

# Episodic and semantic memory distinction



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Explicit memory requires conscious recall, in other words the information must be called back consciously when it is required. If this information is about our own lives it is called episodic memory. Episodic memory allows a person to decide when, where and under what circumstances they experienced an event. A episodic memory test explicitly requires the participant to retrieve information about an earlier episode. If it concerns our general knowledge then it is called semantic memory.

Semantic memory refers to conceptual knowledge, independent of other contexts in which that knowledge was acquired. Semantic memory test can in principle be performed without the need to retrieve information about any specific learning episode. These two memory systems have been proposed by much evidence to be separate distinct memory stores, Tulving (1972) claims that differences in LTM are due to these distinct differences in episodic and semantic memory, such that semantic knowledge cannot aid episodic retrieval.

Tulving suggested that the material is organised differently in each of these and that they have different susceptibilities to forgetting therefore each requires a different explanation. Episodic memory is lost rapidly, and new information arrives and interferes. It may be that semantic memory is constantly used, and it is rehearsed. . In this essay I am going to be discussing the extent to which this dissociation claim is true using evidence from blood flow in the brain, from amnesiacs, from experimental dissociations and simple transfer.

Wood et al (1975), found evidence for the distinction by a measure of the regional cerebral blood flow. They supported the distinction as significant correlations were found between accuracy of performance and blood flow in the occipital and temporal-occipital regions for the episodic recognition group, but not for subjects in the semantic recognition group. Similar findings were also reported by Tulving (1979) where he found an increase in blood flow in the back of the brain for semantic memories and in the front of the brain for episodic memories using radioactivity as a measure.

However caution must be taken as Wood et al pointed out that it might be possible that the differences observed are attributable to differences in the difficulty level of the task, rather than to their episodic and semantic characterization. Evidence from amnesiac patients have shown that they lose their memory for personal events and people (episodic memory loss) while they retain their memory for language and other cognitive concepts and general knowledge (semantic memory). This pathological dissociation was demonstrated by Schacter, Wang, Tulving and Freedman (1982).

They studied a 21 year old man in an amnesic state and after he had recovered. They tested episodic memory by giving him cue words, prompting him to think of past experiences, they also gave him a semantic task of famous face recognition. His semantic ability was similar, in the amnesiac and non amnesiac state, 15 and 16 out of 24 respectively. However his episodic memory was quantitatively and qualitatively different. In an amnesic state only 14% of episodes dated before amnesic onset were reported after the recovery 92% was remembered from the period that he had preceded the onset of amnesia.

This provides evidence for the dissociation. Shimamura and Squire also demonstrated this by looking at source memory of amnesics. Amnesics when tested against the control group had similar fact recall, however they made many more source errors. A source error is the inability to recognise previous information from the original study episode. These results indicate that amnesics can perform a semantic or indirect memory task at the same level as controls, but at the same time have vastly poorer episodic source memory. Experimental dissociation of learning materials is another method used to measure the distinction.

Jacoby and Dallas (1981) gave participants a series of direct (episodic) recognition tests and found that encoding operations (structural, phonetic or semantic) had a substantial impact, however for indirect test perceptual identification tests they had no impact providing evidence for the dissociation. Experiments conducted on post hypnotic amnesia for recently learned material by Kihlstrom (1980) have also shown that there is distinction between the two memory systems by the experimental dissociation of brain states.

Subjects were classified by their degree of hypnotisability and under hypnosis over learned 16 words. In post hypnosis under amnesic instruction subjects were given alternating free recall episodic tasks and free association semantic tasks then a further free recall task following the reversibility cue ‘ Now you can remember everything... ‘. They concluded that episodic memories were blocked by amnesia especially to those who were highly susceptible to hypnotisability (0.1 response probability), but

later became accessible however the semantic memories were not blocked shown by similar response probabilities across all susceptibilities.

This shows that they are separate memory systems. Anderson and Ross (1980), used a simple transfer method attempting to provide evidence against the episodic and semantic distinction. They had a episodic study task where participants assigned to 1 of 4 conditions to study sentences. They were then tested for simple transfer for their semantic memory where they had to make true or false judgements about the sentences they heard.

Anderson and Ross expected to find a negative transfer in the interference condition, where statements such as ‘ a spaniel retrieves a ball’ are given as opposed to the practice condition ‘ a spaniel is a dog’ they argued that such a finding would represent ‘ good evidence against the functional basis of the distinction. However results provided little evidence for this, only in the fourth block and for false pairs did negative transfer occur. Therefore overall positive transfer was shown in the interference condition, this could provide evidence for the distinction. However this method of simple transfer has been criticised on validity basis.

It can be questioned whether it actually is measuring the distinction because it gives no idea as to what is being transferred in their experimental situation, nor do we know whether or how what is transferred is related to the information in episodic memory. Therefore this type of experiment can be classed as inadequate for this debate. Herrmann and Harwood (1980) conducted a experiment of transfer comparison and this proved to be more successful in showing a distinction. Recognition latencies for ‘ new’ pairs

were examined and found episodic variable does and comparable semantic variable does not affect subjects performance the same task.

However there are problems with the episodic and semantic memory distinction found by Musen and Squire. Participants were presented with novel word pairs once. In the perceptual identification priming test condition they were presented with old, new or recombined pairs with no associated semantic relationship, therefore it was assumed that they would be learned episodically. However the identification test is a test of semantic memory therefore no priming should occur. However they did obtain results of priming in both participant groups.

This is inconsistent with the semantic/episodic distinction. A criticism overall however is that most laboratory tests of memory rely on episodic memory and not semantic memory where participants have to recall from a past episodes and all the distinctions in tests have shown a lack of episodic memory. Counter to this claim, Bahrick (1985) has put forward the notion of a permastore for episodic memory, where memories are rarely used but retained for long periods of time. He found that people when shown their high school yearbook could recall the names of classmates over 45 years later (episodic).

Comparably, Bahrick (1985) tested retention of Spanish in 773 people who had studied it in high school. Knowledge declined over the first three years after leaving school and reached a stable state at 50 (semantic). Also the success of hypnosis in revealing forgotten memories also suggests a permastor. Therefore there may be a distinction however not necessarily due

to the blocking of episodic memory as opposed to semantic. At the very least episodic and semantic memories appear to be more closely related than Tulving's original hypothesis envisaged.

This is because episodic memories can become semantic ones. Watkins and Kerkar conducted an experiment which showed that words which were presented twice with different contexts (word colour etc) had superaddictive recall, i. e. greater than expected. However the participants were worse at remembering the contexts of the words if twice-presented. This shows that a semantic memory was created in two presentations of the item, amplifying the commonalities of separate events (identity of the word ) while at the same time discarding individual parts of those events (colour).

Therefore this shows even though there is vast evidence for the distinction, episodic memories can become semantic ones. In conclusion evidence posed for the distinction is vast and varied in methods of measurement and data collection sources. This results have overall shown that there is a distinction between the two memory systems, episodic and semantic. Future research should however look at these two systems in a different light rather than the relationship between them, focus on their relationship with other memory systems.