

## The Strands of Speech and Language Therapy in Neurorehabilitation: Weaving a therapy plan for aphasia.

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### Introduction – The ‘Strands’ of Neurorehabilitation

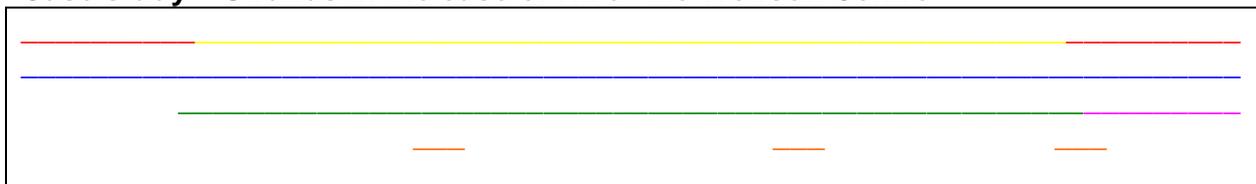
Communicating Quality 3 describes the role of the SLT in aphasia as: “Meeting the needs of individuals with aphasia in maximising their potential for recovery of language, and in developing effective conversation strategies that can be used by both the individual and those they converse with, thereby maintaining their ability to influence their environment, maintain social relationships and quality of life.”

Recent articles in Aphasiology further illustrate the wide ranging role of the SLT, covering topics from lexical retrieval and semantic knowledge (Antonucci, Beeson, Labiner & Rapcsak, 2008) through to accessible public transport (Ahston, Aziz, Barwood, French, Savina & Worrall, 2008). Years of developing an SLT service in response to client needs and research developments have resulted in tailor made intervention programmes, unique for each individual. This makes it difficult for newly qualified therapists or students to grasp what therapy approaches to consider and how to prioritise among them. We have to balance patient’s goals, meeting our professional obligations and the demands of working in a multidisciplinary team. A review of recent cases was carried out and it was found that within SLT input there were consistent themes and principles for how those themes were approached. We envisaged each area of input as a ‘strand’ of therapy, almost like colours woven into a scarf.

Assessment and feedback \_\_\_\_\_  
Goal planning \_\_\_\_\_  
Specific individualised treatment \_\_\_\_\_  
Education \_\_\_\_\_  
Friends \_\_\_\_\_ and \_\_\_\_\_ family \_\_\_\_\_  
Psychosocial adjustment \_\_\_\_\_

We see each client’s journey through their brain injury as a long scarf. At certain times in the journey one colour may be more prevalent than another but over time each colour should be represented. The client’s stay at the rehabilitation centre is just one small part of the longer scarf and so the strands we work on should be considered in the light of what comes before, in the acute stage, and after, in community therapy.

### Case study – Strands in the case of RL at the Wolfson Centre



### Assessment and feedback

The case study example will be used to illustrate the formal and informal measures used at the start and end of therapy but also how the information gathered was feedback

effectively. This strand for RL was very closely linked with the Education strand as it was important for him to really understand his particular areas of breakdown.

### Education

An important strand in the rehabilitation journey is gaining a better understanding of what has happened and what it means to live with a brain injury/ aphasia. Education was a key strand for RL as he struggled to understand what had happened to his brain and come to terms with the changes in his communication skills.

### Goal planning

SLTs are familiar with the goal planning process and RL was involved in this throughout his admission.

### Specific individualised treatment

Following assessment and goal negotiation, RL received therapy input in a variety of settings. He participated in groups, carried out computer based therapy with a SLT volunteer (who also has aphasia), had individual sessions with the SLT or SLT assistant and went on community trips.

### Friends and family

As illustrated in the diagram, although this was an important strand for RL, time and locational factors made it difficult to fully address. RL's family had developed a good working relationship with his referring SLT who was located nearer to them. This was recommended as a key goal for the community therapy team.

### Psychosocial adjustment

This strand was supported by work on brain injury education and also through joint working with the psychologist.

### Conclusions

The 'Strands' approach will be discussed from both the client and SLT perspective. Initially, RL's response and outcomes using this approach will be discussed. From the SLT perspective, using the idea of these strands when introducing new therapists to the team and with students has aided holistic thinking and ensured that patients get a more consistent approach. Treating these areas feels consistent with our philosophy and with recent research. Difficulties arise when we try to tackle all strands at once, so it has been helpful to consider what comes next and/ or take different approaches at different times during an admission. Sometimes flexibility is required as the patient's priorities change during an admission.

### Areas for discussion

- How does this approach impact on the client's experience?
- To what extent are these strands comprehensive and consistent with those provided by other services?
- How much time does it take to provide these strands? Are we attempting something that is unrealistic?
- Does this approach 'blur' the SLT role? How do we resolve clinical dilemmas
- How can we ensure good links between services? Are some strands better left to a certain time or team?

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### **An insider's perspective on language therapy**

**Author:** Sue Gilpin (person with aphasia)

This paper describes a language therapy programme from the perspective of the recipient. Having suffered a left fronto-parietal infarct she was left with right hemiplegia and severe aphasia. This language deficit was particularly devastating for someone who had been Head of English at a large Comprehensive School – the fluent speaker who loved words was not only 'lost for words' but once the teacher and now the pupil. She details the problems identified by the therapist and outlines the remedial work undertaken together with her feelings about each problem.

For her this was a 'battle royal' to regain access to her precious language and to rebuild her self-esteem which she did very successfully by gaining an MA in Education including a thesis on acquired aphasia in a young boy.

## **Video-based Conversation Training: A study on high frequency learning of everyday dialogues in aphasia**

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### **Background**

In aphasia therapy, intensive speech training for several hours per day has yielded good and long-lasting learning results (Boghal et al., 2003; Pulvermüller et al., 2001). During training the patient is not given any direct feedback by an instructor. It is important to develop and study techniques which enable patients to learn intensively on their own. There are two reasons why the computer is an ideal medium for high frequency training approaches: firstly, the intensity of the offered stimuli can be controlled by means of a clean methodology; and secondly, the patients can practice on their own and independently of therapists and relatives. Everyday communication is, to a great extent, based upon the automation of dialogue scripts in conventionalised speech acts (Lewandowski 1994). A script represents a standardised pattern of action or interaction which is put to practice in typical situations such as, for instance, in sales and shopping conversations.

### **Aims**

The therapy study presented here is about the development and evaluation of a video-based conversation training of patients with chronic aphasia. It aims at improving functional everyday communication by high frequency learning or massed practice of prototypical everyday dialogues on the computer. With the help of realistic video scenes, verbal and non-verbal patterns of interaction in conventionalised scripts are practiced intensively and in a well structured form. The present study should answer the following research questions:

Are chronically aphasic patients able to learn prototype dialogue-scripts via an intensive and highly structured video-based dialogue training?

Are there changes in the patients' quality of life?

Is it possible to use this therapy concept for supervised home training?

### **Therapy procedure**

5 patients with chronic forms of aphasia were, over a period of 10 days and for three hours per day, presented with video sequences which consisted of short dialogues typical for everyday situations with 4 to 5 sentence patterns each (such as a doctor-patient conversation). The dialogues were evaluated in analogy to the scoring procedure of the sub-test "Naming of whole sentences" of the Aachener Aphasia Test. In addition to the patients' naming performance, relevant everyday language skills were quantified before and after the therapy phases by means of questionnaires and behaviour tests. Furthermore, the training effects on everyday communication were analysed with the help of guideline-based interviews with the patients' relatives, and the therapy participants themselves were asked to subjectively assess the training success and the medium used in therapy.

## Results

The language skills of all the patients were examined before as well as after training. The evaluations based upon a comparison of the various test results showed that all the patients' performances had significantly improved from the baseline to each of the three measures ( $F=21.08$ ,  $df=12$ ,  $p<0.5$ ). The performance of trained dialogue scripts had significantly improved ( $F=18.15$ ,  $df= p<0.5$ ) and so had the performance of untrained dialogue scripts ( $F=5.406$ ,  $df= p<0.5$ ). Follow-up tests after 4 weeks and after 6 months showed that all patients' therapy effects were stable and remained on the same high level (see figure 2 and 3). The findings for the whole research set of 48 dialogue scripts (i.e. trained and untrained items combined) are summarized for each patient in table 1).

Table 1: Dialog-naming score on 48 dialogues in all four measures

	Prä	Post	F-U 4W	F-U 6M
KoM	96	117	115	117
JJ	68	82	92	86
HH	119	130	137	
IL	69	79	93	103
KM	42	65	77	72
Overall mean	78,8	94,6	102,8	94,5

\* total score=144

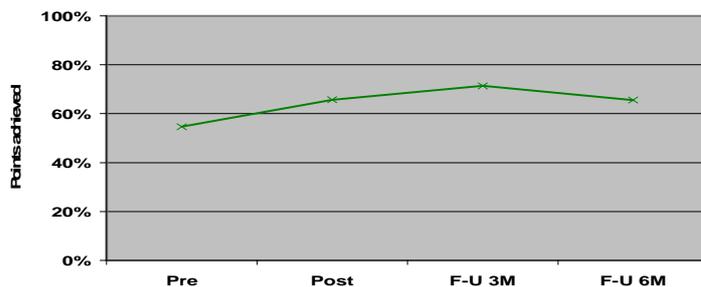


Figure 2: Percentage of dialog-naming mean scores on 48 dialogues

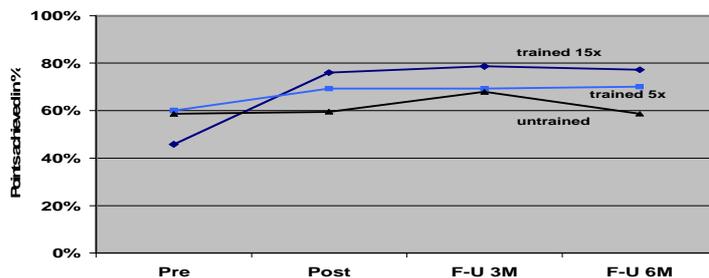


Figure 3: Percentage of mean score achieved over the course of three experimental stimuli - trained scripts (n=15), scripts trained only one time per session (n=5), untrained scripts (n = 28)

Paired samples t-tests were conducted to measure differences between the four measuring points. The results showed a significant change in naming trained dialogue scripts over the course of the whole study (i.e. between all four measures,  $F=18,15$ ,

df=12  $p > .000$ ). As for the untrained dialogue scripts, the performance improvement was also statistically significant ( $F=5.40$ ,  $df=12$ ,  $p < .021$ ).

### **Discussion**

The immediate and long-term outcome of the current therapy study demonstrates the effectiveness of intense dialogue training. The learning success cannot not only be measured directly after training, but it also stays stable for at least six months. The therapy results are reflected in improved word finding as well as in the increased use of clichés and syntactically correct sentence patterns. Relatives and patients both reported in the follow-up tests after six months that the patients could more actively and with greater self-confidence deal with speech acts (for instance, on the telephone or in shopping conversations).

### **Conclusions**

The therapy study presented here proves that computer-based speech training is particularly useful for systematic and repetitive learning. Videos are a very good medium for high frequency practice of realistic everyday speech acts. The further development of video-based speech training in the form of a supervised home training has to be seen as a most useful addition to individual speech therapy.

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## Speech-Music Therapy for Aphasia (SMTA)

**Author:** Joost Hurkmans, Clinical Linguist / Speech Language Pathologist  
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### Introduction

In daily practice of both speech-language therapy and music therapy for aphasia the verbal communicative abilities of clients occupy an important place. SMTA is a new treatment programme for aphasic speakers and/of apraxia of speech that combines speech-language therapy and music therapy. The innovative aspect of SMTA lies in the integration of speech-language therapy and music therapy i.e. *simultaneous* treatment.

### Background

The idea that music, in particular melody and rhythm, plays an important role for the enhancement of speech fluency, is not new. The best example of a therapy programme using musical elements is Melodic Intonation Therapy (MIT; Albert et al., 1973). More recent publications include Musilanguage (Brown, 2000), Modified MIT (Baker, 2001) and Conjoint Music Therapy and Speech Pathology (Kenelly, Hamilton & Cross, 2001). SMTA doesn't use language automatisms as is typical for programmes that rely on the singing of familiar songs in group setting.

### The programme

*Indication criteria and Aims:* SMTA is developed for clients with aphasia and/or apraxia of speech with fluency disorders, caused by phonological deficits as we see with Broca's and Conduction aphasia and deficits in oral motor planning and programming. SMTA can also be used for non speaking aphasics as we see with Global aphasia. To determine these deficits we use the Aachen Aphasia Test (AAT; Graetz et al., 1992), the Amsterdam-Nijmegen Everyday Language Test (ANELT; Blomert et al., 1994) and the Analysis of Spontaneous Speech in Aphasia (ASTA; Zwaga & Wijckmans, 2005). In order to participate in SMTA, clients should minimally have a positive attitude towards singing.

The treatment programme is aimed at increasing speech fluency and bring out, stimulate and consolidate verbal production.

*Methodology:* SMTA can be used deficit oriented in the acute phase as well as functional oriented in the chronic phase of the recovery process. Sessions take place at least twice a week to enhance the efficacy of treatment. Each session lasts half an hour. SMTA consists of two paths of treatment: 1. the speech-language path: sound, word and sentence level and 2. the music therapy path: singing, rhythmical speaking and speaking. These paths take place simultaneously.

*Sound level:* At this level singletons and sound-sequences can be trained. Singletons should be vowels because consonants disrupt the fluency. The selection of singletons in a sequence has to be deliberate. Distinctive features are important parameters (compare /a/ - /o/ and /e/ - /i/). Consonants are trained in a C-V syllable structure and can be build up to a cluster construction (i.e. C-C-C-V). In a sound sequence the final phoneme is always a vowel for reasons of obstruction.

*Word level:* The word level directly takes place in a functional context. We list names of family members, place names, etc. The target word is build up from the sound level. For example: /a/ to /fa/ to /fra/ to the target word /Frans/.

*Sentence level:* Individually chosen sentences, functionally relevant to the client, and daily expressions are practiced. The aim is to achieve an understandable utterance, rather than grammatical accuracy.

In SMTA the transition from singing to speaking, via rhythmical speaking, is made at all linguistic levels and every target-item. After the exercise has been sung, the melody is left out, leaving the rhythm for support. Lastly the exercise is spoken. Singing, rhythmical speaking and speaking follow one another sequentially.

The music therapy interventions are to support the speech-language exercises musically, and as such, they share the same linguistical structural build-up. The musical material consists of tone ladders and newly composed melodies. SMTA doesn't use familiar songs so that language automatisms reduce. Parameters such as tempo, metre, rhythm and dynamics increases the level of difficulty.

### **Practice Based evidence**

Much experience has been gained particularly at the Centre for Rehabilitation "Revalidatie Friesland" in The Netherlands. In the past 8 years we have treated about 80 aphasic clients. We have come to the conclusion that SMTA lowers the client's inhibition to speak and that it leads to improved fluency of speech and enhanced speech production. The repetition of speech exercises is diversified through variations in the music. The functional application of the exercises relates to the daily needs. Clients report SMTA as a pleasant training method.

### **A case study, an example**

Participant V. was a 75-year-old man, who became aphasic due to a single stroke in the left temporal areas seven months before participating in SMTA treatment. According to the Aachen Aphasia Test (AAT) he suffered from Conduction aphasia and apraxia of speech. Mr. V. received 21 SMTA treatment sessions. The entire treatment lasted 6 months. The results show improvement in related subtests on the AAT and spontaneous speech. There was no improvement in intelligibility but there was improvement in understandability in verbal communication measured by the Amsterdam-Nijmegen Everyday Language Test (ANELT).

### **Conclusions**

In clinical practice SMTA demonstrates an improvement in fluency of speech and enhanced speech production. We have recently started a project to evaluate the efficacy of the programme.

## Enhancing Communication in Aphasia through Gesture

**Authors:** Caute A, Best W, Cocks N, Cruice M, Hickin J, Marshall J, Pring T  
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### Introduction

Gesture is often encouraged by clinicians seeking to circumvent the massive language loss in severe aphasia. However, evidence for this approach is thin, whether gesture is used as a compensatory strategy or to facilitate word retrieval. Some single case studies have produced encouraging results (Rose 2006), as have a handful of group therapy studies (e.g. Helm-Estabrooks 1982, Skelly 1974). Many of these have lacked experimental design and several studies treated gesture and naming in tandem, making it difficult to evaluate which therapy approach produced the reported gains.

### Aims

This study aims to answer the following questions:

- Can people with severe aphasia learn a set of gestures?
- If so, can they use these gestures in communicative situations?
- Does using a gesture help cue naming and vice versa?
- What characteristics make a person with aphasia a suitable candidate for gesture therapy?

The project will address some of the limitations of previous research into gesture therapy. It has a group design and will compare the effects of working on gesture and naming (speech or writing). The two modalities will be treated separately but with a similarly structured approach, enabling us to evaluate which modality is more stimutable for each participant and whether progress in one modality facilitates progress in the other. The communicative efficacy of gestures will be evaluated by novel interactive tasks and student raters who do not know the participants or which stage of the project they are at. In addition, there is an optional second phase of therapy which involves a conversation partner and includes work on partner strategies and integrating gesture with other modalities. Thus, two distinct approaches will be evaluated.

### Methodology

#### *Participants*

We aim to recruit 16 people with aphasia to the first phase of the study (Therapy A) and 8 to the second (Therapy B). The recruitment criteria are: severe aphasia (scoring below 20% on the naming subtest of the CAT for both spoken and written naming), are at least 6 months post-neurological injury, English used prior to stroke (may be bilingual) and a conversation partner who is willing to be involved.

#### *Therapy method*

Therapy A centres on a set of 60 items. 30 of these are standard items for all participants, while the remaining 30 are selected by each participant. These generally include functional household items (e.g. bath, spoon, toilet), items relating to participants' and their families' interests or hobbies (e.g. walking, golf, swimming), and items relating to feelings (e.g. hungry, tired, cold). 20 items are treated for gesture therapy, 20 for naming therapy and 20 remain untreated. Therapy consists of 15 hour-long sessions with the time split equally between gesture and naming.

During Therapy B, participants continue to develop their ability to name and gesture the treated items, but in the context of interactive tasks involving their partner, e.g. passing messages, describing photos, role-play, scripts. Partner strategies are addressed and practised across a range of structured (e.g. messages) and more open tasks (e.g. discussing the news). Participants are encouraged to integrate gesture with other modalities where possible (e.g. with writing/drawing). Therapy B also involves 15 one-hour sessions.

Evaluation tasks:

*Gesturing/naming the 60 items*- participants are videoed carrying out this task and the videos will be rated by students who will first make a “blind” guess and then choose from a choice of four options.

*Message task*- participants are presented with messages relating to the items (e.g. for window: “Open the window!”/“Look out the window!”). The message is presented verbally and in written form, with a photo of the item to aid comprehension. The participant then tries to convey the message to their partner, who writes down the message. The partner’s written scripts will then be evaluated for accuracy by student raters.

*Video narratives*- participants are shown three videos at each assessment stage, depicting a simple, everyday story. They are shown each video twice and then attempt to convey the story to their partner. As in the message task, the partner writes down their interpretation of the story and this will later be rated by students.

In addition to these novel assessments of gesture, participants are initially tested for limb apraxia, semantics, working memory and spoken and written single-word comprehension.

## **Results**

Data collection is currently ongoing, with only one participant having completed all phases. Once complete data has been collected for several participants, we will compare performance on the tests at two pre-therapy baselines with post-therapy and maintenance testing. As well as these quantitative results, we will present descriptive data about the changes in accuracy and error types of participants’ gestures and in the interaction between participant and partner following Therapy B.

## **Conclusions**

This presentation will outline the design of the study and the content of the intervention. It will be illustrated with examples of our assessment and therapy materials (including the therapy manual) and videos of sessions. We will be able to present some results from several individual cases. The implications for practice will be discussed.

## **A Collaborative approach to evidence based aphasia therapy**

**Authors:** Jo Burke, Lucy Dyson, Emma Gibbs, Caroline Haw, Ruth Herbert & Dianne Webster (Department of Human Communication Sciences, University of Sheffield, UK)

### **Introduction**

Evidence based medicine is the “conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients” (Sackett et al, 1996: 71) and involves integrating clinical expertise with best available evidence. The challenge to practising clinicians involves overcoming the barriers which stand in the way of this process of integration. In this paper we describe one attempt to achieve this aim.

Clinicians working with people with aphasia base their interventions on a set of factors which can be divided into three categories: those which are personal to the clinician, such as skills and interests; those which relate to the individual including priorities and social needs; and a set of external factors such as model of service delivery.

In considering the relationship between best evidence and clinical application, one major consideration is the status of the participants in research studies. Unlike the people progressing through the healthcare system post-stroke, these participants usually have a long-standing aphasia. They are usually engaged with no other health professionals by this stage. They elect to take part, indicating that mood and social factors are generally positive. In many cases they have reached a good accommodation with the aphasia. A second consideration relates to the processes of assessment and therapy involved in research. The latter takes no account of the particular circumstances and needs of each individual and is administered in a rigorous, tightly controlled fashion, often involving control sets or control tasks. Assessment includes two or more baseline measures, and the tests may involve large numbers of items.

In view of the above, attempts to translate an efficacy study to the clinical setting can seem incongruous if not impossible. This gap between research and best practice is recognised in the literature (e.g. Dodd, 2007). Clinicians report a set of barriers which preclude the translation of research findings into clinical practice: lack of time, lack of confidence in accessing and evaluating the research literature, and lack of resources (Pennington, 2001); and a lack of appropriate evidence in particular clinical areas (Elman 2006).

Despite these difficulties there are potential ways to bridge the gap. Marshall (2006) identified a number of these including the need to limit the assessment process to that which is functionally relevant; the recognition that clinical implementation of a therapy does not constitute a replication study; and the need for more published therapy manuals.

In the project described here speech and language therapists in higher education and those practising in the NHS collaborated to devise a collaborative support system for translating the evidence base for aphasia therapy into clinical practice, evaluating the impact of therapy at the levels of impairment, activity, participation, and well being.

## **Method**

With specific individuals with aphasia in mind, a literature search was conducted to identify language therapy that could feasibly be used in the clinical setting. In terms of Robey's (2004) five phase model the intervention is at phase four, which aims to "assess the degree to which the therapeutic effect is realised in day to day clinical practice" (Robey, 2004: 405).

We wanted to determine whether the therapy made a difference in terms of impairment, activity, participation, and well-being. We devised an assessment and therapy protocol to implement within the existing clinical time constraints, involving limited baseline testing across a range of measures. The protocol was used as a framework to structure interventions and to maximise the resources available at the relevant stage of the stroke care pathway. It was therefore sensitive to the local model of service delivery.

In order to explicitly identify the impact of clinical expertise on the process we devised a format for reflection about the people with aphasia and our decision-making. Using this format we recorded our own practice systematically. This allowed us to report the aspects of each therapy that we felt had been successful, and those that had not. The information in these reports was intended to provide us with future research questions and areas of investigation.

## **Results**

To date a number of people with aphasia have received a targeted therapy conducted within the protocol. A number of other people have been considered, but the anticipated therapy could not be undertaken for a range of reasons.

We identified the following factors as important for the implementation of evidence-based therapy:

- the person with aphasia is motivated to work on their language directly and prioritised this in speech and language therapy;
- the person is able to prioritise speech and language therapy over other concerns;
- the therapist has the necessary skills and knowledge to enable them to access the literature, identify an appropriate intervention, and adapt it for an individual client;
- appropriate specialised assessments and therapy materials are readily available at the start of contact;
- where therapy or assessment materials are not available support from academic speech and language therapists is indicated.

Barriers to conducting evidence based therapy were identified. The timing of language therapy was crucial. Some individuals with aphasia prioritised other issues, such as social and family issues and the impact of the aphasia, or another area of their rehabilitation such as their mobility. In some cases the person's perception of therapy differed from the therapist's. Lack of appropriate resources was a factor for the therapists, who had limited access to web-based resources in particular, and were sometimes unable to access information or devise materials within the allotted timeframe for an individual.

The practice of reporting the therapy attempts and experience increased therapists' awareness of the decision-making process and the factors involved.

### **Discussion**

In our work to date we have shown that collaboration between clinical and academic therapists can enable the former to modify clinical practice, and the latter to develop collaborative research ideas. In order for a therapist to use a published therapy method clinically we believe that a set of criteria apply. Apart from the standard analysis of environmental factors including social situation, and the individual's interest in and need for language therapy, these involve an assessment of the suitability of a therapy for an individual. This requires access to the relevant literature and an ability to critically evaluate that literature. The experience of attempting to use published therapy methods in clinical practice has led to enhanced rigour in assessment and in administration of therapy, and an increased sense of our specialist rehabilitation skills and knowledge as speech and language therapists.

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## **Communication Friendly Ward: Access for people with invisible disabilities**

**Authors:** Debbie Stanton, Carol Hannaford and Helen Palmer (Addenbrookes Hospital, Cambridge, UK)

### **Introduction**

Following a stroke or head injury many people experience an 'invisible disability'. Aphasia is an acquired language disorder resulting from damage to the language centres of the brain. Pound, Parr, Lindsay & Woolf (2000) report that people with aphasia often describe onset as dramatic and traumatic and can leave the individual feeling disorientated and confused in the early days after a stroke or head injury. Visual problems are also common, both pre-existing and acquired, adding to disorientation. Social model practice in delivery of services to people with visible physical disabilities is now common in the public domain. Everyone is familiar with wheelchair ramps enabling access to buildings. The expansion and refurbishment of the Lewin Stroke and Rehabilitation Unit at Addenbrookes Hospital in Cambridge brought an opportunity to provide similar ramps and access for people with invisible disabilities as advocated by Kagan & Gailey (1993) and the Disability Discrimination Act (1995). A communication friendly ward would also assist people with learning difficulties, dementia, those who are illiterate and those who do not speak English.

The proposal of using colour and pictorial signage to create an enabling environment was put to the ward manager who was fully supportive and encouraging. The use of contrasting colours and large print signage aids visual navigation (Lubinski 2001). Colours of the walls, floors, doors and curtains were negotiated. However, the proposed plans did not comply with the trust corporate colours and so a number of different departments were educated about aphasia, cognitive and visual impairments as invisible disabilities, including the trust disability advisor, supplies and the patient involvement and liaison manager who agreed to run the project as a Trust pilot. Nursing, therapy and other unit staff were consulted regarding decisions that may impact on their work. The ward manager also suggested a rehabilitation unit logo competition for staff, patients and relatives to enter.

Outcomes have been difficult to measure for this project as the people it is designed to enable often have difficulty expressing their personal views and experiences. In addition the aim was to reduce the impact of people's impairments so people may not realise how the environment is helping them.

The measurements used included feedback and comments from patients, relatives and staff on moving into the newly refurbished unit and ward observations of interactions between staff and patients as part of a larger conversation training programme. The community team completed questionnaires with people who were admitted to the unit before and after the renovations.

Overall there have been very positive comments about the environment from staff, patients and relatives, not only about the ease of navigation but also around the bright and positive environment being colourful, cheerful and less 'clinical'.

On moving back to the ward one patient commented about how embarrassed he had been feeling over the previous 3 months on the temporary unit as he often returned to

the wrong bed wondering why there was somebody else there. He was now able to find his bed without difficulty.

In an observation a patient was asked where her bed was. She was unable to say but when asked the colour of her room was able to reply.

The staff have been using the bay colour names in handover and have reported it easier to visualise where patients are.

Negative comments have been few and related to personal taste, for example 'I don't like the pink'. These have been equalled by positive comments about the particular colours chosen and have stimulated discussion. Another difficulty encountered is maintaining the plain coloured curtains rather than the corporate trust blue when curtains are replaced for infection control.

The project has raised the profile of aphasia and invisible disabilities within the unit and within the Trust. If successful it may influence the 'Way finding Project' which is looking at signage across the hospital. We will be following this up to ensure that aphasia is on the agenda as future builds and renovations are undertaken.

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## Does it matter how many words we provide in anomia therapy?

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### Background

Anomia is the most prevalent symptom of language dysfunction after stroke (Laine & Martin, 2006) and can be a severely debilitating condition. Despite its prevalence and severity some fundamental questions about its treatment remain unanswered. There are currently no data available on the optimum number of items an individual with aphasia should be given in order to ensure they can relearn words. Results of the meta-analysis of the anomia therapy literature from 1986 to 2006 showed that, as the number of items an individual was given to learn increased, the amount they actually learned decreased. It also showed that those patients with milder naming difficulties made better gains in relearning. However, this result should be interpreted with caution as it also appeared that those individuals with more severe naming impairments were given more items to learn. Comparability of the studies proved problematic as they varied in many aspects, e.g. number of therapy; therapy techniques; length of therapy; intensity of therapy; aphasia type; time post onset and finally whether the studies were individual or group. Additionally, we might as therapists assume that severity will impact on what and how much is learned. However, the above data cannot confirm this. Any future studies should attempt to address the above issues and this following study has been set up to do this.

### Aims

This study was devised using case series methodology to allow us to answer directly whether there is any advantage or disadvantage in restricting the number of items given in therapy and whether the severity of the aphasia/anomia should influence therapists when thinking about how many items to provide in a therapy set. Each participant underwent the same background language and cognitive assessments so as to allow for direct comparisons to be made across cases while ensuring that individual patient detail is not lost.

### Design

There were thirteen participants who, following a left sided CVA, had chronic aphasia and word finding difficulties (mean time post onset = 4.8years). Participants underwent background language (auditory discrimination, comprehension, reading, repetition, naming, semantic tasks and picture description) and cognitive testing (auditory attention, visuospatial memory, executive functions, auditory working memory). Participants then undertook naming therapy under 2 conditions (a small set & a large set).

#### Therapy materials:

Participants were asked to name nouns, on three separate occasions, from a large battery of pictures. Items which they failed to name at least twice were then selected to make up 2 experimental sets (n=20, n=60) and 2 control sets (each of n=20). All 4 sets were matched for Celex frequency (Baayen et al., 1995), phoneme length and baseline naming ability.

### Therapy method:

Participants were shown pictures of all items to be learned in that set. If the participants failed to name an item within 10 seconds, progressive phonemic and graphemic cues were provided, for example, train = tr ai n. Therapy took place once a week for 10 sessions (taking 10 weeks in total to complete).

### Participants:

Participants were recruited from NHS speech and language therapy services and stroke clubs in North West England. For inclusion in the study the following criteria must have been fulfilled: left sided cerebro-vascular accident (CVA), minimum of 6 months post onset, no other neurological diagnosis, no significant cognitive impairment, English as first language, no visual problems (corrected vision permitted), no visual agnosia, no significant verbal dyspraxia, below normal score on Boston Naming Test (BNT, Goodglass & Kaplan, 2001) and the Graded Naming Test (GNT, McKenna & Warrington, 1983), literate pre-onset and not undergoing SLT that could impact on therapy outcome.

### Measurement of therapy effect:

Two assessments were carried out on the therapy and control items (presented in random order) i) immediately post therapy (one week following therapy) and ii) 1 month post therapy.

## **Results**

Accuracy data were analysed at both the group and individual level. The proportion gain was calculated for each individual immediately and 1 month post therapy. This allowed comparisons between the two therapy sets and took into account the different number of items individuals named at baseline. A 2 way ANOVA showed a main effect of time ( $f(2,12)=132.37$ ,  $p<0.01$ ), no main effect of set size and no interaction between time and set size. Post hoc t-tests showed significant differences between time points; baseline and immediately post therapy ( $t[12]=-13.44$ ,  $p<0.001$ ); baseline and 1 month ( $t[12]=-10.24$ ,  $p<0.001$ ) and immediate and 1 month ( $t[12]=6.83$ ,  $p<0.001$ ). As a group, participants learnt significantly during therapy and maintained their learning (compared to baseline) but naming accuracy decreased between the immediate and 1 month follow up. Immediately post therapy, 10/13 participants performed in the same way as the group i.e. they did not differ in performance between the two set sizes. Three participants behaved differently, however; SS and IH were better on the 20 item set than the 60 item set while FL showed the reverse (he was better on the 60 items set than the 20 item set). At 1 month follow up 11/13 participants performed in the same way as the group with two differing; RR was better on the 20 items set and JA better on the 60 item set. Preliminary analyses linking background language and cognitive tests with therapy results suggested that the BNT, auditory discrimination, word reading and divided attention correlated with therapy performance.

## **Conclusions**

Individuals with anomia post CVA were able to learn large numbers of words when given the opportunity. No negative effects were evident when large set sizes were given. This has important implications for clinical practice where it is uncommon for individuals post CVA to be given more than 20 words in therapy at any one time. In addition background language and cognitive testing might provide insights into how the individual will progress in therapy. This would prove invaluable in determining who will respond best to therapy and which other language skills might also need to be targeted.