Prix Eve Kassirer pour réalisation professionnelle exceptionnelle
Eve Kassirer Award for Outstanding Professional Achievement

YVES JOANETTE

Le Prix Eve Kassirer est remis au professionnel ayant apporté une contribution exceptionnelle à l'orthophonie et/où à l'audiologie dans les domaines de l'éducation, des services organisationnels, de l'administration, de la recherche, des services cliniques et d'autres domaines jugés appropriés. Ce prix a été créé en l'honneur de M^me^ Eve Kassirer, sociologue médicale qui oeuvrait au ministère de la Santé nationale et qui est décédée le 30 avril 1988. M^me^ Kassirer a fait preuve d'une grande compréhension de notre identité personnelle, et a fait tout en son pouvoir pour faciliter l'atteinte de nos objectifs et plaider la cause de nos professions auprès des instances fédérales.

Le lauréat du Prix Eve Kassirer de cette année a contribué de façon exceptionnelle au développement et à la promotion de l'orthophonie non seulement au Québec et au Canada, mais dans le monde entier. Véritable ambassadeur de la discipline de l'orthophonie dans de nombreux pays qui recoupent l'Amérique du Nord et du Sud, l'Europe et l'Asie, c'est dans les domaines de la recherche, de l'enseignement et de l'administration qu'il a apporté ses contributions les plus importantes.

Le D^r^ Yves Joanette, lauréat de cette année, a obtenu une maîtrise en orthophonie et en audiologie de l'Université de Montréal en 1976. Il a reçu un doctorat en sciences neurologiques de la même institution en 1980. Il a achevé ses études postdoctorales à la prestigieuse Clinique de neurologie du Centre hospitalier universitaire de la Timone de Marseille, en France. À l'heure actuelle, il est chercheur scientifique principal au Centre hospitalier Côtes-des-Neiges de Montréal et directeur de l'École d'orthophonie et d'audiologie de l'Université de Montréal.

Il serait impossible de résumer avec exactitude toutes les contributions du D^r^ Joanette en matière de recherche dans les domaines liés à l'orthophonie. Il est bien connu pour sa contribution exceptionnelle à la clarification du rapport entre l'hémisphère droit et le langage. De fait, ses amis et ses collègues l'appellent souvent «M. Hémisphère droit». De plus, il prend une

The Eve Kassirer award is presented to a professional who has made an outstanding contribution to speech-language pathology and/or audiology in education, organizational services, administration, research, clinical services, and other areas deemed appropriate. The award is named in honour of Ms. Eve Kassirer, a medical sociologist with Health Canada, who passed away on April 30, 1988. Ms. Kassirer had a deep understanding of our personal identity and did her utmost to facilitate our goals and advocate on behalf of our professions at the federal level.

This year's recipient of the Eve Kassirer award has made outstanding contributions to the development and promotion of speech-language pathology not only in his native Québec and Canada, but throughout the world. He is a true ambassador of the discipline of speech-language pathology in many countries that span North and South America, Europe, and Asia. His most important contributions have been in the areas of research, teaching, and administration.

This year's recipient, Dr. Yves Joanette, received a Master's degree in speech-language pathology and audiology from the *Université de Montréal* in 1976. He completed a PhD in Neurological Sciences, at the same university in 1980. His post-doctoral fellowship was completed at the prestigious *Clinique de neurologie du Centre hospitalier universitaire de la Timone* in Marseilles, France. Currently, he is a senior research scientist at the *Centre hospitalier Côte-des-Neiges*, in Montréal.

It would be impossible to summarize accurately all of Dr. Joanette's contributions to research in areas relevant to speech-language pathology. He is best known for his tremendous contribution to clarifying the relationship between the right hemisphere and language. In fact, his friends and colleagues frequently refer to him as "Mr. Right Hemisphere". He is also actively involved in research projects related to aging as well as Dementia of the Alzheimer Type (DAT).

part active à des projets de recherche liés au vieillissement et à la démence du genre alzheimer.

Il a participé, à titre d'auteur ou de coauteur, à plus de 570 présentations dans le cadre d'assemblées scientifiques et professionnelles. Ses livres et articles ont été publiés dans plusieurs langues, dont le français, l'anglais, l'espagnol, le portugais et le japonais.

Le Dr Joanette participe activement à de nombreuses associations professionnelles et scientifiques aux plans national et international. Il a été conférencier invité à de nombreuses réunions scientifiques et professionnelles, y compris la très prestigieuse New York Academy of Science, à la Fédération mondiale de neurologie, à la International Neuropsychology Society, à l'Académie de l'aphasie, à l'Association canadienne-française pour l'avancement de la science, au Congrès international francophone de gérontologie, et bien sûr à l'ACOA. Il a donné des conférences et présenté des documents et des ateliers à des conférences aux quatre coins du Canada, des États-Unis et de l'Europe.

Le Dr Joanette est également un excellent professeur. Il a enseigné aux étudiants de plusieurs programmes de l'Université de Montréal, notamment dans les départements de psychologie, de neuropsychologie et de linguistique, à la faculté de médecine et bien sûr à l'École d'orthophonie et d'audiologie. Il a également enseigné à la School of Human Communication Disorders de l'Université McGill, ainsi qu'au Service de biologie de l'Université du Québec à Montréal. De plus, il a fait partie du corps enseignant de l'Université d'Aix-Marseille en France.

Il coordonne plusieurs importantes subventions de recherche obtenues d'organismes de financement québécois, canadiens et internationaux, comme la Société Alzheimer de Montréal, la Société Alzheimer du Canada, le Fond de recherche en santé du Québec, le Conseil des sciences naturelles et du génie du Canada, le Conseil de recherches médicales du Canada, l'American National Institute on Aging, et l'OTAN. Depuis son arrivée au laboratoire Théophile-Alajouanine, le centre de recherche a continué de croître et joue un rôle important dans plusieurs domaines de recherche directement liés à l'orthophonie. Tous les étudiants et tous les membres du corps professoral apprécient son leadership au sein du département et de la faculté. Ils ont appuyé avec beaucoup de fierté sa nomination comme lauréat du Prix Eve Kassirer.

De l'avis même des amis et collègues du Dr Joanette, sa personnalité et sa vie personnelle reflètent vraiment sa carrière professionnelle. Ils vous diront qu'il est un écoutant qui fait preuve d'humanisme et un bon communicateur, qu'il est très optimiste et très déterminé. C'est un homme d'action qui prêche par l'exemple.

Le Dr Joanette est très versé en littérature française et a la passion des vins raffinés. Pour terminer, quiconque a eu le grand plaisir d'être invité à partager un repas préparé par le Dr Joanette vous dira que ses très grands talents de scientifique ne sont dépassés que par ses talents de chef!

He has participated, as an author or co-author to more than 570 presentations at scientific and professional meetings. His books and articles have been published in several languages including French, English, Spanish, Portuguese, and Japanese

Dr. Joanette is actively involved in professional and scientific associations both nationally and internationally. He has been an invited speaker at scientific and professional meetings including the very prestigious New York Academy of Science, the World Federation of Neurology, the International Neuropsychological Society, the Academy of Aphasia, *l'Association canadienne-française pour l'avancement de la science*, the *Congrès international francophone de gérontologie* and of course, CASLPA. He has lectured, presented papers or workshops at conferences in literally every corner of Canada, the United States, and Europe.

Dr. Joanette is also an excellent teacher. He has taught students in several programs at the *Université de Montréal*, including the departments of Psychology, Neuropsychology, Linguistics, in the Faculty of Medicine, at McGill University's School of Human Communication Disorders, and at the Department of Biology at the *Université de Québec à Montréal*. Also, he has held a faculty position at *l'Université d'Aix-Marseille* in France.

He coordinates several large research grants obtained from Québecois, Canadian, and international funding agencies, among them the Alzheimer's Society of Montréal, the Alzheimer's Society of Canada, the *Fond de recherche en santé du Québec*, the Natural Sciences and Engineering Council of Canada, the Medical Research Council of Canada, the American National Institute on Aging, and NATO. Since his arrival at the Théophile-Alajouanine laboratory, the centre has continued to grow and play an important role in research directly related to speech-language pathology. It is with great pride that they supported his nomination for the Eve Kassirer award.

Friends and colleagues will comment that Dr. Joanette's personality and personal life are true reflections of his professional career. They will tell you that Dr. Joanette is a compassionate listener and a good communicator, that he is very optimistic and incredibly determined; he is a person of action who leads by example.

Dr. Joanette is also very well versed in French literature, and has a passion for fine wines, And, last but not least, anybody who has had the great pleasure of being served a meal prepared by Dr. Joanette will tell you that his immense talents as a scientist are surpassed only by his skill as a chef!

Morag McKercher received her Bachelor of Arts in Psychology from the University of Saskatchewan in 1991, and her Master's of Speech-Language Pathology from the University of Alberta in 1994. She is now employed at the Alberta School for the Deaf in Edmonton. Her clinical interests include acquired brain injury and pre-school language, as well as the Deaf and hard-of-hearing populations. Morag is the 1994 winner of the Isabel Richard Award for the most outstanding student paper. A reprint of the winning entry follows.

Morag McKercher

Morag McKercher a complété un baccalauréat en psychologie à la University of Saskatchewan en 1991 et complété une maîtrise en orthophonie à la University of Alberta en 1994. Elle est à l'emploi de la Alberta School of the Deaf à Edmonton, et s'intéresse particulièrement au traumatisme crânio-cérébral acquis, aux troubles langagiers chez les enfants et aux populations sourdes et malentendantes. Morag est récipiendaire du Prix Isabel Richard pour le meilleur mémoire étudiant (1994). Nous reproduisons ici le projet de recherche qui lui a valu cet honneur.

Phonological Treatment Dismissal: Optimal Criteria

Interruption du traitement phonologique: Critères optimaux

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Key words: phonological disorders, speech-language pathology and audiology, treatment dismissal, treatment outcome

Abstract

The speech-language pathologist's decision regarding the optimal criteria for reduction or termination of treatment of disordered phonemes has been based on clinical judgment and unsubstantiated recommendations. Phonological treatment dismissal is a vital caseload management issue in that both overly stringent and excessively lenient criteria may have undesirable consequences. This study investigated the effects of a period without treatment on the maintenance of phoneme accuracy in three distinct performance categories: mastery, transitional, and emergent. Results indicated that, across the treatment rest, phonemes at the mastery level (post-treatment) remained at the post-treatment level or improved, while phonemes at the transitional level (post-treatment) displayed a scattered pattern which yielded no prognostic indicators. Results of the emergent level (post-treatment) phonemes indicated that accuracy improved across the treatment rest. Clinical relevance of the results is discussed.

Abrégé

La décision de l'orthophoniste quant au choix des meilleurs critères qui détermineront s'il faut ralentir le traitement d'un trouble des phonèmes ou y mettre fin repose sur le jugement clinique et des recommandations non corroborées. L'interruption du traitement phonologique est une question cruciale en ce qui concerne la prise en charge du patient, car des critères trop rigides ou trop larges pourraient avoir des conséquences désastreuses. On s'est demandé quels effets une interruption du traitement aurait sur le maintien de l'exactitude des phonèmes pour trois classes d'efficacité : maître, intermédiaire et débutant. Les résultats indiquent une amélioration des phonèmes pour la classe «maître» durant l'interruption. Au niveau «intermédiaire» (après traitement), les résultats ne suivent aucun schéma déterminé, ce qui ne permet de dégager aucun indicateur au sujet du pronostic. Les résultats pour la classe «débutant» (après traitement) montrent une amélioration de la précision des phonèmes pendant l'interruption du traitement. Suit une analyse de la valeur clinique de ces résultats.

A major decision in the treatment of phonological disorders is that of treatment dismissal. Literature regarding appropriate dismissal criteria in phonological treatment is scarce (Bernthal & Bankson, 1993; Eger, Chabon, Mient & Cushman, 1986; Olswang & Bain, 1985), yet dismissal decisions have a profound impact on the treatment of phonologically impaired children. Excessively stringent dismissal criteria may result in wasted time and effort by the clinician, client, and client's family, as well as create unnecessarily long waiting lists which preclude service to others. Excessively lenient criteria may result in children returning to the system at a later time or children whose phonological abilities remain unnecessarily delayed. Without evidence to support a single dismissal criterion, clinicians are left to make dismissal decisions on the basis of intuition.

One of the important factors in treatment dismissal is maintenance. Maintenance, as defined by Bernthal and Bankson (1993) is, "the stage where the client habituates the target behaviour and assumes increased responsibility for self-monitoring of target phonological productions". They note that the maintenance stage is characterized by intermittent reinforcement and decreased client-clinician contact. When a client is able to maintain established skills without continued clinician involvement, then dismissal is appropriate. It is not known, however, what level of performance is necessary for maintenance to occur. It is also uncertain whether skills will continue to improve without intervention, or merely stabilize at the post-treatment level. Many factors are obviously important in treatment dismissal decisions. It is during the maintenance phase that dismissal criteria become an issue.

Campbell and Bain (1991) reviewed outcomes as factors in treatment dismissal. They proposed a multiple outcome approach to dismissal, involving ultimate, intermediate and instrumental outcomes. Ultimate outcomes are synonymous with long-term treatment objectives, intermediate outcomes are synonymous with hierarchical short-term objectives, and instrumental outcomes are "those effects of intervention that are assumed ... to lead necessarily to other outcomes without further intervention". The concept of instrumental outcome is of most relevance to this research, as it focuses on determining at which performance level children will continue to improve without treatment. This type of outcome suggests that a client may be eligible for dismissal before they reach a level of mastery, with an expectation for continued improvement.

Fey (1986) also proposed guidelines for treatment dismissal, suggesting that treatment should end under any of three conditions: (a) when the child has reached all stated objectives and is no longer at risk for social disvalue, (b) when the child's progress toward stated goals has plateaud and efforts made to modify the intervention plan have not led to notable gains, or (c) when the child exhibits continued progress toward basic goals, but there is no evidence that the intervention program is responsible for this progress. As Campbell and Bain (1991) commented, these criteria may not be easily defined. In addition, Fey has not substantiated the above guidelines with empirical evidence.

Similarly, Gantwerk (in Eger, 1988) suggested that children be dismissed from therapy in a school system if: (a) the behaviour of concern has been eliminated, (b) the student is performing at a predetermined level or is within normal range, (c) the behaviour has not changed over a predetermined amount of time, or (d) there is documentation to show that the variables of frequency, intensity, type of service, intervention strategy, and service providers have been manipulated. Again, the dismissal guidelines have not been operationally defined or substantiated with empirical evidence.

Guidelines for dismissal such as those proposed above provide direction for clinicians. The level at which mastery level performance will maintain without intervention, or emerging performance will continue to improve without intervention, remains elusive. More specific criteria are necessary to determine these critical performance levels.

A few authors have suggested specific performance criteria for making treatment dismissal decisions. A commonly used dismissal criterion for children with phonological disorders is at least 90% correct production (Hodson & Paden, 1991; Eger et al., 1986; Bosley, 1981). Eger (1986) reported that clinicians adopted, "almost uniformly ... conversational proficiency levels in excess of 90%". The efficacy of treating targets to such high accuracy levels is questioned by the work of Elbert, Dinnsen, Swartzlander and Chin (1990), who reported that, "many children do generalize correct sound production to conversational speech without direct treatment on conversational speech". Even with a dismissal criterion of 93%, Eger (1988) reported that half of the subjects continued articulation treatment for five to eight weeks after attaining the criterion.

Other research noted that children remained in treatment for six to eight weeks after a 100% accuracy level was achieved (Eger, 1988). Further, Eger (1988) noted that 50% of the time spent in articulation treatment was devoted to the retention of criterion behaviour. These findings emphasize the potential enormity of wasted caseload time and the need for consistent, data-based dismissal criteria.

The few data-based studies that have been conducted indicate that dismissal criteria well below 90% may be sufficient. Diedrich and Bangert (1980) provided evidence to support a dismissal criterion of 75%. In their study, which focused on the phonemes /r/ and /s/, public school clinicians kept children in treatment for an average of six to eight weeks after reaching an accuracy level of 100% in conversation. Diedrich and Bangert also found that less than 19% of the children with a conversational accuracy level of 75% or better regressed after a four-month treatment rest. Furthermore, they reported that 11% of the children below 75% accuracy on /r/ and 13% of the children below 75% accuracy on /s/ had an accuracy level over 75% after the four-month treatment rest. They recommended treatment be ended at a 75% accuracy level.

Similarly, Olswang and Bain (1985) studied single-word production phoneme acquisition and the effects of treatment withdrawal on the acquisition process of three phonologically impaired children. Treatment of target phonemes

was withdrawn at predetermined performance levels (30%, 75%, and 100% success). Results of their study indicated that, for many phonemes, treatment could be withdrawn early in the acquisition process without disruption. No phonemes in the study, regardless of level of accuracy, regressed in performance. Olswang and Bain (1985) suggested two models of phoneme acquisition resulting from treatment. In the first, treatment is necessary only until the child has 40-75% production accuracy with the target phoneme, or until a rapid increase to a high level of performance occurs. In the second model, more prolonged treatment is necessary, as a 75-100% accuracy level over a long period of time must be achieved. They noted that research has not yet determined which phonemes respond optimally to which treatment model, or what the optimal criterion levels are. They suggested future research focus on determining "which child characteristics and/or sound error characteristics might be related to differences in the acquisition process", and recommended that, until those characteristics are documented, clinicians are advised to monitor sound acquisition closely to best decide which model to implement.

Dismissal criteria are a vital component of accountable and efficient phonological treatment. Despite the crucial role of dismissal criteria, it remains a scantily researched topic. Research has indicated that phonemes with an accuracy in excess of 75% may continue to improve without further treatment (Diedrich & Bangert, 1980; Elbert, Dinnsen, Swartzlander & Chin, 1990; Olswang & Bain, 1985). There is no empirical evidence on which to base predictions of maintenance for phonemes with an accuracy below 75%. It appears reasonable to expect that the maintenance of phonemes with accuracy levels approaching 75% would be superior to those at lower levels. Olswang and Bain's (1985) research indicates that 40% may be a minimum performance level at which continued improvement without intervention could be expected.

This study investigated the effects of a non-treatment period on the maintenance of phoneme accuracy in three distinct performance categories. Each category was investigated separately because it was hypothesized that distinct maintenance profiles may exist for each level of performance. In addition, a ceiling effect was predicted for the high accuracy group, which would bias comparisons between the groups.

The following specific research questions were addressed:

1. Is there a difference between the post-treatment and follow-up accuracy of phonemes at the *mastery* (75%-100%) level?
2. Is there a difference between the post-treatment and follow-up accuracy of phonemes at the *transitional* (40%-74%) level?
3. Is there a difference between the post-treatment and follow-up accuracy of phonemes at the *emergent* (0%-39%) level?

Method

Subjects

Participants were seven male volunteers, between four years, five months and seven years, five months of age at post-treatment. The mean age at post-treatment was five years, ten months. All were monolingual (English), phonologically impaired children who received treatment at Corbett Clinic, University of Alberta. The phonological difficulties of the subjects ranged from mild delays involving few phonemes to more severe disorders involving many sounds across multiple sound classes. Combined, the subjects had 57 error sounds, 16 of which were targeted in treatment. Two subjects had exposure to a second language; one German and one French. All had receptive language skills within the normal range, normal hearing, and normal speech mechanism structures according to screenings and/or assessments conducted by the subjects' clinicians.

Each subject's post-treatment age, diagnosis and information on error phonemes are included in Table 1.

Materials

Materials included an audio tape recorder (Sony WM-D6C) with an external microphone (Sony ECM-121), and 4x6 inch cards with coloured pictures to elicit phoneme production in words. Fifteen picture cards were used for each target phoneme, five cards each for initial, medial, and final position (adapted from Elbert & Gierut, 1986). Medial positions were obtained through morphophonemic alternation (i.e., pig, piggy; run, running).

Procedure

A single-factor, within-groups experimental design was used. The factor was stage of treatment, having two levels: post-treatment and follow-up. For the purposes of this study, maintenance was measured through comparison of phoneme accuracy at these two levels. The design was applied to three distinct categories of phonemes. The three categories were as follows:

1. Mastery level (n=14): All phonemes with a post-treatment single-word accuracy level of 75%-100%.
2. Transitional level (n=13): All phonemes with a post-treatment single-word accuracy level of 40%-74%.
3. Emergence level (n=30): All phonemes with a post-treatment single-word accuracy level of 0%-39%.

Table 1. Individual Subject Description and Data

Subject	Post-Tx Age	Diagnosis	Phoneme	Group	Pre-Tx%	Post-Tx%	Follow-up%
D.B.	6:2	mo. AD	θ*	E	14	13	21
			ʤ*	T	33	40	33
			r	E	0	0	0
			ð	E	25	0	11
			z	E	0	43	47
			ʧ*	E	31	33	33
			s	T	53	66	73
			ʃ*	E	33	33	33
T.S.	5:5	mo. PD	r *	E	0	0	0
			ʧ	E	33	0	20
			l*	E	0	20	* *
			θ	E	0	0	* *
			ʃ	E	53	<1	33
			s *	M	86	100	100
			ʤ	E	33	0	13
			ð	E	0	0	0
			z	T	60	47	40
			v	T	53	53	33
P.D.	7:5	mi. AD	z	E	0	27	33
			s *	T	<1	73	20
			ʤ	E	0	0	100
			θ	E	75	<1	86
			ʃ*	T	71	42	100
D.S.	4:4	mi. PD	g *	M	66	80	93
			r	M	94	100	100
			θ	E	0	27	21
			k *	T	59	70	100
			b	M	82	93	87
			t	T	75	71	100
			p	T	78	73	100
			ð	C	0	11	33
			h	E	20	27	100

Table 1 Individual Subject Description and Data - continued

J.K.	5:10	s-p. PD	z	E	27	20	60
			ʃ *	M	0	81	87
			l *	E	13	33	53
			r	E	<1	0	<1
			f *	E	13	33	100
			v	E	27	<1	50
			θ	E	0	0	0
			ð	E	0	0	0
			s	E	0	<1	60
J.S.	6:10	mi. AD	v	M	87	100	93
		& WFD	ð	M	66	89	89
			θ	M	73	86	79
			r *	E	0	0	0
			l	M	66	100	40
			ʧ	M	87	93	100
			ʃ	M	80	100	100
P.R.	5:1	mo. PD	z *	E	20	13	93
			θ	E	0	0	0
			r	T	66	66	66
			ʧ	M	73	100	73
			ʃ	T	53	47	0
			s	M	53	93	100
			ʤ	T	66	73	59
			ð	T	0	55	55
			v	M	93	87	93
			l *	E	13	13	27

Legend: **Tx = treatment** **E = Emergent**
mi = mild T = Transitional
mo = moderate **M = mastery**
s-p = severe to profound
AD = articulatory disorder
PD = phonological disorder
WFD = word-finding disorder
***= target (trained) phoneme**
****= post-treatment measure not collected, omitted from data analysis**

emergent-level phoneme, /r/, which was treated and yet remained at 0%. Rather than a phonological disorder, J.S. had an articulation pattern to change in a motoric rather than linguistic sense. The lack of progress for this phoneme reflected difficulty with stimulability and sound acquisition. Results of an informal inspection of subject profiles, then, indicate that the group trend was followed by individual subjects in a relatively consistent manner. Results also support the need for considering sounds with no or trace occurrences separately from those with emerging but inconsistent accuracy.

Comparison of treated and untreated phonemes in the Emergent Group revealed that five of the nine treated phonemes improved, while four stayed at the same accuracy level. Apparently, only moderate treatment gains were seen for these targets. Of the untreated Emergent Group phonemes, 13 improved, and 5 remained at the post-treatment accuracy level. One untreated phoneme decreased in accuracy, but no treated phonemes decreased in accuracy.

It is encouraging to see that phonemes at the emergent level may not deteriorate in accuracy across a treatment rest, and that there is evidence to indicate that they may in fact improve. It appeared that once some correct productions were established, continued, if modest, gains resulted over the period of the treatment rest.

Conclusions

Results of this study provide some additional information on which to base treatment withdrawal decisions. Phonemes at the mastery level revealed a pattern which was entirely predictable; phonemes with an accuracy level of 75% or above did not deteriorate in accuracy across a treatment rest, and may improve across a rest period. Clinically, results of this study would suggest treatment withdrawal once an accuracy level of 75% at the word level is attained. Monitoring on a monthly basis for approximately three months would also be recommended for those phonemes. If the child has other disordered phonemes below the 75% accuracy level, treatment could focus on those phonemes while the mastery level phoneme is being monitored.

The transitional level phoneme group is one of great uncertainty regarding treatment, prognosis, and treatment rests. Some phonemes at the transitional level seemed to stabilize, others improved, and still others decreased in accuracy across a treatment rest. The group statistics were not indicative of individual performance. In effect, the improved phonemes and deteriorated phonemes served to statistically 'cancel each other out', creating an illusory indication of maintenance. The statistical description of the group data, which indicated no significant change in the accuracy level of phonemes at the transitional level, is not a valid description of the situation. Although clinical recommendations for transitional level phonemes are more nebulous than those for the Mastery Group, it would be appropriate to suggest that treatment for transitional level phonemes be reduced, and other targets below the 40% level be selected for treatment while the treated sounds are monitored. If no other disordered phonemes below 40% accuracy exist, the child could receive less intensive intervention, or be dismissed from treatment, with frequent monitoring.

The emergence level phonemes revealed a more predictable pattern of response to treatment rest than did the transitional level phonemes. They showed improvement across the treatment rest. Olswang & Bain (1985) speculated that treatment merely initiates or triggers the natural acquisition process, and the continued progress across a treatment rest is reflective of a maturational process. Perhaps limited treatment at the emergence or transitional accuracy level is sufficient to put children's phonological systems into a state of flux, and makes children aware of their sound systems, providing a base from which children independently reorganize their phonological systems. Clinically, phonemes in the Emergent Group may best be monitored for improvement during training, and a treatment rest or reduced treatment may be appropriate once substantial improvement within the 0-39% accuracy range is detected.

In summary, results for the mastery level clearly support previous research and clinical implications, which indicated that phonemes with an accuracy level of 75% or above need only monitoring. In addition, results suggested that phonemes with an accuracy level of 40-75% need frequent monitoring, while phonemes with an accuracy level of 0-39% accuracy level may show an increase if other sounds are being trained.

Several extraneous or unexamined variables may have influenced the outcome of this study. One such variable is disorder type. As indicated in the subject description, the children formed a very heterogeneous grouping with respect to the nature of their phonological impairment. It seems reasonable to expect different maintenance profiles from children with such diverse phonological skills. Closely related to the nature of the disorder is the nature of treatment. Each subject received treatment from different clinicians who undoubtedly used different approaches toward phonological remediation. Some may have been broad-based, touching on many sound classes, while others may have had a more narrow treatment focus. Generalization and maintenance patterns may have been affected by treatment type.

The accuracy level of phonemes pre-treatment and improvement over the treatment term are other factors not

considered. It seems logical to expect that sounds showing great improvement over the treatment period will have more favourable maintenance profiles than those which showed little change. It would be interesting to explore the research questions using pre-treatment to post-treatment gain as a grouping variable.

Another variable not controlled in this study was parental involvement. It was expected that parental involvement in the treatment regimes varied considerably. The amount of involvement, especially during the period of no treatment, may have affected maintenance.

Another consideration is phoneme type. Both target and untrained phonemes were included in the data. Some of the untreated phonemes were related to treatment targets, through structural and/or implicational relationships (Elbert & Geirut, 1986). Hence, generalization may have been expected. Others had no relationship to the target, and therefore functioned as true control phonemes. Informal inspection of individual data did not find distinct trends for treated and untreated phonemes, but no attempt was made to consider generalization phonemes separately from control phonemes.

A final consideration is the length of time between post-treatment and follow-up measure. Only six to eight weeks elapsed between these measures. It may be that performance decay would be seen over a longer time frame. It is also possible that improvement would be noted over a longer time frame. In either case, another later measure would contribute to the validity of the results.

This study clearly indicates that performance levels below 90% are appropriate for treatment dismissal in phonological disorders. Prognosis of sounds with performance below 75% remains uncertain. Future investigation of criterion for treatment dismissal in phonological disorders would benefit from consideration of variables such as phoneme type, pre-treatment to post-treatment gains, disorder type and treatment type, in addition to performance levels. Such investigations will provide additional data on which to base treatment dismissal decisions.

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