

Emotion

The article from the journal *Memory & Cognition* that was titled “The effects of emotion and encoding strategy on associative memory” was mainly about recognition experiments run by Brendan D. Murray and Elizabeth A. Kensinger. They were testing how emotion affects memory by testing how well word pairs were recalled or recognized when emotional words were paired with neutral words or neutral words were paired with other neutral words. They were also testing how the encoding of the words was affected when the emotional-neutral pairs were supposed to be thought of as separate words versus if they were supposed to be together as a unit. They also asked their participants to either separate or pair the neutral-neutral word pairs to provide a baseline for whatever difference was found between single or paired encoding strategies for the emotional-neutral word pairings.

These experiments were designed to test Easterbrook’s cue-utilization theory versus the priority-binding theory of Mackay et al. The cue-utilization theory states that emotion causes memory to be entirely focused on the details that involve the emotion and that any other details which might be present but have nothing to do with whatever provoked emotion will not be remembered. This would mean that the neutral-neutral pairs would have a higher rate of recall because only the emotional word from the emotional-neutral pairs would be remembered. The priority-binding theory states that emotion causes sharper memories and that even neutral things that are present in an emotional situation will be recalled because emotion strengthens that memory entirely. Based on this theory, the emotional-neutral word pairings would have a higher rate of recall because the emotional word would strengthen the memory of the neutral word. Another theory that played a role in the hypothesis of the experimenters was Mather’s object-based theory which states that emotional-neutral pairings would have a higher recall rate if the encoding strategy is the

grouped strategy, but neutral-neutral word pairings would have a higher recall rate if the encoding strategy is the single encoding strategy.

What Murray and Kensinger expected to find was that encoding the paired words together would in turn promote the memory of both of the words, whereas encoding the paired words individually would only promote the memory of the individual words, but that the fact that two words were paired would not necessarily be recalled. As for the emotional aspect of the experiment, Murray and Kensinger were not sure how the memory of the word pairs would be affected.

For the first experiment, forty-five adults were tested from the Boston College campus. They received either ten dollars an hour for their help or they received course credit. There was a total of two hundred and forty positive words, two hundred and forty negative words, and five hundred and twenty neutral words that were chosen for this experiment, the emotional words being split into positive and negative categories. The words were chosen from Affective Norms for English Words words lists and previous words lists that Kensinger had used for a previous experiment. The words were then matched pseudorandomly in order to avoid positive-negative word pairings, positive-positive word pairings, and negative-negative word pairings. The groups of the pairings were positive-neutral words, negative-neutral words, and neutral-neutral words. The actual execution of the first experiment was divided into three phases. The first phase was the imagery practice phase in which the participants practiced the encoding technique of visualizing images for given words as separate images per word or the technique of visualizing one complete image composed of the integrated images for the separate words. The second phase was the study phase in which the participants were given one hundred word pairs to memorize with the technique of imagining the words as separate images and then a different hundred pairs to memorize using the technique of imagining the word pairs as one whole image together. The third phase of experiment one took place a half hour after the participants finished with the second stage and consisted of the participants taking a memory test, and then twenty-four of those participants taking another memory test designed to test their associative pair

recognition while the other twenty-one were given a different memory test which was in order to test their cued recall.

The initial memory test was just the participants viewing six hundred words and deciding if the words that appeared were words that they had seen during the study phase or if they were words that had not yet been presented to them. The associative pair test consisted of the selected twenty-four participants each viewing word pairs and deciding if the words that appeared in said pairs were in one of three groups: either the word pairs appeared during the study phase with the exact word that they appeared during this test, both the words from that pair had appeared during the study phase but with a different word as its pair, or that the words in the pair present had never appeared during the study phase. The associative cued recall test consisted of the participants being presented with individual words from the initial test that they had stated had been presented in the study phase. They were then asked to determine if the paired word that had appeared with it was positive, negative, or neutral and were asked to write the word that it was paired to on a piece of paper. The results of this experiment showed that participants were more likely to recall the word pairs when they were tested in the way that they had studied the pairs. That is, if they had been asked to memorize the word pairs as individual words, they did better on the item recognition test which was simply asking if they had seen the word before, and if they had been asked to memorize the word pairs together, they did better on the associative recall tests. As far as the emotional aspect, this experiment showed that neutral-neutral pairs are more accurately recalled.

In experiments 2a and 2b, Murray and Kinsinger tested how long it takes emotional-neutral word pairings to be memorized versus neutral-neutral word pairings. They varied the time that the participants were allowed to view the word pairings by two, four, or six seconds. They expected to find that neutral-neutral word pairings would take longer to memorize because the emotional words from emotional-neutral word pairs help to make memories stick. Twenty-three new participants were chosen and tested with one hundred and twenty word pairs broken into groups of forty words each in the same groups as experiment one. Both experiment 2a and 2b were run the same way as experiment one with

the only difference being that experiment 2b only had one associative recall test in phase three. The results from these experiments being that emotional-neutral word pairings were more quickly memorized when memorizing the words together than neutral-neutral word pairings, but that when memorizing the word pairings as individual words, the timing across the two different groups was relatively the same.

The overall results from these experiments helps to support the priority-binding theory which states that emotions help people remember neutral details which accompany them, but the results would only support that theory initially because it was also found that after some time, neutral-neutral pairings begin to have better recall rates.

References

- Murray, B. D., & Kensinger, E. A. (Oct. 2012). The effects of emotion and encoding strategy on associative memory. *Memory & Cognition*, *40*(7), 1056-1069. doi: 10.3758/s13421-012-0215-3