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The BAT screening test. A very short version of the Bilingual Aphasia Test (BAT) in 8 languages

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The Bilingual Aphasia Test (BAT) remains the best suited assessment tool in multilingual populations as it is available in nearly 60 languages and dialects. For many of these languages no other tests exist to assess aphasic patients. The BAT comprises 32 tasks that allow a complete assessment of language skills at all levels of processing (word, sentence, text) and for all modalities. All tasks and all items in each task are strictly matched across the different language versions. As such the BAT provides sufficient material for a very comprehensive assessment and a step-by-step comparison of the results in the different languages of the patient (Paradis, 2011; Paradis & Libben, 1987).

However, in multilingual patients, a comprehensive assessment of all languages can be exhausting for the patients. Even the short version of the BAT (see Muñoz & Marquardt, 2008; Paradis & Libben, 1987) may be long for patients in the acute phase or for quick screening of each language in a multilingual with 3, 4 or 5 languages, for example.

1. Choose a restricted number of sub-tests and items allowing for quick screening in no more than 20 minutes per language

BAT = 32 sub-tests, 472 items (part B)

Short BAT = 22 sub-tests, 250 items (part B)

Screening BAT = 17 subtests, 117 items

Linguistic domain	Subtests (n° of the items in the screening BAT)
Phonology (37 items)	- Spontaneous speech (18-23) - Verbal auditory discrimination (42-48) - Repetition of words and pseudowords (59-70) - Repetition of sentences (71-73) - Reading aloud of words (83-87) - Reading aloud of sentences (88-91)
Syntax (27 items)	Comprehension: - Commands, from simple to complex (35-41) - Syntactic comprehension (49-58) - Reading comprehension for sentences (101-104) Production: - Spontaneous speech (18-23) - Spontaneous speech (18-23) - Verbal auditory discrimination (42-48) - Syntactic comprehension (49-58) - Contraires sémantiques (78-82) - Reading comprehension for words (97-100) - Reading comprehension for sentences (101-104)
Semantics (36 items)	- Spontaneous speech (18-23) - Spontaneous speech (18-23) - Verbal auditory discrimination (42-48) - Syntactic comprehension (49-58) - Contraires sémantiques (78-82) - Reading comprehension for words (97-100) - Reading comprehension for sentences (101-104)

	Mean administration time	Mean time for one language
French version	15 min 18 s	17 min 55 s
Other language	20 min 32 s	
Total for both languages	35 min 50 s	

Competence	Subtests (n° of the items in the screening BAT)
Comprehension (36 items)	Oral: - Pointing (30-34) - Commands from simple to complex (35-41) - Verbal auditory discrimination (42-48) - Syntactic comprehension (49-58) Written: - Silent reading of words (97-100) - Silent reading of sentences (101-104)
	Lexical access (21 items) - Spontaneous speech (18-23) - Naming (24-29) - Series (74-75) - Verbal fluency (76-77) - Semantic opposites (78-82)
Transposition (17 items)	- Repetition of words and pseudo-words (59-70) - Repetition of sentences (71-73) - Copy (92-93)
Reading (17 items)	- Reading aloud of words (83-87) - Reading aloud of sentences (88-91) - Reading comprehension for words (97-100) - Reading comprehension for sentences (101-104)
Writing (5 items)	- Copying (92-93) - Dictation of words (94-95) - Dictation of sentences (96)
Orthography (3 items)	- Dictation of words (94-95) - Dictation of sentences (96)
Transcoding (29 items)	- Repetition of words and pseudowords (59-70) - Repetition of sentences (71-73) - Dictation of words (94-95) - Dictation of sentences (96) - Reading aloud of words (83-87) - Reading aloud of sentences (88-91) - Copying (92-93)

2. Standardize the French version of the screening BAT with 65 healthy bilinguals speaking one of the other languages.

Language	L1	L2	Total
French	22	43	65
German	6	0	6
English	9	15	24
Arabic	0	1	1
Spanish	7	3	10
Italian	2	0	2
Portuguese	18	3	21
Russian	1	0	1
Total	43	22	65

3 age groups:

- 25 - 45 years
- 45 - 65 years
- > 65 years

2 education levels:

- less than 10 years (low level)
- more than 10 years (high level)

Fig. 2: Proportion of subjects per score

■ 107 à 109 points ■ 110 à 112 points ■ 113 à 115 points

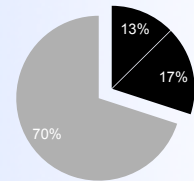


Fig. 1: Proportion of subjects per score

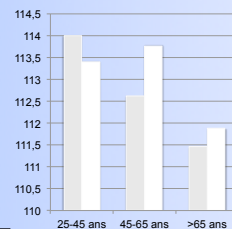
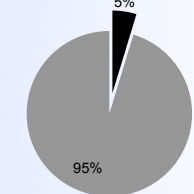


Fig. 3: Proportion of subjects per score

■ <95% du score maximal ■ >95% du score maximal



3. Approve the test with aphasic speakers of multiples languages

The patients:

- Madame T.: 54 years old, L1 Moroccan Arabic, L2 Spanish, L3 French. Administration of tests in all 3 languages with the help of interpreters.
- Madame N.: 46 years old, 5 weeks post-onset, L1 Spanish (Chile), L2 French. Late bilingual. Administration of BAT in both languages with the help of her husband.
- Mademoiselle B.: 26 years old, L1 French, L2 English, intensive professional use of both languages. Late bilingual. Administration of tests in both languages with the help of an interpreter.

	Mme. T			Mme. N		Mme B	
	Items	Arabic	French	Spanish	French	French	English
Spontaneous speech	30	28	15	16	-	-	26
Naming	6	6	6	6	-	-	6
Pointing	5	5	5	5	5	2	5
Simple and semi-complex orders	6	6	6	6	-	2	6
Complex orders	4	4	4	4	-	-	4
Verbal auditory discrimination	7	7	6	6	6	6	6
Syntactic comprehension	10	10	8	6	7	7	9
Repetition of words and pseudowords	12	12	11	12	2	0	12
Repetition of sentences	3	3	3	2	-	-	3
Series	2	2	2	2	0	0	2
Semantic contraries	5	5	2	5	-	-	5
Subtotal spoken language	90	88	68	70	20	17	86
Reading aloud	9	9	9	8	-	-	9
Copy	2	2	2	2	2	2	2
Dictation	6	6	6	5	0	-	6
Silent reading of words	4	4	2	4	3	2	4
Silent reading of sentences	4	2	4	2	1	2	4
TOTAL SCORE	115	111	91	91	26	23	99.5

Summary of the standardization:

Education level:

- No difference between high and low education level for each age group (p>0.1).

Age:

- Significant difference between the oldest age group (<65 ys) and the others (p<0.005).

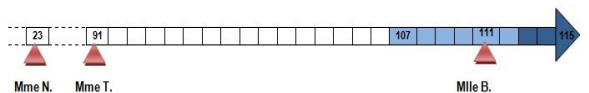
Native language:

- Subjects with L1 French are significantly better than others (p<0.0001).

Self assessment of L1 and L2 proficiency:

- Self assessment scores and Screening BAT score are significantly related.

Summary:



The blue zone shows the dispersion of scores in healthy participants. The majority of healthy speakers (70%) are found in the dark blue zone, with a score of at least 113/115.

- It is possible to administer the test with the help of a native speaker of the unknown language.
- For healthy subjects the mean duration of the test is 18 min. per language
- The mean scores of healthy bilinguals (> 95% correct) are identical to what has been established with longer versions of the BAT (e.g. Muñoz & Marquardt, 2008)
- For the 3 bilingual aphasics tested, the duration of the test remains < 30 min par language
- The test allowed the establishment of the linguistic profile of the patients and to distinguish the difficulties in each language.

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