

Recalling Psychology's Past: The Memory Drum

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In 1885, Hermann Ebbinghaus (1850-1909) published *Memory: A Contribution to Experimental Psychology*. The work has stood the test of time and earned Ebbinghaus a place of distinction in the study of memory.

In order to study memory free from the effects of prior learning, Ebbinghaus constructed his now famous “nonsense syllables.” All together, he created about 2,300 nonsense syllables that he grouped into and subsequently tried to memorize. Using a metronome to pace himself, he would measure how long memorization took.

Ebbinghaus’ work inspired a new generation of early psychologists intent on researching memory. Among these were Georg Elias Mueller (1850-1934) and Friedrich Schumann (1862-1940). Although they recognized the value of Ebbinghaus’ work, they also saw limitations.

First, Ebbinghaus used himself as both subject and experimenter, creating multiple roles that could have impacted his findings. Secondly, his use of lists of syllables meant that even though he was only supposed to be viewing one stimulus at a time, his visual range could perceive other syllables occurring above and below on the list. Thirdly, Ebbinghaus’ use of the metronome to pace himself was a step in the right direction of equalizing exposure to each syllable; but it was not the most precise method. What was needed was a new piece of laboratory apparatus that could address and improve upon these issues.

Mueller and Schumann discovered a new function for an already ubiquitous piece of lab equipment: the kymograph, a rotating metal drum that would revolve paper against a stylus in order to record physiological responses. The kymograph was particularly useful since its rotation was timed and would be constant. James McKeen Cattell had used a similar device for presenting color patches and words when he was a student with Wilhelm Wundt at Leipzig (Haupt, 2001).

In 1887, Mueller and Schumann literally turned the kymograph on its side and put the material to be memorized around it. A screen was placed in front of the rotating drum so that only one item was visible at any time. Through several revisions using different types of kymographs, Mueller and Schumann finally found one that suited their needs. Their 1894 article was the first to explain the use of a new laboratory apparatus: the memory drum.

A drawback of Mueller and Schumann’s memory drum was that its constant movement always had the stimulus in motion upwards or downwards. Otto Lipmann (1880-1933), a student of Ebbinghaus, devised a way of moving the drum a certain amount in a stepping action so that the stimulus was held still for a fixed amount of time and then stepped out of sight. (Lipmann, 1904). It was Lipmann’s device that Ralph Gerbrands at Harvard used as the basis for his memory drum, illustrated in Robert Woodworth’s influential *Experimental Psychology* (Woodworth, 1938). This drum would be the design used for virtually all the memory drums to come later.

Soon to become a staple in psychology laboratories across the world, memory drums would continue to yield to innovation. Variations of this first apparatus have come and gone in the century since its invention, and many interesting examples can be found at the Archives of the History of American Psychology in Akron, Ohio.