

Errorless and errorful learning of verbs and nouns in aphasia: A case-series study

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Background: Verb impairments in aphasia have been the focus of considerable theoretical interest in the literature (see Druks, 2002; Marshall, 2003; Druks and Masterson, 2003). This is not reflected in the number and variety of studies investigating the efficacy of therapies for verb impairments (Conroy et al., submitted). This is despite the pivotal role verbs play in connected speech and their vulnerability in aphasic speech (ibid.). Recent anomia therapy studies have utilised errorless learning techniques (Fillingham et al., 2003, 2005abc; Abel et al., 2006). The results have been equivocal but certainly, in the Fillingham group of studies, errorless techniques were as effective for the majority of participants, and were overwhelmingly preferred by participants. There remain strong theoretical reasons why errorless learning techniques should be beneficial to, arguably, all aphasic participants, but especially those with additional cognitive impairments such as executive dysfunction (see Fillingham, 2003). Similarly, errorless learning could well particularly benefit specific linguistic forms which make greater processing demands, such as verbs (Silveri et al., 2003).

Research questions: 1. Given the accounts of relative verb or noun deficits within aphasic participants in the literature, what will the prevalence of these symptom patterns be across a relatively randomly sampled set of participants? 2. Do verbs and nouns respond in similar ways to errorless and errorful (hierarchical cueing) therapies for participants with aphasia? 3. Can we replicate the Fillingham (2005abc) finding that cognitive functioning (including, in particular, self-monitoring) predicts the degree of therapy effect for participants rather than measures of language impairment such as naming scores? 4. Does errorless learning show particular benefit for participants with cognitive impairment? 5. Given the pivotal role of verbs in connected speech, what are the effects of improved verb retrieval on sentence production and discourse?

Research design: A case-series study with errorless and errorful therapy for verb and noun naming in parallel was implemented, with nine aphasic participants of various aphasia subtypes and degrees of severity. Participants were admitted to the study having shown reliable word repetition skills (70% correct threshold on a repetition screen) so as to facilitate use of the errorless learning technique. Extensive language and neuropsychological background testing was undertaken prior to the therapy programme. A noun-verb naming screen with 44 items (22 verbs, 22 nouns which were matched closely on psycholinguistic variables) showed no significant difference between level of verb naming deficit and noun naming deficit in any participant. 120 words which had been consistently failed in naming tasks were collated for each participant. These were divided into three sets, which were matched for significant psycholinguistic variables, including length, frequency and imageability. Each set consisted of 20 verbs and 20 nouns. Set A was used in the errorless therapy, set B in errorful therapy, and set C as control items. Errorless therapy consisted of the therapist presenting the spoken and written form of the word, in the presence of the action or object picture, which the

participant then repeated five times. Errorful therapy consisted of a five stage cueing hierarchy: a broad semantic cue; a narrow semantic cue; an initial phoneme and grapheme cue; an initial consonant vowel phoneme and grapheme cue; and, finally, a whole word phonological and graphemic cue. These therapy protocols were devised with the specific aim of contrasting the learning conditions strongly in terms of error occurrence. In the errorless therapy, 80-100% correct naming trials were anticipated; in errorful, 20-60%. These items were presented twice, resulting in 10 naming trials per session, ten therapy sessions in total. Post therapy, naming of all items across the three sets was re-assessed, alongside measures of sentence production using learnt verbs, and discourse measures (Cookie Theft picture descriptions, and the QPA).

Results: All participants showed significant therapy effects across both errorless and errorful therapies. There were significantly greater improvements in noun naming over verb naming for three participants who were the most naming impaired at baseline. There was a significant errorless over errorful learning benefit for one participant, who showed marked phonological impairment and a tendency to reinforce her own consistent phonological errors in the errorful therapy. Errorless learning showed a non-significantly greater effect over errorful learning for seven of the nine participants. Nouns showed a non-significantly greater therapy effect over verbs for five of the nine participants. The remaining data are presently being analysed.

Discussion: Question 1: Despite the many accounts of relative verb or noun naming deficits in the literature, no such dissociation in naming was found in any of our participants who displayed various aphasia sub-types and a range of severity levels in language. 2: Verbs and nouns respond to errorless and errorful therapy in a strikingly similar way in participants who were more moderately impaired in naming skills at baseline. Note that for these participants, the errorful therapy tended not to evoke as many errors as anticipated, as they responded correctly at early stages of the cueing process, and they learnt quickly during the therapy. For more severely naming impaired participants, nouns responded (often highly significantly) more to both therapies, and both verbs and nouns responded to a non-significantly greater extent with the errorless therapy. The errorful therapy was more notably errorful for more severely naming-impaired participants, as they would tend to respond later in the cueing process and often did not learn quickly during therapy. As we recorded naming trial responses throughout, we anticipate the 'learning curves' these will provide will reveal some interesting patterns to do with which items participants learnt, and why, and how quickly we may detect this. Qualitative feedback also showed marked contrasts between moderately and severely naming-impaired groups. The former found both therapies initially as acceptable, but as therapy progressed, found errorful more engaging, and errorless less so. The later group found errorless therapy much more satisfying and engaging, and errorful laborious and frustrating. Questions 3-5 await further data analysis, presently being concluded.

An evaluation of a treatment for word sound deafness in an aphasic patient

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Word sound deafness refers to the breakdown of auditory analysis of speech, in contrast to the preserved abilities to perceive, discriminate or identify non-speech sounds (e.g. Shoumaker et al., 1977, Kussmaul, 1877). Within cognitive neuropsychological models, the auditory comprehension of spoken language requires the functioning of several different processing components (e.g. Franklin, 1989). Within these models word sound deafness can be located at the first processing level, thus the auditory analysis component.

The objective of the present study was to evaluate a specific treatment procedure applied to a female aphasic patient (MTR) with word sound deafness, originating from a selective impairment in the auditory analysis component. Treatment involved training the ability to auditory discriminate between minimal word and nonword pairs within several different settings. The present treatment procedure presents a partial replication of Morris et al.'s study (1996), conducted with a patient suffering from word sound deafness as part of an aphasic syndrome. These authors reported their treatment procedure to be successful (discrimination of minimal pairs utilizing lip-reading). Based on the application of similar techniques as in Morris et al. (1996), Maneta et al. (2001) presented the opposite outcome after remediation of a patient with similar deficits, i.e. no significant improvements.

The current treatment investigation was planned to evaluate treatment specific effects, generalisation effects for the same but untrained material and for functionally related tasks. Within an ABA design, baseline testing was administered before and after treatment, for functionally related and unrelated tasks and trained and untrained items. Treatment specific items were minimal pairs, matched for phonemic structure, frequency and the amount of distinctive features; varying from one to three features: place of articulation, manner of articulation and voice. Training auditory discrimination of minimal pairs, was conducted with seven different tasks (e.g. discrimination of CV-syllables, word-picture-matching with phonological distractors and word-picture-verification). Within this procedure the amount of distinctive features differentiating minimal pairs, decreased hierarchically after reaching a cut-off of 90 % correct responses. Item presentation during treatment changed systematically after five correct responses within each distinctive feature condition, from an open presentation, allowing the patient to see the therapist's mouth, to a hidden presentation with no possible lip-reading.

Results of the present treatment evaluation will be presented and theoretical implications considering phonological processing will be discussed. Furthermore the overall clinical relevance will be considered, taking into account previous results from Morris et al. (1996) and Maneta et al. (2001).

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Applying the principles of Neuro-Linguistic Programming (NLP) within the context of a communication group for people with aphasia

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NLP studies the structure of how humans think and experience the world. It allows us to examine thoughts, behaviours and beliefs that limit us and to find effective ways of changing. Because of its relevance to all of communication, NLP is capable of embracing the experience of aphasia within the bounds of normality. It was decided to run a group using the frameworks of NLP and to evaluate the results.

A pilot group of six people met together for two hours once a month, over a period of six months. Each member had a degree of language difficulty following stroke, but were able to communicate with minimal support. Over the course of the first month, a measure was taken of their attitude towards their disability. The Disability Questionnaire of the CAT (Comprehensive Aphasia Test) was employed for this purpose.

The group was facilitated by a speech and language therapist and pharmacist, both of whom were familiar with NLP. During each session, the group were invited to explore various ideas that were generated from NLP frameworks, though no reference was made to the group members about their source.

Following the six month period, the Clinical Effectiveness Team interviewed the group as a whole, and collected comments arising from preset questions. The disability questionnaire was once again administered on an individual basis.

Results

The comments arising from the questions generated by the Clinical Effectiveness Team reflected the positive and vital nature of the group. The results of the Disability Questionnaire were harder to compare in a useful way, partly because of its qualitative nature and also the seasonal changes that had occurred which affected the mood of several members. (The group began in May and finished in November.) A more reliable tool to measure changes in attitude over time has yet to be established. The input for preparing the group was minimal, beyond the preparation of the mindset of the facilitators. The monthly interval between sessions enabled people from a broad geographical area to attend and to further explore ideas mooted in the group, within the context of their own daily lives. The trial group bonded sufficiently to prompt several members to continue meeting independently after the six month period.

Working with the family of a man with severe aphasia to improve conversation and manage emotions

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Acquired communication difficulties caused by aphasia affect the client and their family. Speech and Language Therapists have recently started to design and implement therapy programmes to assist the partner and family in living with aphasia (e.g. Lock et al, 2001).

In this presentation, the process and results from a single case study will be discussed where a conversation training programme was provided for the partner and family of a client with severe receptive and expressive aphasia and verbal dyspraxia. An eight week conversation training programme based on the SPPARC (Lock et al, 2001) was used with the client's partner and two adult children in a combination of small group sessions and individual sessions.

The focus of therapy was:

- Easier, more successful conversations including the sharing of strategies used by individual members of his family.
- Increased understanding of the long term nature of aphasia, dyspraxia and cognitive-communication difficulties and specific aspects of communication which have been affected.
- Support for the partner and adult children.
- Strategies to manage emotions within conversation

Conversation analysis of videos of conversation, the CAT (Swinburn et al, 2004) and the CAPPA (Whitworth et al, 1997) were carried out prior to therapy. These assessments are due to be carried out again after the therapy to investigate changes made. In depth interviews will also be taken after the therapy. At this stage it is clear that using video for assessment and as a therapy tool has generated several benefits:

- The video captures the whole conversation within a specific context (which cannot be captured through interview or rating scales).
- It enables the therapist and participants to share the data that they are hoping to improve.
- Different aspects of conversation are explored by viewing real-life examples.
- Emotions that are evident on the video can be explored more easily.
- Outcomes can be measured more objectively by the client, partner and therapist.

This work not only investigates the long term impact of aphasia for the client, his wife and two children and the need for longer term input for clients and their families, but also informs us of a specific therapy that has been carried out with the partner and children of a client with severe aphasia.

Bridging the gap between language therapy and conversation: The way towards generalisation?

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There is a fundamental assumption underlying much ‘impairment-based’ language therapy for people with aphasia, that if we can achieve improvements in language processing through ‘off-line’ task-based therapy, these changes will be accompanied by improvements in the person’s ability to communicate in an everyday setting, so-called ‘generalisation’. However our clinical experience is often that such generalisation is disappointingly poor.

This presentation will describe a therapy programme based from the outset on the dynamics of conversation. The prediction was that generalisation would thus be more likely to occur. Michele, a 44 year old bilingual woman, was working as a school teacher until her stroke in December 2004, which left her with severe expressive aphasia. She was also diagnosed as having articulatory dyspraxia, a diagnosis with which I disagreed. The reasons for this will be discussed.

When we began working together in March 2005, Michele had no functional spoken output. She and her family had been told that the prognosis for the return of speech was not good, and that AAC seemed like the way ahead. Michele was deeply distressed, regularly tearful and reluctant to accept the poor prognosis. She was highly motivated to work to regain some speech.

The therapy programme was based not on psycholinguistic assessment, but on observation of what facilitated spoken output. Michele was able to produce words and phrases easily in response to closure cues. Therapy activities were based from the outset on scenarios and role play, using closure cues and a range of self-cueing strategies to help her to initiate pseudo conversational output. These activities will be described in detail and examples shown in video.

By the end of April 2005, Michele had started to produce some spontaneous speech. Her communication skills were further enhanced by her success in developing a new strategy of sky writing. Gains continued into the autumn, by which time she was producing some longer sentences in conversation. At the same time however, signs were becoming apparent of a tendency towards agrammatism.

Possible reasons for Michele’s gains in conversational speech will be discussed, along with possible reasons for the limits in these gains. The theory underlying the therapy will be explored, including a proposition that generalisation to everyday speech might be best achieved where therapy involves from the outset the activation of the whole processing pathway.

Living with aphasia: People in partnership

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Introduction

Involving users in planning and developing services (Clare and Cox, 2003; Department of Health, 2003, 2004) is an exciting challenge. To put this into practice, speech and language therapists (SLTs) need to think 'outside the box'. They need to find creative, new therapies whereby they work in partnership with people with aphasia, enabling them to re-engage in life and move forward (Hewitt and Byng, 2003). The process is a journey of self-discovery for the therapist as well as the person with aphasia. This presentation offers a reflective analysis of partnerships between people living with aphasia and a team of speech and language therapists.

Aims

It aims to:

- Briefly review relevant literature on user involvement in health and social care
- Describe how two volunteers with aphasia and SLT staff worked together to:
 - a) run Conversation Groups for others with aphasia
 - b) train and educate SLT staff and students
- Outline plans for the future

Throughout the presentation, the two people with aphasia and the SLT staff will reflect critically upon events and processes.

Methodology

The therapy is an example of 'action research' (Meyer, 2000) involving collaboration between SLT staff and volunteers with aphasia. The therapists worked explicitly *with* and for the volunteers rather than undertaking research *upon* them. Together they generated solutions to practical problems. Everyone responded to events as they naturally occurred, working collaboratively and iteratively to plan, act, observe, reflect, and re-plan. In accordance with action research principles, this project is described in rich contextual detail. Videos, pictures, and photographs provide documentary evidence. They describe events which took place and incorporate the values and beliefs of those involved.

Results

Results of the project are the regular involvement of volunteers with aphasia in service planning and delivery, the organization of 10 Conversation Groups during the last two years, the establishment of an embryonic, long-term, self-help group for people with aphasia, and the development by the volunteers of their own goals for the future.

Issues for Discussion

The presentation will offer the opportunity to discuss a range of issues including the practical insights of people with aphasia as experts in their own conditions, the influence of their prior knowledge and skills, the ethics of involving them as volunteers, the need for the staff to avoid 'tokenism', and the personal differences of both staff and volunteers.

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