

9.65 Fall 2001 Report of Lab 1 on Memory

Note: The references to your text are for study purposes: you did not have to talk about anything in the text to get a full grade.

1. War of the Ghosts: There is a brief mention of Bartlett's work on p. 202 and 211 in Reisberg, where other evidence for inaccuracies in story recall is discussed (note that this chapter is assigned later). Bartlett found that some changes are made, even for people who recall a lot of the story very accurately. Paraphrases, natural inferences, but also selective distortions and omissions are made, to bring the story into a culturally more familiar story framework. We use SCHEMAS already in long-term memory to encode new information: some schemas are as abstract and implicit as a characterization of "how a story should be organized." At the same time, people are apt to remember several rather arbitrary things about the story, such as "Egulac" or "something black came out of his mouth."

2. PENNY memory: No literal, photographic memory. You remember what you need to, to distinguish coins--you know that there are certain things on the penny (the head, the date, a motto, etc.), but not exactly how they are laid out.

Do we fail to store the information because we need to save storage space? Or because seeing is not equivalent to storing: to store, must encode, and perhaps repeatedly encode, and we only do that (usually) when we have a reason to. Passive exposure is a very slow, inefficient way to learn, compared with looking for meaningful relations, etc.

When you forget, you forget meaningful parts, not arbitrary patches or corners.

3. STM span: The memory spans for letters and words: although frequency and abstractness make some difference, the main point is that in general the amount remembered is all within Miller's 7 ± 2 figure, for memory spans measured in chunks. Memory for 8 letters isn't that much better than memory for 8 words with many more letters: that small difference is probably partly a difference in the rate of articulating (see artic. loop) and also in the rate of output: can't write the words as fast, giving time for forgetting. Familiar words (high-freq.) slightly easier than less frequent words, concrete slightly easier than abstract. But notice that these differences are comparatively small: short-term memory for unrelated items does seem to rely to a large extent on the ARTICULATORY LOOP, which is insensitive to meaning. You may have noticed that you made some "intrusions" of letters that sounded like the actual letters (although of course you might have misheard them in the first place). Some of you will have mentioned a recency and primacy benefit, as well: forgetting is more likely to come in the middle of the sequence.

4. BROWN-PETERSON-WICKENS Release from Proactive Inhibition (PI):

a. The original Brown-Peterson procedure: showed that a filled delay-->loss even of simple information. Their conclusion: this represented spontaneous decay of information with the passage of time (when you were not rehearsing it).

b. But: it turns out that you rarely forget on Trial 1!! The tendency to lose information with delay requires build-up of PI. Thus, NOT passive decay: "proactive" interference from the preceding lists.

c. Moreover: this interference is much worse if lists use similar materials (e.g., animals): you

get "release" from the problem (and a return to "good" first-list memory) when you change to other materials (e.g., musical instruments, in the lab). Which is a way of finding out WHICH DIMENSIONS ARE ENCODED AND USED IN Short Term RETRIEVAL. One such "feature" is a superordinate category like "animals." Another, it turns out, is positive versus negative things, even within the same category. A switch from nice things like butterflies and roses to nasty things like spiders and crabgrass will give you "release from proactive inhibition."

d. Later recall of all items shows a different, FLAT curve, showing that it is NOT the case that you have more and more trouble attending to or encoding the successive groups of animals: your problem is in RETRIEVAL of just the most recent group: the most recent animals get mixed up with all the other animals you've just been remembering.

e. The fact that everyone tends to remember fewer of the items (animals, the musical instruments) after 10 or 15 minutes is not surprising: we continue to forget over time. The informative finding is that the shape of the curve does NOT look like that of initial recall of the same series of items, but rather suggests that they were all initially encoded to the same level as you initially read them.

f. Counting backward: Usually recall for the trio of words has more or less stabilized after 15 s of doing something else. But your concentration on the counting-backward task may have fluctuated. Note that I didn't time the duration of your backward counting at all precisely, so that could also have affected how far backward you counted.

5. Paired associate memory lists:

This part of the lab focused on LONG TERM MEMORY, as did most of the lab except the memory span lists. Note that I gave you a memory span task immediately after you heard the word pairs, exactly in order to make sure that your short-term memory (whether aided by an articulatory loop, a visuospatial sketchpad, or by CSTM) would be completely engaged in that task, so that you would be relying on LTM when you recalled the paired words ("paired associates").

Lists 1 and 2: Concrete, imageable items. As we will see later in the course, imaging a word helps you to remember it better. (If you imaged spontaneously on the first list, no doubt you remembered it well, too). Imaging two things interacting causes you to seek out information in memory that creates a link between the two--if you'd been asked to picture them side by side, that would not have worked as well.

Abstract words (List 3): can't readily image, so you waste time trying to. You may notice that abstract words in isolation are really hard to remember.

Method of loci (List 4): Learning associations with places is probably innately favored, and so people often find this list easy. Occasionally they will make a paraphrase, like "baby" for "infant" or "stove" for "oven": this suggests that they were thinking of the thing or concept, rather than remembering the word itself.

Concrete/abstract sentences: "The nudist is devouring a bird": Usually these are fairly easy because the sentence provides a meaningful link between the to-be-remembered words. Meaningful sentences with abstract words don't present nearly as much difficulty as abstract words in isolation: the point about an abstract word is that it is something of an "empty vessel" (empty slots or variables) to be filled by the appropriate context.

Your overall comments on these various ways of remembering paired associations should have brought out some of these ideas, including the usefulness of associating 2 ideas/words via a "rich" or meaningful structure.

(The memory spans were fillers--you may have had something to say about them, but that wasn't the main focus.)

6. Semantic illusion: So-called recall of "facts": Erickson & Mattson (1981).

Note that these illusions only work if you have the relevant background information--and perhaps the subjects who participated in the original experiment were more likely to have this knowledge than today's students: For example, not all of you may know the Bible stories, or have read Moby Dick and 20,000 Leagues Under the Sea.

Shared semantic features create the confusion. Shows that concepts like "Noah" are not represented as holistic nodes, but as bundles of meaning-features--e.g., Biblical figure, old man, revered leader, two-syllable name, connected with water...all of which are shared by Noah and Moses. Evidence shows that the effect is not due primarily to misreading, or failure to see/process the name: seems to involve weighting matching features of meaning more heavily than mismatching ones. Not just for proper names--although it may be more acute for proper names, which are just pointers to a referent and have no meaning in themselves. Consider:

A plane crashed exactly on the Canadian/US border: where do you think the authorities should have buried the survivors?¹

No eye injury is too trivial to ignore.²

Your work fills a much-needed gap in the field.³

7. Flashbulb memories--Brown & Kulik, 1977: The original results of that study were summarized in your lab. In past years many students have had what they considered a flashbulb memory of their admission to MIT--others have not. Perhaps you can think of some other personal event of great importance--whether sad, happy, or just very surprising--that you seem to remember in "unnecessary" detail. Emotion seems to heighten memory and extend it to details: a case of association merely by contiguity, in one "trial". A physiologist proposed a special "print now" mechanism for such memories.

But whether there is really some special physiological mechanism at work in such cases, or whether this is an extreme case of ordinary memory mechanisms, remains in dispute. For one thing, these important events are probably ones that you told others over and over, and reviewed many times on your own. McCloskey, Wible, & Cohen (1988) claim that FBs show normal errors and forgetting. Harsch & Neisser (1989, *Psychonomics*) compared college students' reports of how they heard the news about the Challenger disaster, written the morning after it occurred, with the same students' memories a year and a half later. Few were exactly correct in their later memories, and a good many were "wildly inaccurate," even though students were quite confident. They sometimes even had trouble remembering, when they looked at their own written account. A pair of studies of memory for the San Francisco earthquake of 1990 (*Psychonomics* 1991: S. Palmer et al.; Neisser et al.) showed that memories of direct personal experiences did not show the same distortions, later, as memories based on indirect information such as news reports. The jury is out, on this one: see discussion in Reisberg on pp. 222-223 (Ch. 7), which will be assigned later in October.

¹survivor/ victim

²...so trivial that you should ignore it, but that's not what that sentence means!

³from Stephen Crain: try writing this to someone you want to insult.