

NOTE

CONFABULATION IN APHASIA¹

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Confabulation, the production of false information without intention to deceive, has been said to result from impaired memory and decreased self-monitoring ability (Stuss, Alexander, Lieberman, and Levine, 1978). Confabulations typically occur only in response to questions and generally consist of information relevant to the patient's injury or personal history (Weinstein and Lyerly, 1966). On the other hand, fantastic confabulations, assertions about things which could not possibly have occurred, are less common and may be spontaneous, i.e. may be produced without the prompting of a specific question. The neuropsychologic deficit most often associated with either type of a confabulation is perseveration of response set within the area of impaired cognitive function (Shapiro, Alexander, Gardner and Mercer, 1981). Weinstein (1981) has noted the similarities in behavior in patients with semantic jargon aphasia and patients with confabulation, particularly the uncritical acceptance of their own deviant utterances.

We report the case of an aphasic patient with two distinct forms of confabulation: (1) typical confabulations about personal events from the recent past, apparently triggered by gaps in memory; and (2) atypical (aphasic) confabulations in response to questions about word meanings or attributes, apparently triggered by gaps in semantic representation.

CASE REPORT

The subject was a 66 year old right-handed retired factory worker who was found in generalized status epilepticus on the floor. Skull X-ray revealed a left temporal linear skull fracture; CT scan demonstrated a left temporal intracerebral hematoma (Figure 1). The electroencephalogram was abnormal due to bilateral slow posterior rhythms. Past history was significant for alcohol abuse. He was an amateur boxer in the remote past. There was no evidence of confabulation or of memory disturbance prior to the current illness.

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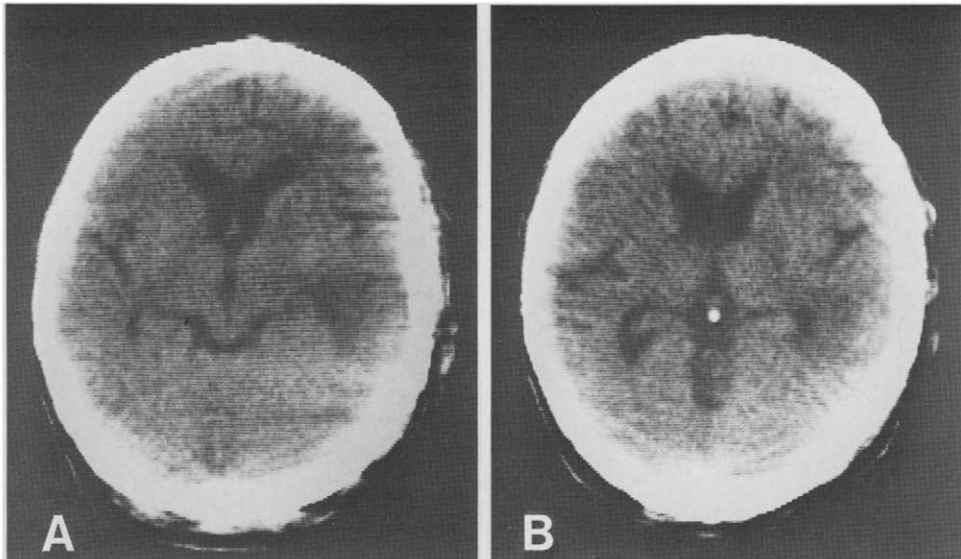


Fig. 1 — CT scan showing an area of attenuation in the left temporal lobe corresponding to the middle temporal gyrus.

When examined six weeks post-onset, the subject was fully oriented to person, place and time. Speech was well articulated and generally informative, although there was marked word finding difficulty. Evaluation with the Boston Diagnostic Aphasia Examination (Goodglass and Kaplan, 1983) revealed fluent output with press of speech, circumlocutions, perseverations, and literal and verbal paraphasias. Auditory comprehension and repetition were only mildly impaired. Word discrimination was average for aphasic patients and 19/20 pictures of common animals were correctly identified on a multiple choice test. Further evaluation revealed instances of failure to recognize common words as familiar, and strikingly bizarre responses to questions of common knowledge such as “Do dogs fly?”. No concern over or awareness of these problems was ever acknowledged, and the patient actively denied language deficits. Language was essentially unchanged when re-evaluated 6 months post-onset.

TABLE I
WAIS-R Scores

Prorated Verbal IQ = 79		Performance IQ = 89	
Subtest	Peer Score	Subtest	Peer Score
Information	7	Picture Completion	7
Comprehension	7	Block Design	9
Digit Span	7	Picture Arrangement	9
Vocabulary	6	Object Assembly	10
		Digit Symbol	6

Neuropsychological evaluation was characterized by mildly impaired performance on verbal tests measuring vocabulary, general information, and social judgement, and low average to average performance on visuospatial tasks. Ability to abstract similarities between related concepts, however, was severely impaired as was comprehension of common one word metaphors such as feeling "blue" WAIS-R results are summarized in Table I.

Memory was moderately impaired, with zero out of five hidden objects recalled after five minutes. Recall of the details of the Wechsler Memory Scale (WMS) narrative passages was below normal with signs of confusion and confabulation. Immediate recall of the WMS figures was good, but was impaired by intrusions after a delay. Delayed recall of the Rey Osterreith Complex Figure was simplified and contained reduplication of details.

Experimental Test Procedures

Three sets of experimental tests were administered. These included: *Tests to elicit confabulation* (adapted from Mercer, Wapner, Gardner and Benson, 1977)

The patient was asked to discuss events from his remote and immediate past and to answer questions requiring the use of environmental cues. Questions involving estimation (adapted from Shallice and Evans, 1978), difficult factual material, and information about the attributes of common objects and animals were also posed.

Tests to examine lexical access and semantic representation

First, the patient was asked to sort a deck of cards containing written stimuli into two piles: words or non-words. Failure to differentiate real words from nonsense words would indicate a disruption of or an inability to access the lexicon. Second, a verbal description was requested for each of the same stimuli presented orally. This task was primarily intended to encourage self monitoring but also provided a means for exploring possible disruptions in the representation of word meanings. Third, the patient was requested to sort basic level printed words (e.g. pea) into five superordinate category piles (e.g. vegetable) to look for disruptions in semantic representation.

Tests to elicit perseveration

Perseveration of response set was evaluated with a non-verbal test requiring alternation of symbols and multiple reversals, and a visual-verbal test requiring conceptual shifting. Other forms of perseveration were evaluated on a variety of additional verbal and non-verbal tests described elsewhere (Sandson and Albert, 1984).

RESULTS

Confabulation

Questions about remote personal history (e.g. military service and job history), questions requiring estimation, questions dependent on environmental cues, and difficult factual questions all failed to elicit confabulation. Responses con-

sisted of correct answers, reasonable guesses, and admissions of ignorance.

Typical confabulations were obtained in response to questions about how the patient first became ill, the course of his hospital stay, and his role when he was interviewed before a large group in a clinical case conference. For the last, he claimed that he was at a debate about philosophy and religion.

Atypical confabulations, on the other hand, were obtained in response to questions about the attributes of common objects, in particular of animals. He confidently stated, for example, that the stars in the American flag are red, that dogs can fly, and that elephants are taller than giraffes. A giraffe was, on three different occasions, defined as a smaller version of some other animal (Table II). All confabulatory responses, though sometimes fantastic, were appropriate to the semantic category being discussed. Animals, for example, were never associated with the attributes of inanimate objects. Atypical confabulatory responses were not obtained from a control patient who had Korsakoff's disease when we administered the tests of animal description to him. This control patient did produce typical confabulations.

TABLE II

Excerpts from Test of Animal Description

Item 3

Examiner: Describe a giraffe for me.

Subject: Giraffe? Boy, that's an animal I've never seen that much, only in certain countries where they have a lot of, uh, giraffes. Uh, an animal that uh, uh, like a field, uh, where there's grass.

Examiner: What does it look like?

Subject: Well, he's a smaller animal. He's uh like something that would fly and uh in dangerous in that way.

Item 6

Examiner: How about a tiger? What would you tell me about a tiger?

Subject: A tiger you'd find nine times out of ten in a foreign country where they have more tigers than just about any other animal and like, like Africa. (yes, O.K.) and that I would say you'd find more, although we got 'em in the United States in the southern part. I'd say the southern part of the United States with farms that tried to grow 'em or something. Jeez, whatever they've done uh, they've made a mistake I would say.

Item 12

Examiner: The last one I'm going to ask you is about an elephant. What's an elephant like?

Subject: Huh. An elephant, oh brother. He's, he could, uh, well, I don't know if they're actually that much trouble, but they have 'em on certain farms or around certain farms. Where there's a lot of trees 'n every... cause they're another animal, God, they live in trees, they live in pretty good uh, acreage. Uh, live near uh where there's water.

Semantic Representation

10/30 written non-words and 15/60 spoken non-words were misclassified on the lexical decision task; that is, the non-words were incorrectly identified as real words. Further, confabulated definitions were produced for some of the misclassified non-words (Table III) both spontaneously and when meanings were requested (e.g. *barg* — “the situation or way you’re doing something, either in writing or in speaking”). All but one real word, “fig” presented in the auditory modality, were correctly classified. 5/33 written words were sorted into the wrong superordinate category on the categorization test.

TABLE III

Excerpts of Definitions for Printed Nonsense Words

Spoed: Well, a spood, its a part of, its part of a, ooh, I say, um, a dramatic thing, something about doing with, uh, pictures or clothes or like, uh, (unintelligible), spumatic, something spumatic. What’s that mean? That, that’s like men who build a house, even, or build a platform. Women who go to a certain store to buy certain clothes. It’s not the perfect word but I know it, that’s what it means.

Cratem: ... Cratman, it’s, it must be a certain individual, uh, way of doing something. ... A woman wants to make a coat or a jacket. She could buy the right material. Right? And the right quarter in order to make it right. Cratman, and this might be part of the individual or what she’s buying or the certain way she’s doing it.

Perseveration

There was no perseveration of response set on the task requiring alternation and reversal of symbols. There were verbal recurrences on the Visual/Verbal test but these perseverations did not seem to interfere with conceptual shifting. Verbal perseverations were prominent on tests of naming and description.

When he was re-tested six months post-onset, 2/14 written non-words were misclassified. Responses on a test of animal description remained grossly confabulatory. At the time of re-testing, the subject was living independently in his own home.

DISCUSSION

Two distinctive forms of confabulation occurred in this patient in the absence of a confusional state or severe memory disturbance. Detailed investigation of the nature of his confabulatory responses suggests mechanisms which produce the two separate types of confabulation. (1) The typical confabulations occur only in the context of small gaps in recent memory and only when self-monitoring fails and memory deficits are denied. (2) The aphasic confabulations occur only in the context of impaired or missing semantic representation (e.g. reduced knowledge about word and category boundaries, loss of meaning for some words), but also only with defective self-monitoring and denial of language deficit.

Two additional factors, word meaning alienation (e.g. Yamadori and Albert, 1973) and perseveration, may also play a role in the aphasic confabulations of this patient. Confabulatory responses were always noted on the infrequent occasions when the patient indicated that he had no recognition of a common stimulus. The patient asserted, for example, that the word "bubblegum" was totally unfamiliar to him, although he then stated that it was probably blue.

The aphasic confabulations of this patient often contained elements from previous responses. The statement that elephants live in trees followed the discussion of several animals where trees were appropriately mentioned. Perseveration may, in fact, also play a role in explaining why typical confabulations often contain elements from the patient's recent experiences.

ABSTRACT

We describe a brain-damaged patient who produced two distinctive forms of confabulation, typical and atypical (aphasic), both of which were associated with perseveration, poor self-monitoring, and denial of deficit. We propose that the typical confabulations are triggered by gaps in memory for the period surrounding the onset of his illness, while the aphasic (fantastic) confabulations are triggered by gaps in semantic representation. These observations suggest that confabulations may comprise a portion of the language deficit in patients with other varieties of fluent aphasia.

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REFERENCES

- GOODGLASS, H., and KAPLAN, E. *The Assessment of Aphasia and Related Disorders*. Philadelphia: Lea and Febiger, 1983.
- MERCER, B., WAPNER, W., GARDNER, H., and BENSON, D.F. A study of confabulation. *Archives of Neurology*, 34: 429-433, 1977.
- SANDSON, J., and ALBERT, M.L. Varieties of perseveration. *Neuropsychologia*, 22: 715-732, 1984.
- SHALLICE, T., and EVANS, M. The involvement of the frontal lobes in cognitive estimation. *Cortex*, 14: 294-303, 1978.
- SHAPIRO, B., ALEXANDER, M., GARDNER, H., and MERCER, B. Mechanisms of confabulation. *Neurology*, 31: 1070-1076, 1981.
- STUSS, D., ALEXANDER, M., LIEBERMAN, A., and LEVINE, H. An extraordinary form of confabulation. *Neurology*, 28: 1166-1172, 1978.
- WEINSTEIN, E. Behavioral aspects of jargonaphasia. In J. Brown (Ed.), *Jargon Aphasia*. New York: Academic Press, 1981, pp. 139-148.
- WEINSTEIN, E., and LYERLY, O. Confabulation following brain injury. *Archives of General Psychiatry*, 18: 348-354, 1966.
- YAMADORI, A., and ALBERT, M.L. Word category aphasia. *Cortex*, 9: 83-89, 1973.