

Research Focus: Three Levels of Processing?

Craik, F.I.M. & Tulving, E. (1975). Depth of processing and the retention of words in episodic memory. Journal of Experimental Psychology: General, 104, 268-294.

Aim:

To demonstrate three separate levels of processing. Craik and Lockhart advanced their theory, admitting to three different depths of processing, after criticisms that the original theory made it sound as though all semantic processing is equal.

Procedure:

Subjects saw word lists, followed by sentences of increasing complexity, e.g:

Simple: "She cooked the _____"

Medium: "The _____ frightened the children."

Complex: "The great bird swooped down and carried off the struggling _____"

Subjects were asked to decide which words fitted meaningfully into the blanks, after seeing twenty sentences of each level of complexity. They experienced cued recall – they saw the sentences and were asked to recall the words.

Findings:

Subjects were much more likely to recall words that fitted into the complex sentences meaningfully as they had been more elaborately rehearsed, and had probably drawn down resources from other cognitive stores. The least remembered words were those which fitted meaningfully into the simple sentences.

Conclusions:

There are probably three levels at which we process information: structural, phonetic and semantic. Does this sound like the codes used in SR, STM and LTM?

Research Focus: Criticising the Multi-Store Model of Memory.

Craik, F.I.M. & Watkins, M.J. (1973). The Role of Rehearsal in Short Term Memory. Journal of Verbal Learning and Verbal Behaviour, 12, 599-607.

Aim:

To investigate whether rehearsal of items in STM always leads to entry into LTM, and are therefore easier recall. The researchers believe that often we rehearse information briefly, until we don't need it anymore, then we allow it to decay. This is known as *maintenance rehearsal*.

Procedure:

Participants were given lists of words of varying lengths, and asked to listen out for and remember words that began with a certain letter. Imagine that letter is "G", and see the below list:

<i>Daughter</i>	<i>Oil</i>	<i>Rifle</i>	<i>Garden</i>	<i>Grain</i>	<i>Table</i>
<i>Football</i>	<i>Anchor</i>	<i>Giraffe</i>	<i>Pillow</i>	<i>Thunder</i>	<i>Glove</i>

Each time you come across a G word, you rehearse it whilst you listen for the next, and the longer it stays in STM, the greater the chance it goes into LTM. "Garden" should have gone into the LTM and therefore be recalled more frequently. Craik and Watkins gave their subjects a surprise quiz on the words at the end of the session.

Results:

They found no differences in recall between any of the words – all G words had been rehearsed entirely for the purposes of the experiment (maintenance) and length of time in STM had had no effect at all.

Conclusion:

Evidence is against the Multi-Store Model of memory, information does not automatically pass from STM into LTM when rehearsed. We often rehearse information to use in the near future, and allow it to be then discarded.



RESEARCH FOCUS

EVIDENCE AGAINST THE LEVELS OF PROCESSING MODEL

Morris, C.D., Bransford, J.D. & Franks, J.J. (1977) “Levels of processing versus transfer appropriate processing.” Journal of Verbal Learning and Verbal Behaviour, 16, 519-533

AIM: To demonstrate that the LOP model is limited because of its concentration on encoding. The prediction is that the best recall does not necessarily depend on depth of processing but will be for the type of learning that is most relevant to the retrieval task. Under some circumstances phonetic learning can result in better recall than semantic learning.

PROCEDURE: Subjects are given an incidental judgement task (exactly the same as that used by Craik & Tulving). They are shown a series of words (e.g. ‘cat’) and asked to make rhyme judgments on them (e.g. ‘Does it rhyme with hat?’) or semantic judgments (e.g. ‘Does it have a tail?’).

The following day, subjects were either:-

1. Required to recognise the items (in exactly the same way as Craik & Tulving’s experiment), *or*
2. Were shown a list of words and asked in each case whether the word rhymed with a word presented the previous day.

What would the LOP model predict?

FINDINGS: The following was found for the two conditions:-

1. Standard LOP procedure: the semantic processing condition led to the higher performance (as the model would predict) – i.e. subjects recalled more of the words that had been processed in terms of their meaning.
2. When asked to recall words based on their judgment of rhyme (phonetics) the *opposite* result occurred – *subjects performed better on the words presented in the phonetic condition* (rhyme judgments).

CONCLUSIONS:

Stored information will be remembered only to the extent that it is relevant to the memory test used. Under these circumstances deep (semantic) processing is not necessarily more memorable than shallow (phonetic) processing.

This is an experimental disproof of the Levels of Processing model.