

## Tutorial: Word Retrieval & Word Retrieval Problems

### WHAT IS WORD RETRIEVAL?

The terms “word retrieval” and “word finding” refer to the processes involved in mentally identifying and then producing the word or words needed to express a thought or name an object. Word retrieval is one among many types of information retrieval. **[See Tutorial on Retrieval]** Because words have two very different storage systems in the brain, word retrieval relies on the development of both systems.

**Meaning (or Semantic) Storage System:** The meanings of words are stored in the brain as a large number of connections and systems of connections among nerve cells. These connections correspond to what we call word associations. For example, when a person is asked “What’s a sparrow?” she might reply, “A sparrow is a bird (category). Like all birds, they fly and sing and ...(actions); they’re not used for food or much of anything except to look at and listen to (use/function); they have a beak and wings and skinny little legs and feet (parts); they are small and grayish and round, with a shrill call (attributes); they make their nests in trees and are found in the following locations in summer ... (location); and when I think about sparrows, I think about my uncle the bird man...(idiosyncratic associations)” The specific details are not so important here; however, the important concept is that word meaning is a set of more or less organized associations that correspond to large numbers of neural connections in the brain. These neural connections can encompass large and distant areas of the brain. Each meaning connection represents one “route” to that word in the brain.

**Sound (or Phonologic) Storage System:** In order to say a word, we also need to know what sounds go together to make the word. These sounds and their organization are stored in the phonologic storage system of the brain – again, a set of nerve cell connections, but this time not so wide spread in the brain.

Thus there are two storage systems and they need to work in harmony in order to support fast, fluent, and effortless retrieval of words.

Word retrieval problems occur when a student tries but fails to produce a word that is known to be part of his receptive vocabulary (i.e., he knows the meaning of the word and has produced it before). Word retrieval problems are indicated by the “tip-of-the-tongue” difficulties, by frustration at not being able to say what one wants, by frequent use of nonspecific words like “thing, stuff, watchamacallit” and the like, or by frank admission of retrieval difficulty (e.g., “I know the word; I just can’t think of it”).

Word retrieval problems might result in slow but accurate retrieval (i.e., there is a delay, but the student manages to retrieve the word), slow and inaccurate retrieval (i.e., there is a delay, and the word produced is incorrect), fast but inaccurate retrieval (the student retrieves a word quickly, but it is incorrect), or total retrieval failure (i.e., no word is produced). A speech-language pathologist might be able to document word retrieval problems by comparing the results of a receptive vocabulary test (i.e., understanding words) with an expressive vocabulary test (i.e., naming things or pictures).

### WHY ARE WORD RETRIEVAL PROBLEMS IMPORTANT FOR MANY STUDENTS AFTER TBI?

Students with a wide variety of disabilities are known to have word retrieval difficulties. These include specific learning and specific language disability, reading disability, attention deficit/hyperactivity disorder, fluency disorders, and brain injury. Word retrieval problems of one sort or another are associated with many types and locations of brain injury. Difficulty retrieving words can be caused by damage to several parts of the brain because word meaning information is stored in many parts of the brain. Word retrieval problems are particularly associated with the “language zones” of the left hemisphere (toward the back and bottom of the left frontal lobe and top of the left temporal lobe) and with other parts of the frontal lobes that are associated with retrieval generally.

General difficulty with *effortful or strategic retrieval* (i.e., *trying to retrieve the word*) is usually associated with damage to the frontal lobes, common in TBI. Encouraging these students to *try harder* to remember or to retrieve the word may just make their problem worse. Retrieval problems are also associated with anxiety. "Performance anxiety" is a common experience and everybody reports that it is harder to retrieve information or words when experiencing significant anxiety. Some degree of anxiety is common after TBI, possibly for specific neurologic reasons and possibly because so much in life is more difficult and frustrating after a brain injury. **[See Tutorials on Anxiety and on Performance-Oriented versus Support-Oriented (Apprenticeship) Teaching]**

## **WHAT ARE THE MAIN THEMES IN INTERVENTION AND SUPPORT FOR STUDENTS WITH WORD RETRIEVAL PROBLEMS?**

**1. Understanding the Problem:** As with all problems, step one is understanding the problem. Retrieval problems are easily misidentified as lack of knowledge. Psychological or speech-language testing helps to identify specific word retrieval problems.

**2. Accommodations:** Accommodations need to be made for students with word retrieval problems in both testing and instruction.

**Testing Accommodations:** If a student has documented word retrieval problems, then test procedures should use recognition memory tasks (e.g., multiple choice or true/false) rather than or in addition to free retrieval tasks. **[See Tutorial on Retrieval]** Retrieval tasks may simply reveal what you already know – that the student has retrieval problems. These tasks will NOT tell you what you want to find out with testing – namely what the student actually knows in his head.

**Instructional Accommodations:** Similarly, everyday instructional tasks should not be organized around teacher questions requiring students to retrieve information. This will simply frustrate the student and little teaching and learning will be accomplished. Apprenticeship teaching procedures can be used. These procedures do not rely on ongoing demands for unassisted performance from the student. **[See Tutorial on Apprenticeship Teaching]**

**Conversational Accommodations and Supports:** When students face word retrieval problems in everyday conversation, the situation is not quite so clear. Students with word retrieval problems differ in how they like conversation partners to help them. Supports should be negotiated individually with the student. Supports might differ from one communication partner to another. For example, the student might want a teacher to give him a hint about the start of a desired word, whereas he might not like his little sister to act like a teacher and give the same kind of hints. What follows are possibilities to be negotiated with the student and used with sensitivity. Some students may simply want the conversation partner to give them the sought after word if the partner knows it.

Here are some possibilities:

**Direct Help:** The conversation partner might say, "I think the word you're looking for is 'horse' – right?"

**Indirect Help:** The conversation partner might say, "Do you want me to say what I think the word is you're looking for? Do you want me to give you a clue? Do you want me to wait?"

**Sound (Phonologic) Cues:** The conversation partner might give a phonological cue, like "I think the word is ho... (horse)"

**Meaning (Semantic) Cues:** The conversation partner might give a semantic cue, like "It lives in a stable"

### **3. Instructional Strategies to Assist Students with Word Retrieval Problems**

**Direct Practice of Specific Words:** In cases of extremely severe word retrieval problems, there may be value in having the student practice saying specific important words over and over. These words should be produced in response to a variety of stimuli, including the object, pictures of the object, printed words, related objects, and conversational stimuli.

**Indirect Practice with Meaning (Semantic) Organizers:** [See Tutorial on [Advance Organizers](#)] Each meaning association for a word is a potential retrieval route to that word. Therefore, word retrieval practice should include elaborating the meanings of words. However if this is done in a disorganized way, the word retrieval problems could get worse. Therefore it is important to have a consistent system for elaborating word meanings.

Staff can use a diagram (graphic organizer or “semantic map”) for this purpose. The word to be elaborated is placed in a circle in the middle of the page. From this circle there are lines that radiate out like spokes on a wheel. At the ends of the lines are boxes for associated words. At the 12:00 position is the word’s category or what kind of thing it is (e.g., a horse is an animal). At about 1:30 is a box for the actions that the thing does (if any)(e.g., a horse trots and gallops and races). At about 3:30 is a box for the uses or functions of the thing (e.g., a horse is used for farm work, riding, racing, etc). At about 5:30 is a box for important attributes (e.g., a horse is big, strong, fast, etc). At about 7:00 is a box for the thing’s parts (e.g., a horse has four long legs, a long snout, a mane, a long tail, etc). At about 8:30 is a box for the locations where the thing could be found (e.g., a horse can be found in a barn, race track, field, circus). At about 10:30 is a box for other associations that might be unique to that student. (E.g., My uncle Harry raises horses).

There is no special magic in this particular “map” of word meanings. However, it does serve the important purpose of organizing the elaborated meanings as the student organizes more and more associations with a specific word.

The “map” plays one more critical role. When the student is stuck, she can be encouraged to start talking about the thing, but not randomly. Rather the diagram can be used to organize this circumlocution – or talking around the word. The circumlocution may help the student to actually retrieve the word. If not, at least she will be able to communicate the concept to the listener.

After the word elaboration is complete, it is important to put the word to use. This could be done by collaboratively writing a descriptive paragraph about the thing or perhaps writing a little story.

**Compensatory Circumlocution Practice with Meaning (Semantic) Organizers:** Circumlocution means “talking around a word without necessarily arriving at the word”. Students with word retrieval problems can use a graphic organizer or “semantic map” to guide this “talking around the word” in an organized way. (See the previous section for an example of a semantic map.

**Practice Using Nonverbal Support:** Some students benefit from nonverbal supports for word retrieval. For example, when stuck for a word, the student might gesture or draw on paper or in the air. These nonverbal moves might help to cue the word. Alternatively they may successfully communicate the idea without producing the word.

**Practice Asking for Help:** Students may need help remaining calm when stuck for a word and asking for assistance in finding the word. Asking for help is better than suffering in silence.

**Fun Family Play with Words:** Word games are a useful way to spend idle family hours, for example during long car rides or during bedtime book reading. The games should be fun and not drill, and the child should experience a great deal of success. Among the possibilities:

1. Read with the student. All book reading activities can be useful. Books that discuss specific categories of knowledge are particularly helpful, for example books about vehicles, wild animals,

outdoor sports, occupations, and the like. In these cases, elaborative associations are made that can facilitate word retrieval.

2. Read riddle books or other books that play with words.
3. Tell jokes that involve word play.
4. Play word classification games (Let's see how many words we can think of starting with ...; Tell me as many fruits as you can think of; etc)
5. Name several things and then guess the category that they belong to.
6. Play synonym and antonym games ("What means the same as...? What means the opposite of...?").
7. Play similarity and differences games ("How are ... and ... alike? How are they different?").

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