HOW MANY “ITEMS” CAN A PERSON HANDLE IN WORKING (SHORT TERM) MEMORY? MILLER’S NUMBER, 7±2
(H. Weller, EDW 472/SMS 491, Spring 2007)

SPAN OF ABSOLUTE JUDGMENT: GEORGE MILLER’S TAKE
(Norman, 1969, p. 73)
- “My problem is that I have been persecuted by an integer. For seven years this number has followed me around, has intruded on my most private data, and has assaulted me from the pages of our most public journals. This number assumes a variety of disguises, being sometimes a little longer and sometimes a little smaller than usual, but never changing so much as to be unrecognizable. The persistence with which this number plagues me is far more than a random accident. …..” (George Miller, 1956).

- “Miller summarized a number of studies on absolute judgments and memory and found “a clear and definite limit to the limit with which we can identify absolutely the magnitude of a unidimensional stimulus variable. The limit is called the span of absolute judgment and it usually lies somewhere in the neighborhood of seven” (Norman, 1969, p. 75).

CHANNEL CAPACITY (Gladwell, 2002, pp. 175-176)
- “There is a concept in cognitive psychology called the channel capacity, which refers to the amount of space in our brain for certain kinds of information.”

- Example: I play you a number of different musical tones, at random, and ask you to identify each one with a number. You can distinguish among about 6 different categories, until you begin to make mistakes (unless you have perfect pitch).

- This is a very consistent finding!

- This natural limit for processing raw data shows up again and again in simple tests.

- Example: Sorting glasses of iced tea into different sweetnesses.

- Example: Flashing dots on a screen in front of you very quickly, and you count howe many there are. You would be correct up until about 7 dots.

- ‘There seems to be some limitation built into us either by learning or by the design of our nervous systems, a limit that keeps our channel capacities in this general range,’ the psychologist George Miller concluded.

- This is the reason that telephone numbers have 7 digits.
SHORT-TERM MEMORY: SIMON’S TAKE (Simon, 1981, p. 81)

- “The facts that appear to emerge from recent experiments on short-term memory are these. If asked to read a string of digits or letters and simply repeat them back, a subject can usually perform correctly on strings up to seven or even ten items in length. If almost any other task, however, is interposed between the subject’s hearing the items and repeating them, the number drops to two.”

- Chunking can change this: “Where experimenters appear to show that more than two chunks are retained across an interruption, the phenomena can almost always be explained by such mechanisms as the subject recoding the stimulus into a smaller number of chunks before storing it in short-term memory.


- “Clearly there are limits on the number of items that can be ‘apprehended’ or to which we can pay attention at any one time. The nature of this limit is referred to as the span of apprehension” (p. 6).

- Short-term sensory registers: There are “apparently visual and auditory sensory registers capable of holding information for very short intervals of time. Unless the information is quickly attended to, it soon disappears. This kind of memory is apparently qualitatively different from the memory that contains such information as what you ate for breakfast or who was the last president of the United States” (p. 7).

REFERENCES


