



CRAIK AND TULVING (1975)

Aim: To test the levels of processing framework by looking at trace durability

The **levels of processing framework** suggests that material which has been processed *semantically* (deeply and for meaning) is that which will be best recalled. **Craik and Tulving** (1975) carried out a study to test the framework, by testing to see if the **durability** of a trace was affected by the depth of processing.

Durability -
the durability of a trace is how long it lasts

Forgetting occurs when the memory trace has gone. The aim of the study was to see whether material which had been more deeply processed would be recalled better. This would mean a greater degree of semantic processing, involving meaningful processing.

PROCEDURE [THE BASIC STUDY]

- The participants were put into situations where they used different depths of processing:
 - **shallow processing** involved asking questions about the words themselves (**structural processing**)
 - **intermediate processing** involved questions about rhyming words (**phonemic processing**)
 - **deep processing** involved whether a word fit into a particular semantic category (**semantic processing**)
- After this **encoding** phase, there was an unexpected recognition or recall task
- All ten experiments used the same basic procedure. Participants were tested individually, and were told that the experiments were about perception and reaction time. A **tachistoscope** was used, which flashed words onto a screen
- Different words were shown, one at a time, for 0.2 seconds. Before the word was shown, participants were asked a question about the word, which would lead to different levels of processing, from the list above
- After being asked the question, the participant looks into the tachistoscope and the word is flashed
- They give a "yes" response with one hand and a "no" response with the other
The questions were designed to have half of them answered "yes" and half "no"
- After all the words have been completed, the participants had an unexpected recognition assessment: their hypothesis, that 'memory performance would vary systematically with depth of processing'

EXPERIMENTAL DETAILS

In *Experiment 1*, structural, phonemic and semantic processing was measured, as well as whether or not a particular word was present. Words were presented at 2-second intervals over the tachistoscope. There were 40 words and 10 conditions. Five questions were asked

- Do the words rhyme?
- Is the word in capitals?
- Does the word fit into this category?
- Does the word fit into this sentence?
- Is there a word present or not?

Each question had "yes" and "no" responses, making ten conditions overall. The results are shown below

Tachistoscope -

a device which allows an image to be displayed upon a screen, used here by the experimenter to flash letters or other stimuli onto the screen for a short time in sequence



Response Type	Level of Processing from Least Deep (1) to Deepest (5)				
	1 Is there a word?	2 Is the word in capitals?	3 Does the word rhyme?	4 Does the word fit into this category?	5 Does the word fit into this sentence?
	Proportion of words recognised correctly				
Yes	0.22	0.18	0.78	0.93	0.96
No	N/A	0.14	0.36	0.63	0.83

CONCLUSIONS

Deeper encoding (when the participants had to consider whether a word fitted into a particular category or sentence) took longer and gave higher levels of performance. Questions where the response was “Yes” also produced higher recall rates than those which were responded with “No”.

It was concluded that the enhanced performance was because of qualitatively different processing, not just because of extra time studying. Craik and Tulving say “manipulation of levels of processing at the time of input is an extremely powerful determinant of retention of word events”. It is interesting that “Yes” and “No” answers took the same amount of processing time, but “Yes” answers led to better recognition rates. This does not seem to be just about levels of processing and so needs further investigation.

EVALUATION

- ✓ The experiments were designed carefully with clear controls and operationalisation of variables. The study can therefore be replicated and the findings are likely to be reliable. In fact, by carrying out so many experiments, Craik and Tulving (1975) have replicated their own work
- ✓ The framework is clear and the study takes the ideas and tests them directly, subsequently feeding back to the framework: for example, the researchers recognised that deep processing being measured as meaningful processing is a circular argument, so they focused on depth of processing needing longer processing – focusing on a criticism of the framework strengthened their study
- ✗ One weakness is how to test “depth” – it can be very vague (there is a circular argument of “deep” meaning “meaningfully processed” and “meaningfully processed” means “deep”)
- ✗ The tasks are artificial. They involve processing words in artificial ways and then trying to recognise them. This is not something that would be done in real life, so the study could be said to lack validity