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Can the effects of Facilitation predict the effects of Treatment?

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In the treatment of word-finding in anomia, there has been no simple correspondence between the treatment used, the impairment and the success of the treatment. For the clinician, therapy remains something of a 'lucky dip'. Even with the best assessment and a theoretically guided choice of treatment, there is no guarantee of success. In this project we investigate whether it is possible, by using a task once (facilitation) to predict whether the same task will be successful as treatment. Participants were first given a series of tasks (e.g. semantic feature questions; repetition) and the effects of one application of these tasks on their subsequent naming was examined. Subsequently, for each individual, one task that was successful and one that was not was chosen and used repeatedly as treatment. We will discuss the relationship between the results of facilitation and the results of treatment and the implications for clinical practice.

Introduction

Over the past two decades there have been numerous group and single case studies investigating the treatment of word-finding difficulties in aphasia (eg. Howard et al. 1985b; Marshall, Pound, White-Thompson & Pring 1990; Nickels & Best 1996b). These studies have added to our ever-increasing knowledge of naming and given us clearer direction towards treating word-finding difficulties effectively. We still however, are yet to find a simple correspondence between the treatment used for naming, the impairment and the success of the treatment. In a review of treatment studies, Nickels and Best (1996a,b) found no simple relationship between functional locus of impairment and the treatment task that was most effective. Nevertheless, it is clearly in the interests of both people with aphasia and the speech pathologists treating them that the most effective treatment is given immediately. Therapy is a time consuming (and hence costly) process and relying on a 'trial and error' approach (albeit an informed trial and error approach) to select the best treatment is far from ideal. Given that no clear relationship has emerged between the type of word-finding problem and the appropriate treatment task, what is required is a means of quickly establishing that a particular treatment is likely to be effective for an individual WITHOUT having to use that treatment for several weeks to determine its effectiveness or lack of effectiveness - (as currently the case).

In our research we aim to investigate whether there is a correspondence between the effect on naming accuracy of a task performed once ("facilitation") and the effect of the same task performed on multiple occasions ("therapy"). Both facilitation and therapy involve tasks or techniques intended to assist word-retrieval/production at a later point. However, the effects of

facilitation are generally transient (lasting minutes or hours) in contrast to the effects of a successful therapy task which can produce lasting improvements in word-retrieval (Howard, Patterson, Franklin, Orchard-Lisle & Morton, 1985a,b). Both facilitation and therapy have been found to vary in their efficacy in improving word production from task to task, and participant to participant. Just as not all individuals with aphasia benefit from therapy, neither do they all benefit from facilitation. The question that concerns us here is whether the efficacy of a task when used in facilitation bears a consistent relationship to the efficacy of that task used as therapy for a particular individual. In other words, can we use facilitation to predict therapy?

In order to identify the true relationship between the success of facilitation and that of treatment, exactly the same tasks must be used in each condition: This study will do just that. A case series of individuals with word retrieval impairments as part of their aphasia will be given the same tasks in a facilitation and a therapy design. We report here the first two cases of this case series.

Method

Two individuals, JUE and DRS, participated in the study. We report first their case history and background language testing (see Table 1), including identifying their level of impairment, then the two phases of the study – facilitation and therapy.

Pre-therapy assessment

>insert Table 1 here<

JUE is a 31 year old woman with non-fluent aphasia who had a left CVA two and a half years ago. She has poor word-finding, making predominately semantic errors. She has relatively intact semantic processing and adequate repetition. She has a severe deficit in reading aloud and is unable to read aloud non-words. Her breakdown appears to be in the mapping of semantics onto a relatively intact phonological system.

DRS is a 56 year old woman with fluent aphasia who had a left CVA five years ago. Her fluent spoken output is hampered by word-finding difficulties and hesitations, in the context of relatively adequate syntax. She is often able to access partial or complete orthographic information (via writing) about a target word, and is subsequently able to access output phonology. The majority of her naming errors are semantic but she also produces phonological errors. She has relatively good semantic processing, with the auditory modality being less reliable. She has difficulty with all transcoding tasks (repetition and reading aloud), which are worse with non-word targets. DRS's breakdown appears to be at the level of mapping semantic information onto phonology.

Tasks

Two tasks were used in both the facilitation and therapy conditions – one 'semantic' and one 'phonological' as examples of the most commonly used types of task.
- 'Semantic': Feature verification e.g. DOG – "Does it bark?"
- 'Phonological': Repetition (with the picture present)

Facilitation

Details of the method and results are reported in Crofts, Nickels, Makin, Taylor and Moses (2004). Each item received one facilitation and the effect of this one-off application was assessed at least 10 minutes later. JUE showed a trend toward significant benefit from both phonological and semantic tasks. DRS did not show significant benefit from either facilitation tasks.

Therapy

Three treatment baselines were conducted. For each baseline the participant named a set of 300 pictures. The least accurately named items across these baselines were then divided into five sets, matched for frequency and length (DRS: n=50 per set; JUE: n=40 per set).

1. Semantic (S): Received semantic treatment task
2. Phonological (P): Received phonological treatment task
3. Naming Control - Semantic(NC-S): Naming controls presented during semantic treatment
4. Naming Control - Phonological (NC-P): Naming controls presented during phonological treatment
5. Unseen Control (UC)

Therapy was conducted four times a week for two weeks (Block 1), followed by a two week break, and then a second two week therapy block (Block 2). In order to monitor improvement over the two week period, each session started with a naming pre-test. This pre-test included the session's treatment set (S or P) and a naming control set (NC-S or NC-P). Semantic or phonological treatment then followed (see earlier). Both participants received semantic treatment in Block 1 and phonological treatment in Block 2.

Participants were then re-tested on all the naming sets one week after therapy and two weeks after each block of therapy to assess improvement. A conversational analysis and the control task were re-administered during the follow-up testing.

Treatment is currently underway and results will be reported and discussed in the oral presentation.

Discussion

The two individuals reported had similar types of naming impairment (impaired retrieval of phonology given relatively intact semantics), yet responded differently to the facilitation tasks. This reinforces the difficulty in predicting the correct task to use for treatment. The results of the therapy study will be the first indication of whether the use of a task once in facilitation can be useful in predicting the outcome of the same task in therapy.

References

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Test	Scores		
	n	**JUE**	**DRS**
WAB (Aphasia Quotient)		68.4	65.8
Pyramids and Palm Trees - 3 picture version	52	.90	.98
Pyramids and Palm Trees - 2 picture/1 spoken word	52	.94	.92
Pyramids and Palm Trees - 2 picture/1 written word	52	.90	.94
Auditory Synonym Judgements (PALPA 49)	30 30	HI=.97 LI=.63	HI=.83 LI=.50
Written Synonym Judgements (PALPA 50)	30 30	HI=.83 LI=.70	HI=.93 LI=.83
Non-word - reading aloud	35	.00	.17
Non-word - repetition	35	.71	.49
Real word - reading aloud	80	.46	.62
Real word - repetition	80	.89	.82
Naming Accuracy of first 100 items in the facilitation study:			
▪ % correct		.71	.57
▪ % semantic errors		.62	.56
▪ % phonological errors		.10	.12

Table 1. Background Language Testing and Naming Accuracy