Bridging the gap: Can impairment based therapy for anomia have an impact at the psycho-social level?

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Key Words: Anomia, therapy, communication disability, activity, participation, impairment.

Abstract

Background: Studies of therapy with people with aphasia tend to use impairment based and functional measures of outcome. The views of participants are not formally evaluated. In today's more patient-centred, evidence based Health Service it is important to investigate the wider-outcome of speech and language therapy.

Aims: To explore the outcome of a therapy for anomia using the Communication Disability Profile (CDP), focusing particularly on participants' ratings of 'activity'.

Methods and procedure: Overall 8 people with aphasia and conversation partners participated in the study. Following two baselines (at least 8 weeks apart), there were two phases of therapy for anomia each lasting 8 weeks. This first involved the use of spoken and written cues to aid word finding. The second encouraged the use of targeted words in connected speech and conversation. Eight weeks later, after no further therapy, participants were reassessed.

Outcome and results: Participants' word finding improved significantly, particularly after the first phase of therapy. There was a significant relationship between the group's word-retrieval scores and CDP activity ratings over the course of the study. Furthermore, all participants rated participation in activities requiring communication higher at the end than the start of the project. In addition the CDP provided the clinicians with further insights into the impact of aphasia on a person's daily life, even when they knew participants in advance of the study.

Conclusions and implications: The findings suggest that therapy which targets word-retrieval can have an impact on people with aphasia's views of their activity and participation. The findings support therapists' clinical insight that impairment based interventions can effect change beyond scores on language tests. It is important that providers of services to adults with aphasia are aware of

these results. The CDP provides useful information both clinically and for research.

Introduction

Whilst there is now strong evidence that aphasia therapy can alter specific aspects of language processing (e.g. Nickels, 2002a), questions concerning real-life impact are being raised (e.g. Hewitt and Byng, 2003). When speech and language therapists use impairment based techniques they do so in the belief that changes in the speech and language of people with aphasia will affect communication and everyday life. The people with aphasia they work with do not generally have difficulties with use of language i.e. the pragmatics of communication and the assumption is often that once the linguistic tools (e.g. understanding a different sentence structure, using more peoples names) are available, people with aphasia will utilise their improved language skills to maximise communication in daily life. There are however two caveats. First, in these days of evidence based practice, transfer of linguistic skills to conversation needs to be demonstrated objectively. Douglas et al. (2004 p. 54) review the evidence base for treatment of aphasia and state that “outcome measures employed in efficacy research to date have dealt exclusively with diminution of impairment, measuring only a small component of outcome”. Secondly, in an NHS which is increasingly aiming to be patient-centred, it is imperative that we consider the impact of therapy on the life of the person with aphasia from the individual’s own viewpoint (RCSLT Clinical Guidelines, 2005, p. 98, working in partnership). This paper focuses on the second of these areas in the context of a health service study of anomia therapy. In the study we used Swinburn with Byng’s Communication Disability Profile to explore the effects of aphasia for individual participants and to help investigate the impact of therapy on their everyday language activities.

Communication Disability Profile

The CDP (Swinburn and Byng, in preparation) offers 'a means of appraising language disability from the perspective of the person with aphasia'. It aims to redress the balance with respect to the wide variety of impairment and functionally based assessments that do not take into account the views of the individual with aphasia. It has sub-sections focusing on: (i) activity, (ii) participation, (iii) barriers and facilitators and (iv) emotional consequences of aphasia. An example of a question in the activity section (i) is 'how easy is it for you to talk under pressure?' The person responds by rating their ability on a pictorial visual analogue scale, which can then be translated into a numerical score. The participation section (ii) includes questions about things people may have to do (e.g. dealing with appointments, money, shopping etc) and things people want to do (e.g. holidays, clubs, meeting friends etc.) The section on emotional consequences (iv) includes asking people to rate their emotions in relation to their aphasia (e.g. do you feel determined? does your aphasia make you feel angry?) The profile is completed in discussion with the therapist and contains pictures to complement both the spoken and written words throughout. A great deal of qualitative information is shared when completing the profile which can be used to jointly plan therapy and formulate goals. The quantitative information from the profile is used here, with a focus on the activity section.

Therapy for anomia

A number of studies have incorporated cueing techniques to aid word retrieval (Nickels 2002a). The outcomes are often positive with regard to picture naming and some studies have investigated the effect on connected speech (e.g. Best et al., 1997).

However, there has been little systematic investigation of the views of participants with anomia before and after therapy.

Method

Eight people with aphasia and conversational partners were included. All participants with aphasia were more than a year post-stroke and had word-finding difficulties that formed a significant part of their aphasia. They had a range of types and severity of aphasia.

There were 5 points during the study when participants were assessed on a number of tasks including parts of the CDP; picture naming as a measure of word finding, control language tasks, connected speech and conversation. The design is illustrated below:

A1

Language assessments

A2

Cueing therapy

A3

Connected speech therapy

A4

Follow-up

A5

A1 and A2 were baseline assessments prior to intervention and took place 2 months apart. During this period there was regular contact with the researcher who carried out background language assessments. This design exposes any effects of ‘therapist charm’ or change as a result of assessment (Nickels 2002b). Between A2 and A3 there were 8 weekly sessions of a ‘cueing therapy’ for word-finding. This first phase of therapy was similar to that reported in Hickin et al (2002). In the current study combined phonological and orthographic cues were used to treat 100 words taken from a set of 200 which were named at all five assessments. For 50 words participants were given a single combined (i.e spoken and written) cue, and for the other 50 words they were given a choice of combined cues¹. An example of a single cue is provided in figure 1.

Figure 1 about here

After A3 there was a second eight week phase of therapy centred around using treated words in connected speech and conversation (similar to that reported in Herbert et al. 2003). Activities moved from tasks involving pictures, through structured exchanges designed to elicit treated words to conversation on topics related to treated items. The words treated included a set of 40 functionally relevant items chosen by each participant. Assessment tasks were repeated at A4, and finally there was a follow up

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¹ The results for single and choice of cues did not differ dramatically. In this paper therefore the results are collapsed across the two cueing conditions.

assessment at A5 to investigate maintenance of any therapy effects. Participants completed the full CDP at A1 and A5 and the 'activity' section at all 5 assessments.

Thus, with interruptions such as holidays and illness, participants were involved in the study for a minimum of 10 months.

Results

1) Word-finding

All participants showed significant changes in naming pictures of treated items after therapy. The findings for the whole research set of 200 items (i.e. treated and untreated items combined) are summarised for each participant in Table 1. There was significant change from scores before the cueing therapy (A1A2) to scores at A3 (Wilcoxon matched samples test, $p < 0.025$, 1-tailed) for all 8 participants. Detailed description of individual findings is beyond the scope of this paper. Of relevance here however are the following:

- i) Most participants show positive change from A1 to A2 i.e. during pre-therapy baseline, in all cases, however, this is numerically smaller than the change between A2 and A3 i.e. over the first phase of therapy².
- ii) On average there is very little change in naming from A3 to A4 i.e. over the second phase of therapy. The pattern differs however across individuals (see for example DJ).
- iii) The changes in word-retrieval were maintained at follow-up assessment (A5).

Table 1 about here

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² The change in word-finding over the first phase of therapy was limited to treated items for all but two participants (TE and PP), both of whom showed generalisation to unseen items from the first phase of therapy

2) CDP

The process of carrying out the CDP with participants with aphasia added considerable value to the study. Therapists gained a better understanding of people's views of their aphasia and their world. This was true in some cases even when the therapist and participant had known each other well prior to the study. The quantitative scores are summarised in Table 2. There was a strong correlation between people's scores on the activity section of the CDP during the baseline phase of the study (i.e. between A1 and A2, $r=0.92$, $d.f.=6$, $p<0.005$).

Table 2 about here

3) Word-finding and the CDP

- i) Is there a correlation between individual's naming and CDP activity scores prior to therapy? When the mean score from naming prior to therapy (A1A2) was correlated with the mean activity score prior to therapy (A1A2) no significant relationship was found ($r=0.22$, $d.f. 6$, n.s.).
- ii) Is there a relationship between *change* in word-finding and *change* in CDP activity rating from A1 to A5 (only activity ratings were completed from A1 through to A5, so it was not possible to answer this question for other sections of the CDP)? This question was answered with data averaged from the 6 participants for whom it was

complete. The results, illustrated in Figure 2 below³, show a significant relationship (Spearman rank⁴ $r=0.82$, $df=3$, $p<0.05$, 1-tailed).

- iii) What were the patterns for individual participants? The patterns were very varied. One individual (TE) showed a near perfect relationship between word-finding and CDP activity rating across the 5 occasions. Others provided varied numbers at different points in the study and these could not all be related in a straightforward way to events in their lives. For example, one participant (CM) obtained employment during the study (after A3). His CDP activity score following this showed a big dip relative to his other CDP activity ratings. Another participant (LM) underwent chemotherapy during the study and her views of her activity remained stable despite the stress and physical illness she experienced during this period. During this time the improvement previously seen in her naming regressed to improve again later (see table 1).
- iv) What about the sections of the CDP used only at the start and end of the study (A1 and A5) i.e. before and after the change in naming? Information on 'emotional consequences' and on 'participation' was available for 7 of the participants (sadly one person, CV, died during the course of the study). Four showed a change in a positive direction with respect to 'emotional consequences', one was stable and two

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³ The y-axis for naming and the y-axis for CDP activity rating are not meaningfully related. The two lines are shown on the same graph for ease of comparison. It is the relationship between the two lines across the 5 occasions that is important.

⁴ A non-parametric test is used here as the relationship is investigated over only 5 occasions of testing.

gave less positive views at A5 than A1, one of these was LM who had undergone chemotherapy. All 7 participants viewed ease of participation as greater at the end than the start of the study; this was a statistically significant change (Wilcoxon matched pairs test, $z = -2.3$, $p < 0.025$). The greatest change in rating, from 42% to 83%, was given by the man (CM) who obtained employment.

Discussion

1) Word finding

The study adds to those in the literature demonstrating significant effects of cueing therapies on word-finding abilities in adults with aphasia. The tendency to find changes limited to treated items highlights once again the importance of choosing items of functional relevance for each individual. The strong maintenance effects are very positive.

2) CDP

The study benefited considerably from inclusion of the CDP (Swinburn and Byng, in preparation). The participants with aphasia were generally positive about the experience of completing the profile despite some very difficult issues being raised. The therapists gained greater insight regarding the impact of aphasia on the daily lives of the participants which could usefully contribute to the planning of therapy and goals.

In the manual the authors caution against inappropriate use of the CDP. This might include administering the profile in the absence of resources to support the person with aphasia with any issues that arise. This is of particular importance when considering use of the CDP in research projects where there may be limited opportunity for follow-up. Finally, we would suggest that the profile should be completed only when the person with aphasia and therapist already know one another and not in the first few sessions of meeting (this was avoided in the present study which took place in an NHS setting).

The finding of a highly significant correlation between CDP activity scores at A1 and A2 suggests participants were using the profile in a similar way on the two occasions. The CDP activity section appears to have good 'test re-test reliability' and this warrants investigation with more people. This is an important finding as individuals' ratings of their communication can vary widely across occasions of testing (Hickin et al., 2006).

3) Word-finding and the CDP

- i) The lack of a relationship between word-finding and CDP activity score prior to therapy is not surprising. People with very similar scores on a naming task can communicate very differently from one another in conversation. In addition, the activity rating is made up from several sub-sections. This adds to the potential for confounding factors to exert influence on the activity rating score (e.g. use of nonverbal strategies, discrepancies between spoken and written language). The participants in this study also varied greatly in terms of the support that they had available to potentially mitigate the effects of their communication

impairment. The papers in a special issue of Aphasiology (Worrall and Holland, 2003) suggest quality of life (QOL) is not easy to measure. Whilst it may relate to communication disability (Hilari, et al., 2003) QOL does not necessarily relate to language impairment (see also Ross and Wertz, 2002). The CDP does not measure quality of life but its relationship to language functioning may be similarly complex, indeed the lack of predictable relationship between impairment and perceived disability was one of the motivating factors behind the CDP.

- ii) The relationship between change in word-finding and in CDP activity rating across the intervention study is particularly encouraging. While caution should be exercised, as the number of participants is small, the results tend to suggest that, for the group, change in word-retrieval may link with changes in activity. This relationship may be obscured in individuals due to variability but when scores are averaged across participants a significant relationship may emerge. While the change does not necessarily relate to inclusion in the therapy (correlation is not causation) the lack of increase in CDP activity scores over the baseline phase of the study (A1 to A2) illustrated above fits well with the fact therapy was not carried out during this time. Looking at the pattern of scores there is then some change in both measures over the first phase of therapy (A2 to A3), a small reduction during the second, less effective⁵, phase of therapy (A3 to A4) and finally a small increase in both during the follow-up non-contact phase. This suggests a change in impairment may be reflected in a measurable change in activity.

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⁵ This phase of therapy was less effective on average. This was not the case for all individuals, indeed one participant benefited considerably more from the second phase of therapy than from the first.

- iii) As discussed under (i) there is not necessarily any straightforward relationship between language impairment and scores on the CDP activity rating. Therapists are used to interpreting individual's scores and ratings taking into account people's wider communication and life contexts and the CDP is similar to other assessments in this respect and may itself help provide a wider understanding of the impact of aphasia on someone's life.
- iv) The change in emotional consequences for most participants and the increase in ease of participation rating for everyone in the study is perhaps our most encouraging finding. This supports therapists' clinical intuition that impairment based intervention can impact on everyday communication. In the future, studies with additional baselines are recommended. If a change in outcome measures occurs immediately following intervention it is most likely that it is the therapy that is causing the changes.

Three general points will be highlighted prior to drawing final conclusions. Firstly, it is usual in the area of aphasia therapy to make use of single case or case series designs. This study is unusual in the UK as it combines the results from a number of participants with very different types of aphasia. What was uniform in the study was the type of therapy given; the averaging across participants allowed the overall relationship between word-retrieval and participants' own views of their activity to be revealed. The pattern was not the same for all participants and we would certainly advocate considering individual profiles as well as group means in future

studies using the CDP. We would also advocate larger studies, although recognise the difficulty of collecting such detailed data from large numbers of participants over the course of a therapy study.

Secondly, the CDP provides a rich source of information on individuals' views about their aphasia and its impact on their lives. Both clinically and in research this wider picture is crucial. The focus of this paper has been on the quantitative aspects of part of the profile (the activity section which was used 5 times in our study). We highlight the relationship between this and the therapy for word-retrieval as any change is crucial to those assessing evidence of effectiveness and making decisions about service provision.

Finally, the CDP was designed to be used with adults with aphasia and the careful planning that has gone into this is evidenced by the reliability of people's ratings across occasions. The profile has the potential to be modified for use with other adult populations. Furthermore, some of the ideas could transfer to children and parents where tools for gauging views of speech and language difficulties and their impact are also lacking.

Conclusions

- ♦ The study provides further evidence that therapy for anomia can improve word-finding abilities in adults with aphasia and that these changes can last.

- ♦ The Communication Disability Profile provides a useful tool allowing exploration of a person's views of their aphasia and its consequences.
- ♦ CDP activity scores given two months apart prior to therapy were highly correlated suggesting it can be used as a reliable tool to measure peoples' views of their communication activities.
- ♦ The study demonstrates a significant relationship between change in word-finding and change in CDP activity ratings over the course of an impairment based intervention.
- ♦ All the people with aphasia rated their participation as higher at the end than at the start of their involvement in the project.

What this paper adds:

The views of people with aphasia are rarely formally evaluated in studies of aphasia therapy. In particular, the impact of impairment based aphasia therapy on peoples' views of their activity and participation has not previously been investigated.

This study suggests the Communication Disability Profile will be a useful clinical and research tool. All participants in an impairment based anomia therapy study rated their participation as greater at the end than at the start of the study and there was a relationship between change in word retrieval and change in activity ratings on the CDP over the course of the study.

The findings suggest impairment based aphasia therapy can influence individuals' views of their aphasia and their daily activities.

Figure 1: Example of picture and cues used in therapy

- 1) Participant presented with picture to name
- 2) If unable, cued with spoken and written cue: /ae/ and A
- 3) If still unable to name cued with /aent/ and written ANT
- 4) Is still unable presented with spoken and written form of whole word: “anti-biotics” and ANTI-BIOTICS.

Figure 2; CDP activity and naming scores from A1 to A5 (averaged across 6 individuals).

Key

■ CDP

◆ Naming

Table 1: Picture naming score on 200 items, A1 to A5

Participant	Assessment				
	A1	A2	A3	A4	A5
TE	143	152	182	172	182
FA	35	45	84	84	83
GB	38	29	38	48	38
CM	106	116	131	124	142
CV	96	127	167	a	a
DJ	96	109	123	153	154
PP	39	35	63	67	58
LM	100	123	148	109	121
Overall mean ^b	82	92	117		
Mean (n=6) ^c	87	94	114	112	116

^a Sadly, CV died after the second phase of therapy.

^b The overall mean provided here is for all eight participants.

^c The mean here is for 6 participants. CV is excluded. FA's scores are also excluded from this mean as she was not given the CDP at A4. In order to sensibly compare naming and CDP scores for the group across the 5 occasions of testing only 6 participants can be included (see section 3ii).

Table 2: Communication Disability Profile scores for 8 participants A1 to A5

	ET		AF		BG		MC		VC		JD		PP		ML	
(i) Activity																
Number of items	64		80		80		64		64		64		64		64	
A1	43	67%	42	53%	36	45%	35	55%	29	45%	40	63%	41	64%	29	45%
A2	44	69%	37	46%	34	43%	36	56%	30	47%	38	59%	40	63%	21	33%
A3	54	84%	47	59%	58	73%	34	53%	23	36%	45	70%	35	55%	25	39%
A4	50	78%			36	45%	25	39%			43	67%	42	66%	28	44%
A5	55	86%	54	68%	33	41%	41	64%			53	83%	43	67%	29	45%
(ii) Participation																
Number of items	12		12		8		12				12		12		12	
A1	7	58%	7	58%	4	50%	5	42%			7	58%	9	75%	3	25%
A5	11	92%	8	67%	6	75%	10	83%			11	92%	10	83%	7	58%
(iv) Emotional consequences *																
Number of items	48		48		48		48				48		48		48	
A1	19	60%	20	58%	21	56%	36	25%			10	79%	4	92%	17	65%
A5	7	85%	17	65%	20	58%	6	88%			15	69%	5	90%	29	40%

No scores are given for section (iii) of the CDP 'barriers and facilitators', because these are discussed but not rated when the profile is completed.

* In the 'emotional consequences' raw scores a reduction is a change in a positive direction, the percentage scores have been reversed to bring them in line with the other sections.

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