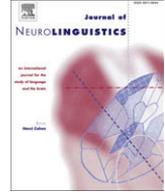




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Semantic vs. word-form specific techniques in anomia treatment: A multiple single-case study

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ABSTRACT

This study compared a semantic and a phonological/orthographic approach to the treatment of word-finding difficulties in a case-series of ten individuals with aphasia, using a cross-over design. The study aims to investigate whether one approach is generally more effective than the other or whether the effectiveness of the two treatments relates systematically to the nature of the underlying functional impairment within the framework of a modular single-word processing model.

In both treatments, the main task was spoken naming of pictured objects with different types of cues. In the semantic approach, different aspects of the target semantic concept were used as a cue in picture naming, while in the word-form method, both phonological and orthographic information were provided as a cue.

Treatment effects were assessed in terms of both short- and long-lasting effects on spoken picture naming accuracy in each participant after the end of each treatment phase. Here, both item-specific effects and a possible generalisation to untreated pictures were considered. In addition, the immediate effects of the phonological and the semantic prompts were analysed.

With regard to the cue effects on immediate naming, the word-form specific cues proved stronger than the semantic cues. The semantic treatment phase on the other hand, produced more stable effects than the word-form specific phase in some participants. A direct relationship between specific treatment effects and underlying functional deficit pattern was not confirmed for all subjects, i.e. participants with post-semantic anomia benefited from the semantic approach and participants with semantic anomia benefited from the phonological/orthographic approach.

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In the discussion of the results different explanations are considered, including the importance of preserved functions which aphasic participants bring into the treatment, the possible acquisition of a conscious strategy, and the possible influence of order of treatment.

The effects of the two treatments are interpreted with regard to their underlying functional mechanisms in a single-word processing model.

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1. Introduction

Word-finding difficulties are a common symptom in aphasia (Goodglass & Wingfield, 1997; Nickels, 1997). It is generally known that they can result from different underlying functional impairments. In “semantic anomia” word-retrieval deficits reflect incorrect, incomplete, or underspecified semantic representations (Hodges, Graham, & Patterson, 1995; Howard & Orchard-Lisle, 1984), hence, lexical target entries do not receive enough activation from the semantic system to be retrieved from the output lexicon. Word-finding difficulties can also result from a post-semantic deficit at the level of the phonological (or orthographic) output lexicon itself (“post-semantic anomia”). In this case, semantics may be totally preserved whereas access to the output lexicon (“classical anomia”) (e.g. Lambon Ralph, Sage, & Roberts, 2000) or the lexical representations themselves (“lexical anomia”) (e.g. Howard, 1995) may be impaired (see also Gainotti, Silveri, Villa, & Miceli, 1986; Howard & Gatehouse, 2006; Howard & Orchard-Lisle, 1984).

The functional deficit underlying a patient’s anomia is not predictable from surface symptoms in spontaneous speech or spoken naming (Nickels, 2003, 2004). For example, central-semantic deficits and deficits at the level of the phonological output lexicon may both surface as semantic paraphasias (Caramazza & Hillis, 1990; Howard & Franklin, 1988; Nickels, 2004), and patients may also produce semantically related word errors when they consciously try to compensate for their word-retrieval impairment (Goodglass & Wingfield, 1997; Nickels, 2003). Similarly, phonological errors in naming may also be caused by different functional impairments: They may result from a deficit at the level of the phonological output lexicon, or from a post-lexical deficit at the phonological encoding or the phonological output buffer level (Buckingham, 1992, 1993; Butterworth, 1979; Kohn & Smith, 1994; Nickels, 2003; Nickels & Howard, 1995; Shallice, Rumiat, & Zadini, 2000).

In the treatment of word-finding difficulties, tasks focusing on word form (phonological/lexical techniques) or word meaning (semantic techniques) have both been demonstrated to be effective (e.g. Hillis, 1998; Hillis & Caramazza, 1994; Howard, Patterson, Franklin, Orchard-Lisle, & Morton, 1985a; Nickels & Best 1996b). However, no single task has been found to be universally effective for all individuals with impaired word retrieval (Nickels, 2002; Nickels & Best, 1996a).

Some authors postulate a direct relationship between the underlying functional deficit and specific effects of a particular treatment task (e.g. Miceli, Amitrano, Capasso, & Caramazza, 1996; Nettleton & Lesser, 1991). Semantic tasks are argued to be effective for individuals with semantic impairment, and phonological tasks for those with impaired retrieval of phonology. However, other authors have found both semantic and phonological techniques to be effective for the same patient (e.g. Hillis, 1998).

With regard to the stability of effects, some authors reported longer-lasting effects for semantic than for phonological tasks (e.g. Howard et al., 1985a; Patterson, Purell, & Morton, 1983). Generalisation effects also appeared to occur more often after semantic than after phonological treatments (Nickels & Best, 1996a, 1996b). However, several authors provided evidence that word-form specific approaches (phonological, orthographic) may result in long-term improvement and may generalise to untreated items as well (e.g. Best, Howard, Bruce, & Gatehouse, 1997; Hillis, 1998; Miceli et al., 1996; Raymer, Thompson, Jacobs, & Le Grand, 1993; see also Howard, 2005). Howard (2005) therefore suggested that the effectiveness of semantic and phonological techniques may be based on a common mechanism.

Some authors argue that generalisation effects are more likely to occur in patients with an underlying semantic deficit (and after semantic therapy) than in patients with (post-semantic) lexical access deficits (e.g. Miceli et al., 1996). The reason is that the semantic system and the phonological

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