

Q: What is Ebbinghaus' concept of association?

A: The concept of association, which Ebbinghaus used to explain memory, is pure mechanism. An association link is a link between things. If one member of the associated group appears, the association is automatically activated, and that leads inexorably to the appearance of the other associated member or members. (i.e. If the word grass is associated with the word green, anytime you think of grass, green will also automatically come to mind. In this sense, the contents of conscious thought are mechanically determined. [ref: FCP p. 12-13]

Q: Why did Ebbinghaus work with nonsense syllables?

A: Ebbinghaus invented the nonsense syllable because he was interested in understanding retention of newly learned material. He reasoned that nonsense syllables, unlike words, would have no associations at the outset of the experiment. Thus, he would be able to study the factors that determined association formation in his experiments. Ebbinghaus assumed that associations were being formed between and among the nonsense syllables in order for them to be successfully remembered. Over the course of his research, he verified the intuitions that repetition facilitates memory and that memory declines as a function of the time since the experience. The influence of a prior experience on your current behavior varies, depending on whether you intend to remember the past or you intend to do something else. Intentionality is not a concept that is easily folded into a mechanistic explanation, and the legacy of Ebbinghaus is pure mechanism in memory explanation. [ref: FCP p. 12-13]

Q: How does the term rationalism relate to memory research?

A: Rationalism is to be contrasted with empiricism, which is the belief that all of our knowledge is in the form of particular experiences. One way you can think about this distinction is that rational knowledge is produced by thought. Once psychologists began to study complex human behavior in the late nineteenth century, rational processes and abstract knowledge started to reappear in discussions. [ref: FCP p. 18-20]

Q: What is the connection between rationalism and linguistics?

A: The reemergence of the concepts of rationalism and abstract knowledge influenced all of cognitive psychology, but specifically the discipline of linguistics. The renewed emphasis on rationalism and abstract knowledge was incompatible with the behaviorists' insistence on empiricism and environmental determinism and encouraged a return to the study of mental processes that characterized the beginnings of psychology. [ref: FCP p. 18-20]

Q: What is the definition of structuralism?

A: Structuralism holds the position that perception is a composite experience based on the elementary structural parts of the sensations. This theory assumes that objects are perceived on the basis of parts, but these parts are three dimensional geometric components of the objects. For example, the components may be such things as cylinders, blocks, and wedges. [ref: FCP p. 63]

Q: What are the basic elements of Baddeley's Working-Memory Model?

A: The phonological loop stores verbal material. The visuo-spatial sketchpad is the visual storage system of working memory. The episodic buffer is a subsystem that holds information integrated across time and space. Working memory is an active system of memory in which information is assembled and organized prior to recall. And long-term memory is a concept that represents the vast

store of knowledge we have about the world, ranging from everyday events such as how to use a knife and fork to more esoteric information such as axioms of geometry. [ref: FCP p. 128-130]

Q: What are the differences between encoding processes and retrieval processes? Processes underlying perception and comprehension of experiences are referred to as encoding processes to long-term memory. Processes occurring at the time memory is tested are retrieval processes. [ref: FCP ch. 4]

Q: What are the basic elements of working memory capacity from Engle's article? Working memory capacity is separate from short-term memory. It is most important under conditions in which interference leads to the retrieval of responses that conflict with the current task. It predicts performance on a wide range of real-world cognitive tasks. Working memory capacity is an important component of general fluid intelligence. There are positive relationships between measures of working memory capacity and performance on higher-order cognitive tasks. [ref: Engle, R. J. (2002). Working memory capacity as executive attention. *Current Directions in Psychological Science*, 11, 19-23.]

Q: What are the basic elements encoding specificity? Encoding specificity theory states that a cue is effective only if it was specifically encoded with the "to-be-remembered" item of information. Effective retrieval cues are those that were present when the event occurred. That is, a cue will be effective if it was specifically encoded with the target event. According to encoding specificity, the necessary condition for successful retrieval is that cues that were encoded with the target are present. Depending on other prevalent conditions, the cue will either bring the target to mind or not, and this would be true in either recall or recognition. [ref: FCP p. 163-164]

Q: What is the definition of a single process theory? A single process theory of retrieval is one in which both recall and recognition decisions were based on a sense of familiarity. Encoding specificity is an example of a single-process theory. [ref: FCP p. 163-164]

Q: What is the original levels-of-processing hypothesis? The levels of processing hypothesis has a different goal from that of working memory. Working memory is an elaboration of the concept of short-term memory. Levels of processing was conceived as a general description of retention in both the long and short term. Levels of processing abandons the idea of discrete storage systems and concentrates on the types of processes associated with different levels of retention. The hypothesis is based on two fundamental assumptions: 1) Memory trace is a by-product of perception and comprehension. What you remember will be the things to which you paid attention; 2) Retention is directly related to the processing of meaning. Semantic processing is assumed to produce better memory than non-semantic processing. Semantic processing is assumed to be "deep" processing and non-semantic processing "shallow," hence the designation, "levels" of processing. The primary difficulty with this hypothesis is that nonsemantic information does not decay more rapidly than semantic information. [ref: FCP p. 140-145]

Q: What is the generation effect? Labeled by Slamecka and Graf (1978): Information you generate is better remembered than information you see or hear. In their study, the group that generated the words remembered many more than the group that read the words. The generation effect occurs under a wide range of circumstances. A number of different generation rules, including rhyme, category, and associative rules, produce the effect. The generation effect does not occur when using implicit memory tests. [ref: FCP p. 150-151]

Q: How is priming used, in the Schacter article?

A: Priming can be accompanied by decreased activity in a variety of brain regions. There are two routes to cross-modality priming. One route involves changes in phonological processing while the

other involves explicit retrieval. Both amnesic patients and healthy patients have a working phonological processing route. However, only the explicit retrieval route is available to healthy people. [ref: Schacter D. L., & Badgaiyan, R. D. (2001). Neuroimaging of priming: New perspectives on implicit and explicit memory. *Current Directions in Psychological Science*, 10, 1-4.]

Q: What is the Loftus type misinformation effect?

A: This is the effect of intervening questioning on later memory. Interpretations of this effect include directed forgetting and decay. Directed forgetting is purposive, while decay theory states that forgetting is due to an autonomous weakening or decay of the memory trace. One interpretation of this effect is that the intervening event causes the original information to be lost from memory; that is, the intervening event replaces the original item in subsequent memory for the event. [ref: FCP p. 221]

Q: What is interference theory?

A: Interference theory is a theory of forgetting which contends that events are forgotten because other learning interferes with those events or prevents them from being remembered. The theory argues that forgetting results from competition among responses to a retrieval cue. This competition is based on the relative associative strength between the competing items and the cue. If an incorrect response has a higher associative strength than the correct response, access to the correct response is blocked, which can lead to a reduction in the associative strength of the corrected response to the cue. Interference theory assumes that response competition is the important setting condition for forgetting. [ref: FCP p. 205-207]

Q: What is response competition?

A: Response competition is a process in forgetting in which different responses made to the same stimuli compete with each other at the time of recall. [ref: FCP p. 206]

Q: What is source monitoring?

A: Source monitoring refers to storing information about the origins of our memories. Source monitoring takes two key forms: 1) Different physical sources (e.g., color & size of studied words); 2) Physical origin vs. spontaneous mental origin vs. post-event suggestions. On retrieving information about the correct origins of our memories, there are two key forms: 1) Distinguishing different physical sources; 2) Distinguishing physical from non-physical sources. [ref: Metacognition lecture ]

Q: What is a judgment of competence?

A: The Dunning article explains that people are unaware of their incompetence related to a particular skill because poor performances are "double cursed": People's lack of skill deprives them not only of the ability to produce a correct response, but also the expertise necessary to deduce that they are not producing the correct response. People use their preconceived beliefs about their skills to estimate how they are performing. Often these beliefs do not correlate with objective performance, resulting in a lack of awareness pertaining to incompetence. If poor performers are given the skills necessary to objectively evaluate their performance, to discern correct from incorrect answers, then they can recognize their own incompetence. [ref: Dunning D, Johnson K, Ehrlinger J, et al. (2003). Why people fail to recognize their own incompetence. *Current Directions in Psychological Science*, 12, 83-87.]

Q: What are basic level categories? Under the title "furniture," chairs, sofas, and tables are good examples of basic level categories. The basic level can be contrasted with more general superordinate level such as recliner, loveseat, and card table. Basic level concepts share many attributes with other members of the category and few attributes with members of other categories. Category members at the basic level share a larger quantity of information, which makes the basic level concept most informative. [ref: FCP p. 276]

Q: What is typicality? Typicality refers to how well a particular instance represents knowledge of the concept, and ratings of typicality are easily obtained by simply asking people questions such as, "on a scale of 1 to 10, how typical is robin of bird?" The typicality ratings, then, provide an estimate of the number of characteristic features shared by an instance and a superordinate. This is a demonstration of semantic distance. [ref: FCP p. 273]

Q: What did Haber and Haber learn about eyewitness identifications? Haber and Haber asked a simple question that is critical to juries' interpretation of eyewitness identifications: "under good conditions, just how accurate are eyewitness identifications?" They found that when the culprit is absent from the test stimuli, there are two possible responses: a wrong choice (false-memory response) and no choice (true-memory response). When the culprit is present in the test stimuli, however, there are three possible responses: a wrong choice (false-memory response), a correct choice (true-memory response), and no choice (no-memory response). In criminal proceedings, it is the culprit-absent data that are of greatest interest because defendants enjoy a constitutional presumption of innocence. Haber and Haber found that subjects falsely identified an innocent suspect 57% of the time when the actual culprit was absent from recognition tests and that they falsely identified an innocent suspect 27% of the time when the actual culprit was present in recognition tests. [ref: SFM p. 38-39, Haber, R.N., and Haber, L. (2004). A meta-analysis of research on eyewitness line-up accuracy. Manuscript submitted for publication.]

Q: What are some of the differences between constructivism and schema theory? Constructivism states that people remember what they understand to be the meaning of the experience, not the actual experience. They remember false information that preserves the gist of their experience. Shortly after events are experienced, the person's only remaining memories are based on a representation of the meaning of events. This theory also delved into the distinction of short and long-term memory. Short term memory is a veridical (verbatim) storage system, whereas long term memory is a interpretative (semantic) storage system. Schema theory evolved from the constructivist tradition and may be viewed as a specific implementation of constructivist thinking about memory. Four key principles are used in explaining false memories: 1) Selection - of all the people, objects, and events that are components of a target experience, only some will be encoded into memory and preserved in the eventual memory representation; 2) Abstraction - for items that are selected for encoding, this principle specifies that there will be lawful fluctuations in the level of detail about them that is preserved in memory. Abstraction reduces the information in an item's memory representation; 3) Interpretation - interpretation enriches the information in an item's memory representation. This principle incorporates the effects of processes such as elaboration and inference, which generation schema-consistent information that goes beyond actual experience; 4) Integration - Integration refers to the post-storage consolidation of memory representations that fit with an activated schema. If a memory schema has been activated, it is assumed that once memory representations of the target experience have been formed, they undergo a final assimilation process that integrates them into a single, coherent, long-term memory structure. [ref: SFM ch. 3]

Q: What are some of the similarities between constructivism and schema theory? Both are early false memory theories. The theories assume that true and false memories are generated by the same integrated memory structure. They predict too much dependency between true and false memory.

They also predict that on memory tests, true memories and false memories should be positively correlated with each other. [ref: SFM ch. 3]

Q: What are some of the influences on suppressing false memories?

A: Suppressing false memories for unpresented items can be influenced by many different things, including: the distinctiveness heuristic [ref: FCP p. 146 and SFM p. 92, 94-95] monitoring operation in activation/monitoring theory [ref: SFM p. 91-95], and recollection rejection in fuzzy-trace theory. [ref: SFM p. 88-89]

Q: How is clustering related to category learning, according to Bradley Love?

A: Developing categorization schemes involves discovering structures in the world that support a learner's goals. Existing models of category learning, such as exemplar and prototype models, neglect the role of goals in shaping conceptual organization. Bradley Love's article focuses on a clustering approach that reflects the joint influences of the environment and goals in directing category acquisition. Clusters are a flexible representational medium that exhibit properties of exemplar, prototype and rule based models. [ref: Love, B. C. (2005) Environment and goals jointly determine category acquisition. *Current Directions in Psychological Science*, 12, 195-199.]

Q: What is SUSTAIN?

A: The clustering model "Supervised and Unsupervised Stratified Incremental Adaptive Network" (SUSTAIN) operates by assuming that the world has a simple structure and adding complexity (i.e. clusters) when existing clusters fail to satisfy the learner's goals elicits surprise. In other words, the mechanism of surprise adds complexity (new clusters) to the clustering model. SUSTAIN acquires category structures which are governed by the structure of the world and the current task or goal. [ref: Love, B. C. (2005) Environment and goals jointly determine category acquisition. *Current Directions in Psychological Science*, 12, 195-199.]

Q: What do we mean by DRM, and what hypotheses are used with it?

A: It has been established that the Deese-Roediger-McDermott procedure has repeatedly produced high levels of false memories. The authors explored whether induced positive or negative moods would influence this false memory effect. The affect-as-information hypothesis predicts that positive affective cues experienced as task-relevant feedback encourages relational processing during encoding, which should enhance false memory effects. The hypothesis also predicts that negative affective cues will encourage item-specific processing at encoding, which should discourage false memory effects. [ref: Storbeck, J. & Clore, G. L. (2005). With sadness comes accuracy; With happiness, false memory: Mood and the false memory effect. *Psychological Science*, 16, 785-791.]

Q: What were the results of DRM experiments?

A: Experiment 1 supported the affect-as-information hypothesis; individuals in negative/neutral moods were significantly less likely to show false memory effects than those in positive moods or those whose mood was not manipulated (neutral). The authors then examined whether moods had their effects at encoding or retrieval. Experiment 2 also supported the hypothesis; moods influence at encoding, rather than influencing monitoring at retrieval. [ref: Storbeck, J. & Clore, G. L. (2005). With sadness comes accuracy; With happiness, false memory: Mood and the false memory effect. *Psychological Science*, 16, 785-791.]

Q: What are some specific instructions for eyewitness identification?



## Memory and the Law: Frequently Asked Questions

A: Identification instructions incorporate many different features. Witnesses should be told that the culprit may not be present in a line-up or photospread and that they are under no obligation to make an identification. In addition, witnesses should be told that the person administering the test does not know the identity of the suspect, even if he or she does know the suspect's identity. [ref: SFM p. 282, Wells, G.L. (1998) Eyewitness identification: A system handbook. Toronto, Canada:Caraswell.]

Q: What did Kassir and Kiechel's experiment show?

A: The authors' experiment showed that false incriminating evidence can lead people to accept guilt for a crime that they did not commit. All subjects in the study were innocent. Compared with subjects in the slow-pace/no-witness group, those in the fast-pace/witness group were more likely to sign a confession, internalize guilt for the event, and confabulate details in their personal memories, consistent with the confessed belief. The authors' research had further implications on misinformation effects and repressed memories. [ref: Kassir, S.M., & Kiechel, K.L. (1996). The social psychology of false confessions: Compliance, internalization, and confabulation. Psychological Science, 7, 125-128.]

Q: How did the experiments in the Seamon et al. article build on the work of DRM?

A: This article questions whether participants in the Deese, Roediger, and McDermott (DRM) procedure demonstrate false memory because they think of non-presented critical words and confuse them with the words actually presented. Two DRM procedure experiments were used. Participants studied DRM lists, half rehearsing silently and half rehearsing "overtly." There were two new results: The majority of overt-rehearsal participants rehearsed half of the critical words during study. More importantly, critical-word rehearsal during the study period increased false recall, yet had no influence on false recognition or remember judgments for falsely recognized critical words. The conclusion was that thinking of critical words during study was unnecessary for producing false memory, there is an underlying automatic activation instead. [ref: Seamon, J.G., Lee, I.A., Toner, S.K. Wheeler, R.H., Goodkind, M.S., & Birch, A. D. (2002). Are false memories dependent on mental rehearsal: Thinking out loud in the DRM procedure. Psychological Science, 13, 526-531.]

Q: What is a major finding which has been obtained in DRM studies with children?

A: False recall and false recognition of unrepresented stimulus words have both been found to decrease as children develop and get older. [ref: SFM p. 164-165, 169]

Q: What are deep-processing instructions?

A: Deep-processing instructions are one of the most frequently studied storage manipulations in the past three decades of false memory research. Deep processing is really 'semantic' processing. In deep processing, subjects are most likely to recall or recognize targets if storage-phase processing is deep rather than shallow. Factors that increase deep processing should enhance true memory. Deep-processing instructions should elevate false memories in both children and adults, yet should elevate adults' false memories more. [ref: SFM p. 117-119]

Q: What are metaphorical statements, and how have they been used in memory research?

A: Reyna and Kiernan studied the influence of metaphorical statements on children's false recognition of distractor sentences that preserved the meaning of those metaphors. Metaphorical sentences involve odd combinations of words (e.g., The woman was an aspirin, kneeling by the lost boy), such sentences attract more surface processing than equivalent literal sentences, so that subjects can figure out what they mean. Concerning false memory, metaphorical statements produced an even larger

deflation in false-alarm rates. Simply put, metaphorical statements can decrease the false memories of children. [ref: SFM p. 184-186, Reyna, V.F., and Kieran, B. (1995) Children's memory and interpretation of psychological metaphors. *Metaphor and Symbolic Activity*, 10, 309-331.]

Q: What are surface cues, and how are they used in memory research?

A: Surface cues are a verbatim cuing manipulation (i.e., a manipulation of the nature of retrieval cues) that affects children's ability to retrieve verbatim traces. When target materials are presented, they are accompanied by certain surface cues. For instance, suppose that the target materials consist of narratives that subjects read while looking at a computer screen. The narratives are presented in letters of a certain size, color, and font, and the sentences that comprise the narrative are presented in a certain position on the screen. For example, subjects see sentences printed in 10-point boldface green Arial font, centered on the computer screen. These are all surface cues that are incidental to the actual words and sentences. Match/mismatch manipulations have figured in many studies of true memory, the standard result being that performance is better when test cues match study cues than when they mismatch. Match/mismatch surface cues during study and test is a verbatim-cuing manipulation that has been found to suppress false-memory reports in adults. [ref: SFM p. 135, 187]

Q: How do source cues affect memory tests?

A: Providing source cues on memory tests reduces/eliminates misinformation effects. Source cues have the same effects in adults and children, where memories are improved by the source cues. [ref: SFM p. 337]

Q: What is memory work?

A: Memory work refers to the domain of memory-recovery exercises, activities that patients are given to perform usually outside therapy sessions, in the hope of unearthing memories. According to Poole et al.'s (1995) survey, memory work, along with the interpretation of behavioral symptoms, is the most common therapeutic procedure for stimulating memory recovery, being used by more than one third of practicing therapists. Examples of memory work include writing songs about childhood abuse and writing accusatory letters to suspected abusers. Journaling is a particularly common form of memory work in which therapists can receive specialized training. [ref: SFM p. 393]