Averbia as a Selective Naming Disorder: A Single Case Report

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After a moderate head injury a 33-year-old woman presented a selective defect in finding verbs and name actions. Objects, colors, body parts, and qualities were named in a normal way. No other associated aphasic defects were observed. It was proposed that the selection and use of verbs in their correct forms implies two different aspects, which eventually can become dissociated: (1) the ability to retrieve the lexical item (the action name); and (2) the ability to use the correct affixation, that is, to select the morphological form according to the current context. Only the second would be associated with agrammatism. Defects in the first aspect (selection of the lexical item) would represent a particular form of anomia, a category-specific anomia, or anomia for verbs (averbia). Our patient illustrated this particular type of category-specific naming disorder.

Naming represents a particularly complex cognitive task. Goodglass, Klein, Carey, and Jones (1966) tested a large series of aphasic patients in five-category naming: objects, letters, numbers, actions, and colors. They observed that selective impairment or sparing or specific categories was more the rule than the exception.

Different reports have corroborated the observation that naming difficulties can be word-category-dependent (Berndt, 1988; Kremin, 1988). Warrington (1981) reported some patients with a selective difficulty in understanding abstract but not concrete words, and some other patients

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who presented the opposite pattern. It has been pointed out that some brain-damaged individuals can present selective difficulties in naming animals and foods, but not inanimate objects (Warrington & Shallice, 1984). Warrington and McCarthy (1983) observed a patient who could use the categories of animals, flowers, and food, but not inanimate objects. Hart, Berndt, and Caramazza (1985) described a patient with a very specific deficit in naming fruits and vegetables. McKenna and Warrington (1978) reported an anomic patient with an unusual category naming preservation for countries. Temple (1986) described a 12-year-old child with an anomia which particularly affected the category of animals. Thus, word-finding difficulties can be restricted to specific semantic categories.

Manning and Campbell (1992) analyzed a 57-year-old patient who after a left occipital infarction suffered an optic aphasia, and alexia without agraphia. The patient presented a severe difficulty in naming objects associated with a striking spared ability to name actions. Zingeser and Berndt (1988) reported a similar case with a verb production far superior to noun production in single word naming. The patient suffered a left hemisphere intracraneal hemorrhage involving the temporal and parietal lobes. The authors proposed that this dissociation could be a consequence of the fact that objects, rather than actions, make critical use of visuo–semantic mapping. Verbs and nouns would have, in consequence, distinguishable postsemantic naming procedures. And naming actions would have several entries to the semantic and language systems (Jolicoeur, Gluck, & Kossly, 1984).

Caramazza and Hillis (1991) reported two brain-damaged subjects with modaly-specific deficits restricted to verbs in oral and written production. The first patient presented a fluent aphasia associated with a left parietal stroke. The second subject presented an aphasia resulting from a left frontotemporal stroke. In both patients an evident dissociation between spoken output (reading and naming) and written output (under dictation and naming) was observed. In the first patient, the oral production of verbs was significantly impaired, while in the second individual, only the written production was impaired. The authors suggested an independent brain organization for nouns and verbs. They hypothetized that the distinction between verbs and nouns would be redundantly represented in the brain, not only in the phonological (oral production), but also in the orthographic (written production) output lexical components.

Excepting these two patients reported by Caramazza and Hillis (1991), to the best of our knowledge there have not been any other reports of

patients with a restricted action-naming disorder and verb-finding difficulty accompanied by no other aphasic defects or agrammatisms.

CASE REPORT

Clinical History

RS is a 33-year-old woman, with an university level of education. On February 29, 1992, she suffered a head injury when falling down from a horse. She lost consciousness for about 24 hours. A CT scan disclosed a small left frontal–parietal subdural hematoma that spontaneously reabsorbed. When recovering consciousness some anterograde amnesia, emotional lability, right hypoesthesia, and transient loss of taste and olfaction were observed. Neither motor nor language defects were evident. She remained hospitalized for 20 days. Four months after the accident (July 1) she returned to her work. At this moment, a new CT scan revealed moderate generalized cortical atrophy associated with some ventricular enlargement. The subdural hematoma was no longer visible. However, the patient complained of severe difficulties in finding verbs and understanding complex arithmetical problems. Additionally, she reported serious troubles with and slowness in writing, resulting from her inability to find verbs. She was referred for a neuropsychological evaluation.

Neuropsychological Testing

Neuropsychological evaluation was performed during the last week of July, 5 months after her accident. At this moment, RS was a collaborative, well-oriented, and highly motivated patient. No motor or sensory defects were observed. Her language was fluent, well-articulated, and appropiate in casual conversation. However, she emphasized that she had serious difficulties in finding verbs. This verb-finding deficit was evident in long latencies and sheer failure to find verbs in expressive language. When the patient failed to find a verb, she presented circumlocutions, but not paraphasic substitutions.

A general neuropsychological examination and a special evaluation directed toward pinpointing her verb-finding difficulties were performed. Table I summarizes the results obtained in the different neuropsychological tests. Her general intelligence remained within normal limits, although her memory quotient, according to the Wechsler Memory Scale

Table I. Results Obtained in the Different Neuropsychological Tests

Test	Score
WAIS-R[a]: Verbal IQ	125
Performance IQ	114
Total IQ	121
Wechsler Memory Scale: Memory Quotient	100
Token Test (shortened version)	34/36
Boston naming Test	54/60
Objects	43/49
Vegetables	2/2
Animals	6/6
Musical instruments	3/3
Action naming Test	16/60
Adjective naming	10/10
Animal naming	28/32
Fruit naming	8/10
Body-part naming	10/10
Finger naming	5/5
Color naming	8/8
Verb conjugation	6/6
Rey-Osterrieth Complex Figure: Copy	36/36
Immediate recall	19/36
Verbal Fluency: Phonological	9
Animals	20
Verbs	12

[a]Wechsler Adult Intelligence Scale-Revised.

(Wechsler, 1945) was decreased with regard to her IQ. Her language profile, according to the Boston Diagnostic Aphasia Examination—Spanish version (Goodglass & Kaplan, 1983) using Colombian norms (Rosselli, Ardila, Florez, & Castro, 1990), could be considered as normal, except for the Confrontation Naming and Written Confrontation subtests, as a result of her failure in finding verbs (Table II). No evident language comprehension defects were observed in the Token Test—shortened version (De Renzi & Faglioni, 1978). Her naming ability, using the Boston Naming Test (Kaplan, Goodglass, & Weintraub, 1983) adapted in Colombia, was within the normal limits (54/60) for her age and educational level. Verbal fluency was adequate in regard to animals (the patient was asked to name as many animals as she could think in 1 min) (percentile 78, according to Ardila and Rosselli, 1992), but decreased in regard to phonological categories (to say as many words as possible that begin with a particular letter of the alphabet) (percentile 22, according to Colombian norms). Verbal generation for animal names was almost twice as high as generation for verbs.

Table II. Scores in the Boston Diagnostic Aphasia Examination

Subtest	Patient's scores	Normative scores
Fluency		
Phrase length	7.0	7.0
Auditory Comprehension		
Word discrimination	72.0	68.5
Body-part identification	20.0	20.0
Commands	15.0	15.0
Complex ideational material	11.0	9.0
Naming		
Responsive naming	30.0	30.0
Confrontation	93.0	105.0
Animal naming	20.0	13.0
Body-part naming	30.0	30.0
Oral reading		
Word reading	30.0	30.0
Oral sentence	10.0	10.0
Repetition		
Words	10.0	10.0
High probability	8.0	8.0
Low probability	8.0	7.0
Automatic speech		
Automatized sequences	8.0	8.0
Reciting	NA	2.0
Reading comprehension		
Symbol discrimination	10.0	9.5
Word recognition	8.0	7.5
Oral spelling	7.0	5.5
Word-picture matching	10.0	9.5
Sentences–paragraphs	9.0	7.0
Writing		
Mechanics	3.0	3.0
Serial writing	47.0	46.0
Primer-level dictation	15.0	14.5
Written confrontation naming	8.0	8.5
Spelling to dictation	NA	9.5
Sentences to dictation	12.0	11.5
Narrative writing	4.0	3.0

No errors in color, finger, body part, and adjective naming were observed. However, in a special animal and fruit naming test her ability to name animals was only mildly decreased (28/32) as well as her ability to name fruits (8/10).

A special Action Naming Test was designed. Sixty usual actions were selected and represented in black and white line drawings, in a form

similar to the Boston Naming Test. The patient's score was 16/60. No paraphasic errors, but instead circumlocutions, were found in retrieving action names. When this Action Naming Test was presented to 10 normal subjects with university level of education, no errors were observed.

The patient was requested to conjugate in present, past, and future tenses three Spanish regular verbs [(*amar*) (*to love*), *beber* (*to drink*), and *vivir* (*to live*), and three irregular verbs (*ser* (*to be*), *ir* (*to go*), and *estar* (*to be*)]; the patient performed the task without any errors or hesitations. In order to rule out any grammatical defect, a Spanish Grammar Test (Ardila, Rosselli, & Puente, 1994) was given to RS. This Spanish Grammar Test had been previously normalized in a general-population sample. Table III presents the results. It can be seen that her performance was errorless, except for those sections were she was required to complete sentences using a verb. Furthermore, even for correct responses in verb completion tasks, her latencies were notoriously longer than in other test sections.

The patient was requested to take note during a 12-day period of all the words she forgot. During this time, and according to her self-report, she failed to remember 45 words in her usual everyday life. Three out of the 45 words correponded to nouns, and 42 to verbs. However, when she was asked to define these 42 verbs she had previously forgotten, all the definitions were correct. The patient was also requested to write down the substitution words that came to mind when searching for a particular verb. Table IV presents some examples. It can be seen that all the substituted words corresponded to verbs. Some of them presented a phonological relation with the target verb, others a semantic relation (by semantic similitude or by opposition), and some no apparent phonologic or semantic relation.

The patient participated in a cognitive rehabilitation program during an 8-week period (two sessions per week). Two rehabilitation procedures were applied: (1) to try to retrieve verbs using the corresponding nouns [e.g., *comer* (*to eat*) from *comida* (*food*)]; and (2) to retrieve the verbs by performing the corresponding actions (e.g., to retrieve the verb *to write* by moving her hand as if she were writing; initially, she performed the action, and later she just imagined it).

Her forgetting of verbs was evident (and disturbing for the patient) especially in two situations: her office work and her home. A list of the main verbs routinarly used by her at work and at home was elaborated (e.g., to write, to call, to phone, to open, to eat, etc.). This list was used during the rehabilitation program. Only concrete verbs were included. Additionally, the patient was requested to take note of those

Table III. Performance on the Grammar Test

Part	Example	Score
Adverb of place	The dog hid _____ the door.	5/5
Adverb of manner	Clara took the medicine. Now she feels _____.	5/5
Verb completion	Yesterday the secretary _____ a letter.	4/5
Past tense	Now I'm going to say your name. Yesterday I _____ your name.	5/5
Future tense	Today Susana came to say hello to you. Tomorrow she _____ say hello to you.	5/5
Present tense	Yesterday I listened to a concert. Now I _____ to a concert.	5/5
Verb *to go* in its appropiate form	Next week he _____ to your home.	4/5
Prepositions	Most people write _____ their right hands	27/27
Use of articles	*áquila*	12/12
Verb into noun	To think: thought	5/5
Noun into verb	Entrance: enter	4/5
Adjective into verb	Obedient: obey	4/5
Antonym (with a different stem)	Fat: thin	5/5
Antonym (prefix)	Real: unreal	5/5
Organizing the parts of a sentence	in/fishes/the/river/the/boy	5/5
Passive sentences	A drawing of a doctor examining a patient. Say yes or no: "The doctor is examined by the patient."	5/5
Comparative sentences	Planes are faster than cars.	12/12
Coordinations	"The secretary you sent with your cousin is Peter's friend." Who is Peter's friend?	12/12

verbs that she forgot. When a particular verb was forgotten, it was focused on during the following session. Success with the first procedure (to retrieve verbs using the corresponding noun) was modest. However, the second procedure (to retrieve verbs by performing the corresponding actions) turned out to be extremely successful, and as soon RS performed an action (or, some time later during the rehabilitation program, simply imagined the action), she retrieved the corresponding verb. After this 8-week training program, the same Action naming Test was presented again to the patient. Her new score was 58/60 and her generation score for verbs was 20.

Table IV. Some Examples of Words That Come to Mind When Searching for a Particular Verb

Correct verb	Substituting verbs
reunir (to meet)	reformar (to reform), rodar (to roll), reir (to laugh), rimar (to rhyme)
poner (to put)	quitar (to take off), sacar (to take out)
apagar (to turn off)	acercar (to approach), cerrar (to close)
cansar (to tire)	calmar (to calm), armar (to assemble), dejar (to leave)
confundir (to confound)	desconcentrar (to discompose)

DISCUSSION

RS presented a clear dissociation between her ability to name objects, colors, body parts, and qualities (adjectives) on the one hand, and her ability to name actions on the other. In the Boston Naming Test she obtained a correct performance of 90%; some few errors were observed in naming objects, but not in other semantic categories, although, of course, the number of items for other semantic categories was very low. Her verbal fluency for animals was normal, and no errors in naming animals and vegetables were observed in the Boston Naming Test.

However, her ability to name actions was severely impaired. The patient herself considered this difficulty as particularly disturbing in her everyday life activities. Her initial performance on the Action Naming Test was only 26.7%, and this defect was not associated with agrammatism or any other evident aphasic impairment. Her preserved grammatical ability was evident in her normal competence to conjugate (regular as well as irregular) verbs and in here ability to perform the Spanish Grammar Test.

Agrammatic patients present obvious difficulties in using the correct affixation in verbs (i.e., to conjugate verbs according to person, gender, number, and tense), whereas their ability to find the lexical item (the root morpheme) can be notoriously better preserved. In Broca aphasia associated with agrammatism, an excessive and inappropriate use of infinitive verb forms is often observed (e.g., Benson, 1988; Kertesz, 1985; McCarthy & Warrington, 1985; Luria, 1966). This can be particularly evident in languages with complex verb affixation, such as Spanish.

According to Manning and Campbell (1992), to see actions and to see objects may differ in their relationship with spoken language (verbs

and nouns). And Caramazza and Hillis (1991) have pointed out that the link between objects and their names may be relatively more vulnerable to visuoperceptual disturbances (as was evident in the case described by Manning and Campbell), whereas the link between actions and their names may be relatively more vulnerable to linguistic disturbances.

It could be proposed that the selection and use of verbs in their correct forms implies two different abilities, which eventually can become dissociated: (1) the ability to retrieve the lexical item (the action name), and (2) the ability to use the correct affixation, that is, to select the morphological form according to the current context. The second would be associated with other forms of agrammatism, and could be included within the general morphological defects observed in agrammatic patients. The first ability (selection of the lexical item) would represent an specific form of anomia, a category-specific anomia (anomia for verbs), or an averbia. Our patient illustrated this particular type of naming disorder.

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