z/ /tʃ/ /ʃ/ /dʒ/	/s/ /z/
7	6.2	/s/ /z/ /r/ /ʒ/ /θ/	/s/ /z/ /θ/
8	12	/s/ /z/	/s/ /z/
9	7.6	/s/ /ʃ/ /tʃ/ /k/ /g/ /r/ /ʒ/	/k/ /g/

Group III

Subject	Age	Phoneme Errors	Phonemes Treated
1	6.1	/k/ /ʃ/ /tʃ/ /r/ /s/ /z/ /ʒ/	/l/ /ʃ/ /tʃ/
2	8.9	/tʃ/ /ʃ/ /s/ /z/ /dʒ/	/s/ /s/ /z/
3	6.3	/k/ /θ/ /tʃ/ /l/ /ʃ/	/k/ /θ/
4	6.0	/θ/ /k/ /s/ /z/	/θ/ /k/
5	7.0	/s/ /z/	/s/ /z/
6	8.1	/s/ /z/ /ʃ/ /tʃ/	/s/ /z/ /ʃ/ /tʃ/
7	8.4	/s/ /z/ /ʃ/ /tʃ/ /dʒ/	/s/ /z/
8	7.6	/r/ /ʒ/ /tʃ/ /ʃ/	/r/ /ʒ/ /tʃ/ /ʃ/
9	6.2	/s/ /z/ /tʃ/ /ʃ/ /dʒ/ /θ/	/s/ /tʃ/ /ʃ/ /z/

Group IV

Subject	Age	Phoneme Errors	Phonemes Treated
1	9.11	/s/ /z/	No treatment
2	8.3	/s/ /z/	No treatment
3	7.2	/s/ /z/	No treatment
4	9.0	/θ/ /ʃ/ /ð/	No treatment
5	7.3	/θ/ /l/ /s/ /z/ /tʃ/ /ʃ/	No treatment
6	8.9	/s/ /z/	No treatment
7	7.0	/l/ /r/ /ʒ/ /tʃ/ /ʃ/	No treatment
8	6.9	/s/ /z/	No treatment
9	6.6	/θ/ /ð/ /l/ /s/ /z/	No treatment