

Semantic Assessment Battery for Malay-speaking Dysphasics

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Abstract

There are no formal language assessment tools for the 200m Malay-speakers in SE Asia. To support evidence-based practice with the Malay-speaking dysphasic population, six computerised subtests for both auditory and written input modalities, was developed using the principles of cognitive neuropsychology: Word-to-Picture Matching (WPM), Picture Naming (PN), and Semantic Matching (SM), for Malay nouns and verbs. Normative data ($N=63$) revealed effects of modality (oral > written) in PN, word class (nouns > verbs), and processing modality (receptive WPM > expressive PN). These conventional effects were particularly marked in the normal elderly (>60 years) probably as a result of limited educational opportunities.

Semantic Assessment Battery for Malay-speaking Dysphasics

The paucity of formal language assessment tools for the Malay-speaking population in SE Asia means that local speech and language pathologists (SLPs) are obliged to rely on batteries developed for unilingual English speakers to assess dysphasic patients. This presents a major problem for evidence-based practice because test items are often culturally inappropriate and norms will not be reliable even if tasks have been translated with due sensitivity (see Roberts, 2001).

The ideal progression in the rehabilitation of dysphasic patients is as follows: identifying the level of breakdown in language, providing therapy for that level of breakdown, predicting the pattern of recovery and lastly, evaluating the outcome of treatment (Nickels & Howard, 1994; Nickels, 2000). Cognitive neuropsychological models of normal language processing support this approach, e.g., PALPA (Kay, Lesser & Coltheart, 1992) and CAT (Swinburn, Porter & Howard, 2004) and allow SLPs to pinpoint, by a process of hypothesis testing, which language processes are impaired and which processes remain relatively intact (Kay & Terry, 2004). Thus the main aim of this study was to develop a language assessment battery for Malay-speaking dysphasic patients using the principles of cognitive neuropsychology (see Figure 1 for basic model).

Method

The design of the subtests described below facilitates examination of the effects of several variables that are important for effective evidence-based practice, notably modality (oral vs. written), word class (nouns vs. verbs) and processing modality (receptive vs. expressive) on normal Malay language processing.

Test 1: Auditory word to picture matching (WPM). This test involves the identification of a picture, amongst three distractors that matches a target word presented auditorily. Performance on this test requires the processing of the spoken word through the *Auditory Analysis*, *Phonological Input Lexicon* and *Lexical Semantics* modules. The pictures are processed by the *Visual Object Recognition* and *Object Concepts* modules. Information from the *Lexical Semantics* and *Object Concepts* modules are then compared to find the match.

Test 2: Written word to picture matching (WPM). This test is the written equivalent to Test 1. Thus, instead of auditory processing of the word, in this test, the word is processed by the *Orthographic Analysis* and *Orthographic Input Lexicon* modules before reaching the *Lexical Semantics* module.

Test 3: Oral picture naming (PN). This test involves the oral naming of a picture (line drawing) presented visually. Performance on this test requires the processing of the picture by the *Visual Object Recognition* and *Object Concepts* modules. Information from the *Object Concepts* module would then be fed into the *Lexical Semantics* module which in turns activates the phonological form of the word through the *Phonological Output Lexicon* and *Phonological Output Buffer*.

Test 4: Written picture naming (PN). This test is the written equivalent to Test 3. Thus, instead of activating the phonological form of the word, the orthographic form is activated through the *Orthographic Output Lexicon* and *Orthographic Output Buffer*.

Test 5: Object semantic matching (SM). This test involves matching a given target picture to one of two pictures which has the closest semantic relation to the target. Performance on this test requires the processing of each picture by the *Visual Object Recognition* and *Object Concepts* modules. The information from each of the three pictures is then compared at the *Object Concepts* module such that the one which best matches the target would be identified.

Test 6: Lexical semantic matching (SM). This test is the written equivalent of Test 5. Thus, instead of processing at the *Object Concepts* module, the site for comparison would be at the Lexical Semantics module after each word is processed by the *Orthographic Analysis and Orthographic Input Lexicon* modules.

Results and Discussion

Normative data for the six subtests were obtained from 63 neurologically-intact Malay-speaking adults from three age groups: 20-40, 41-60 and above 60. Overall, the tests were found to be internally reliable and have already proved useful for enhancing evidence-based practice. Importantly, the study revealed conventional modality effects (oral > written) in Picture Naming, word class effects (nouns > verbs), and processing modality effects (receptive WPM > expressive PN). These effects are consistent with previous reports for English-speaking adults but they were particularly marked in the normal elderly (>60 years) Malay-speaking population probably as a result of limited educational opportunities.

References

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Figure 1: Cognitive Neuropsychological Model of Language Processing

