

# The Bilingual Brain: Bilingual Aphasia

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Since most people in the world know more than one language, bilingual aphasia is an important line of research in clinical and theoretical neurolinguistics. From a clinical and ethical viewpoint, it is no longer acceptable that bilingual aphasics be assessed in only one of the languages they know. Bilingual aphasic patients should receive comparable language tests in all their languages. In the present work, language recovery of 20 bilingual Friulian–Italian aphasics was investigated. Thirteen patients (65%) showed a similar impairment in both languages (parallel recovery), four patients (20%) showed a greater impairment of L2, while three patients (15%) showed a greater impairment of L1. Despite the many hypotheses advanced to account for nonparallel recovery, none of them seems to provide satisfactory explanations. The study of bilingual aphasics with parallel impairment of both languages allows us to verify the hypothesis whereby grammatical disorders in aphasia depend on the specific structure of each language. As far as rehabilitation programs for multilingual aphasics are concerned, several questions have been raised, many of which still need a satisfactory answer. © 2001 Academic Press

*Key Words:* bilingual aphasia; language assessment; language recovery; language treatment.

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## *Describing Bilingualism*

According to current linguistic, psychological, and neurolinguistic approaches, the term “bilingual” refers to all those people who use two or more languages or dialects in their everyday lives (Grosjean 1994). In this presentation, dialects are subsumed under the term “language.” Actually, at the linguistic level no objective criteria to distinguish between languages and dialects have been proposed so far (Pinker 1994), and at the neurolinguistic level the question whether the structural distance between two languages or two dialects or between a language and a dialect may affect their respective cerebral representation is still under debate (Paradis, 1995).

Several neuropsychological studies suggest that it is not correct to consider bilingual subjects as “two monolinguals in one person” (Grosjean, 1989). Indeed, bilinguals do not necessarily need to have a perfect knowledge of all the languages they know to be considered as such. The extremist view of the “perfect” bilingual derives from a language culture which is essentially monolingual. Bilinguals acquire and use their languages for different purposes, in different domains of life and with different people. For example, a Canadian born in Quebec may acquire Quebecois as mother tongue (L1) and use it with his or her family and friends; standard French as a second language (L2), being the official language of education; and English as a third (L3) language, the latter not being used everyday but, for example, to write scientific manuscripts or give lectures at international congresses. Irrespective of the degree

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of knowledge this person has of these three languages, he or she should definitely be considered a bilingual.

Given these methodological premises, at present more than half of the world population is multilingual (Grosjean 1982, 1994). As a direct consequence, multilingual individuals suffering from developmental or acquired speech or language disorders do not represent isolated and exceptional cases—as one might be inclined to think when reading the specialized literature—but rather the majority of clinical cases (Paradis, 1998a).

### *The Assessment of Bilingual Aphasia*

A systematic assessment of all the languages known by an aphasic patient is an essential prerequisite for both clinical procedures (diagnosis, rehabilitation program, assessment of progress in recovery, etc.) and neurolinguistic research on multilingualism. For this reason, Michel Paradis and associates (Paradis & Libben, 1987; Paradis, 2001a) developed the Bilingual Aphasia Test (BAT), which consists of three main parts: part A for the evaluation of the patient's multilingual history (50 items), part B for the systematic and comparable assessment of language disorders in each language known by the subject (472 items in each known language), and part C for the assessment of translation abilities and interference detection in each language pair (58 items each). The BAT is currently available in 65 languages (part B) and 160 language pairs (part C). Parts B and C of this test have not been simply translated into different languages, but rather adapted across languages. For example, when adapting the BAT verbal auditory discrimination test into Friulian, English items were not simply translated. In fact, for each item the authors had to find four Friulian words that differed from each other by only one initial phoneme and could also be easily represented by a picture. Thus, the English stimuli "mat, cat, bat, hat" became "cȳoc, çoc, poc, toc" (drunk, log, chicory, piece).

The persons administering the test are not required to make any judgment: they simply write down the answers given by the patient, which will then be processed by means of a computerized program indicating for each part (B and C) the absolute number and the percentage of correct answers for each linguistic skill (comprehension, repetition, judgment, lexical access, propositionizing, reading, and writing) and for each linguistic level (phonology, morphology, syntax, lexicon, and semantics). For some parts of the test, such as spontaneous speech, description of a short story illustrated by pictures, and spontaneous writing, a thorough neurolinguistic analysis on the basis of strict, objective criteria is required. Assessment of bilingual aphasics by the BAT provides a quantification and classification of language disorders for each language, thus allowing a direct comparison of performances in the different languages known by the patient. Before the BAT, bilingual aphasia was studied using different test instruments; for this reason it was very hard to compare different studies (cf. Paradis, 1983, 1993). Therefore, previous findings should be seen as a useful starting point for a more thorough and systematic neurolinguistic analysis (Fabbro, 1997).

As pointed out by Grosjean (1989, 1998) and stipulated in the implementation manual (Paradis & Libben, 1987), when assessing residual language abilities in bilingual aphasics, a series of methodological precautionary steps should be taken: each language should be assessed on a separate day and the code-switching habits of the patient before pathological onset should be thoroughly described, e.g., asking relatives and friends for relevant information. Indeed, in some bilingual communities code switching is sociolinguistically accepted and quite common during everyday conversation (e.g., among English–French bilinguals in Montreal, Canada), whereas

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