



**University of
Reading**

**School of Psychology &
Clinical Language Sciences**



British Aphasiology Society

Research in Progress Meeting

10 April 2008

Programme & Abstracts

Programme

9:45 - 10:15	Registration & coffee
10:15 - 10:20	Welcome
10:20 - 11:00	R. Varley (Sheffield) "Testing sentence processing in severe aphasia"
11:00 - 11:20	Coffee break
11:20 - 12:00	J. Druks (UCL) "Object and action naming in aphasia and dementia"
12:00 - 12:40	A. Whitworth (Newcastle) "Predicate argument structure deficit with intact verb retrieval: it's not all about verbs"
12:40 - 1:00	General discussion
1:00 - 2:00	Lunch break
2:00 - 2:40	J. Doleman & C. McCann (Auckland, NZ) "Verb retrieval in non-fluent aphasia: A clinical study"
2:40 - 3:20	J. Hunt (Southmead Hospital, Bristol) "Sentence processing therapy through simulated conversation: Challenges and implications"
3:20 - 3:35	Tea break
3:35 - 4:15	C. Salis & S. Edwards (Reading) "Task effects when testing syntax in aphasia"
4:15 - 4:30	General discussion

1. Sentence processing in severe aphasia

Rosemary Varley, Carrie Ankerstein & Vitor Zimmerer (Human Communication Sciences, University of Sheffield).

There are claims that people with aphasia have residual language competencies that are obscured by more superficial performance deficits. For example, impaired phonological working memory or lexical-semantic failure might mask residual grammatical competencies. We examine the evidence for retained grammatical competence in severe agrammatic and global aphasia through the use of two tasks: word monitoring and artificial grammar learning. The word monitoring task is an on-line method that taps, in particular, the ability to parse incoming sentences. Artificial grammar learning involves detecting the rules that govern the structure of a sequence of stimuli. We examine the performance of three men with severe aphasia on these tasks. The results revealed differences in performance that might indicate that their asyntactic comprehension might stem from different sources. We also provide evidence of profound deficits in sequence learning in agrammatic aphasia, indicating that severe aphasia can represent a loss of core grammatical competence.

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2. Object and action naming in aphasia and dementia

Judit Druks (Human Communication Science, University College London)

Evidence from object and action picture naming of non-brain-damaged young and elderly participants, aphasic patients, patients with Alzheimer's disease and semantic dementia, patients with modality specific naming deficits, and from a comprehensive literature review of object and action naming in aphasia is presented and critically examined. It is argued that noun-verb differences do not constitute a simple dichotomy; they are the outcome of a complex interplay of a number of contributing factors.

First, the performance pattern of non-brain-damaged young and elderly participants show that action naming is a more demanding task than object naming. This is the reason why there are many more patients with action naming deficits than object naming deficits, and patients with selective noun impairment are somewhat more impaired in (better preserved) action naming than patients with selective verb impairment, in (better preserved) object naming. Thus, a proportion of verb deficits is always due to their relative difficulty.

Second, in the case of patients with selective noun impairment – fluent type aphasic patients, semantic dementia patients and patients with modality specific naming deficits – the noun deficit is due to damage to temporal lobe structures that is said to support the meaning of objects and their names (as in semantic dementia) and/or to the selective preservation of action plans supported by frontal structures, including the motor cortex (as in patients with modality specific naming deficits).

Third, selective verb deficits are associated with more widespread and more varied lesions than selective noun deficits. This may mean that verb deficits in different patients are due to different underlying reasons – conceptual semantic, syntactic or morphological (or something else that we are unaware of at present). This may put into question the double dissociation view of noun-verb differences, according to which noun deficits are the mirror image of verb deficits.

It is suggested that in order to understand noun-verb differences we need to study patients who present with relatively large differences between noun and verb production; use abstract nouns and verbs in our materials; carry out in depth case studies of patients with selective noun-verb deficits; study patients with complex lesions involving both frontal and temporal lobe lesions; study the exceptional cases of fluent type patients with selective verb deficits and contrast them with fluent type patients with selective noun deficits and non-fluent patients with verb deficits.

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3. Predicate argument structure deficit with intact verb retrieval: it's not all about verbs

Anne Whitworth (Speech and Language Sciences, Newcastle University)

Background: Many studies reporting sentence production impairments involve participants who show some level of verb processing difficulty, and often of a magnitude that implicates this in the sentence level deficit. The semantic (e.g. Jones, 1986) and/or phonological representations (e.g. Marshall, Pring & Chiat, 1998) of verbs have been shown to be central in subsequent sentence production, leading to the development of the

lexical hypothesis. A smaller number of studies, however, highlight the likelihood of other sub-processes that underpin sentence level deficits (e.g. Mitchum & Berndt, 1994; Webster & Whitworth, 2007), suggesting a more complex set of relationships to be taken into account. As most reported cases, however, tend to have a co-occurring verb impairment, clear evidence of these sub-processes remains limited.

Subject: YR, a 62 year old woman, presented with a severe impairment of sentence production. Sentence comprehension difficulties were also present on testing, although to a lesser degree, despite YR having excellent functional comprehension. YR's production was characterised by a vast vocabulary involving all word classes, in the presence of limited predicate argument structure (PAS). Unlike the majority of cases reported in the literature, YR's verb retrieval was over 90% successful in testing and formed a healthy proportion of her output. Described earlier as "telegrammatic", at 15 months post onset, YR's communication remained very limiting, resulting in reduced confidence and engagement in social activities, despite a supportive network of family and friends.

In the presence of good semantic and phonological representations for verbs, it was hypothesised that impaired ability to construct the PAS significantly contributed to YR's performance. Whilst word order difficulties suggested likely involvement of mapping processes, increasing awareness and production of PAS was considered an earlier stage to intervene. YR would provide an opportunity to see whether PAS could be selectively targeted in therapy and whether, as might be predicted, generalised improvement would be seen that was not lexically specified as expected with a verb deficit.

Method: A cross-over design was used to assess performance following two phases of therapy. Therapy took place twice weekly, with 10 sessions per phase. Phase 1 aimed to improve production of PAS with 50 verbs while Phase 2 targeted sentence production with a further 50 verbs (all verbs required 2 arguments). At each point, performance on the full verb set was assessed to determine if effects were limited to items involved in treatment. Performance was monitored across a range of tasks and maintenance of therapy effects explored at 4 weeks post intervention.

Results: YR made significant gains in both sentence production and generation of two argument structures following phase 1 of therapy (Wilcoxon one sample test, $p = 0.001$ one tailed) and perhaps, most importantly, there was no significant difference between treated and untreated verbs. Sentence production increased equally with all 100 verbs. Following phase 2, sentence generation (given the verb) further improved significantly (Wilcoxon one sample test, $p = 0.004$ one tailed), marking change in this more difficult task. Again, improvement was not verb specific. Improved PAS was also seen to generalise to other tasks involving sentence production. Real-life gains in confidence, engagement and communication ability were both evident and reported.

Discussion: The widespread improvement in sentence production involving treated and untreated verbs suggests that YR's gains are (a) attributable to something other than the semantic or phonological representations of verbs and (b) likely to involve a general mechanism involving the creation of the PAS. The absence of a verb deficit that could account for her difficulties to any significant degree marks YR out from other reported subjects, enabling other sub-processes suggested in sentence processing (e.g. Schwartz, 1987) to be isolated. Additionally, her gains highlight the responsiveness of PAS to therapy and suggest particular generalisation patterns across tasks. This paper discusses YR in the light of other cases in the literature, the theoretical framework in which the findings are located, and the clinical implications.

References

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4. Verb retrieval in non-fluent aphasia: A clinical study

John Doleman & Clare McCann (The University of Auckland, Auckland, New Zealand)

Background: Verb retrieval deficits are a common feature associated with aphasia. Verbs are considered to carry information about phrasal structure specifications, thematic roles, argument structure and inflection and therefore may play a pivotal role in the grammatical construction of sentences. We hypothesise that an improvement in single verb retrieval will result in an improvement in grammatically well formed sentences. We report on the effectiveness of a single verb treatment study for three people with non-fluent aphasia.

Methods and Procedures: The study design was intended to replicate that of Edwards and Tucker (2006). Participants' stable baselines were established over two pre-treatment assessment points in order to discount any language change prior to treatment. The three participants then received twice-weekly single verb retrieval therapy over approximately eight weeks. Assessments administered prior to therapy were then repeated immediately post therapy and two months after therapy had ceased.

Outcomes and Results: All participants demonstrated improved verb retrieval to varying degrees. Statistical significance in verb retrieval was demonstrated by one participant. The unreliability of one of the verb naming assessments may have adversely influenced the total verb scores for the other two participants. There was a statistically significant improvement in grammatically well formed sentence construction for one participant.

Conclusions: Repetitive "drilling" treatments can produce significant improvements in verb retrieval. There is evidence of generalisation to untrained stimuli, which has clinical implications. Construction of grammatically well formed sentences appears to be associated with improved verb retrieval.

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5. Sentence processing therapy through simulated conversation: challenges and implications.

Jon Hunt (Southmead Hospital, Bristol)

Two current clients with non-fluent aphasia will be described and their therapy discussed. Therapy has focussed on verbs and on sentence level semantics through the use of wh-questions. Evidence will be presented which suggests that for both clients difficulties exist not only at the linguistic level but also at the conceptual level. Some of the therapy activities have been based on simulated conversation. The implications of this will be discussed, e.g. the anomaly that therapy can easily fail to focus on high frequency, low imageability verbs such as 'get, have, do, go'.

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6. Task effects when testing syntax in aphasia

Christos Salis & Susan Edwards (School of Psychology & Clinical Language Sciences, University of Reading)

Background: Consistency of performance across tasks that assess syntactic comprehension in aphasia has clinical and theoretical relevance. In this paper we add to the relatively sparse previous work on how sentence comprehension abilities are influenced by the nature of the assessment task.

Aims: Our aims are as follows: (i.) to compare linguistic performance across two sentence-picture matching tasks and enactment; (ii.) to investigate the impact of pictorial stimuli on syntactic comprehension in sentence types.

Method: We tested a group of 10 aphasic speakers (3 with fluent and 7 with non-fluent aphasia) in 3 tasks: (i.) Sentence-picture matching with four pictures, (ii.) sentence-picture matching with two pictures and (iii.) enactment. Similar sentence types across all tasks were used and included canonical (actives, subject clefts) and non-canonical (passives, object clefts) sentences. We compared canonical and non-canonical sentences in each task. We examined the results of all participants as group and as case-series.

Results: Several task effects emerged. Overall, the two-picture sentence-picture matching and enactment tasks were more discriminating than the four-picture condition. At the individual level performance across tasks contrasted to some group results.

Conclusions: Our findings revealed task effects across participants. We discuss reasons that could explain the diverse profiles of performance and the implications for clinical practice.

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