study has shown that neuroticism predicts an increased likelihood of intimate partner violence in newlywed couples over the first 4 years of marriage; the effect is stronger among partners who experience greater stress.

In another study, daily diary research on extraversion and social engagement has shown that highly extraverted individuals tend to more frequently create or enter situations that involve socializing, although they do not necessarily derive more pleasure from such situations than do less extraverted individuals. Experience sampling research has also shown systematic variation in people's day-to-day activities as a function of the five factors. For example, individuals high on extraversion tend to spend less time alone, whereas both highly agreeable individuals and highly conscientious individuals tend to use fewer offensive words in conversations with others.

It is clear that the five-factor model has become the dominant model of the dimensions of personality. One comparative review indicated that over a 5-year period 1,500 studies were based on the five-factor model, whereas fewer than 250 studies were based on the models developed by Cattell or Eysenck. Despite the dominance of the five-factor model, it is important to note that according to McCrae and Costa it is not a *theory* of personality. Instead, it is a description of the structure of personality. Understanding the causes and consequences of these dimensions of personality and integrating them into a comprehensive model of personality remains for the future.

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See also Behavioral Theories of Personality; Big Five Model and Lexical Trait Theory; Cross-Cultural Methods of Research; Culture and Personality; Existential Theories of Personality; Humanistic Theories of Personality; Metatheoretical Issues in Personality Psychology; Personality, Measurement of; Personality Types Versus Personality Traits; Psychoanalytic and Psychodynamic Theories of Personality

Further Readings

Cattell, R. B. (1947). Confirmation and clarification of primary personality factors. *Psychometrika, 12,* 197–220.

Costa, P. T., & McCrae, R. R. (2009). The five-factor model and NEO inventories. In J. N. Butcher (Ed.), *Oxford handbook of personality assessment* (pp. 299–322). New York, NY: Oxford University Press.

Eysenck, H. J. (1947). *Dimensions of personality.* London, England: Routledge & Kegan Paul.

Fiske, D. W. (1949). Consistency of the factorial structures of personality ratings from different sources. *Journal of Abnormal and Social Psychology, 44,* 329–3434.

John, O. P., Naumann, L. P., & Soto, C. J. (2008). Paradigm shift to the integrative big five trait theory. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (3rd ed., pp. 114–158). New York, NY: Guilford Press.

Failure of Memory

In the same way that a muscle is easily overlooked until it is strained, memory is most frequently considered when it fails. A man who forgets a recently learned name or walks into a room but cannot remember why he went there is likely to chalk such experiences up to having a "bad memory." However, memory failures are often reflections of the design of a system that is intended to do more than simply store past events and regurgitate on demand. On the contrary, memory plays an important role in all cognitive processes by supporting inference as well as remembering. Understanding the nature of what memory allows helps explain why memory failures occur—and how some of them can be remedied.

Memory failures fall along a broad spectrum of consequentiality. On one end are inconsequential failings to encode irrelevant information (e.g., the color of a car parked at the other end of a parking lot); on the other end are ubiquitous and severe impairments that accompany memory disorders (e.g., Alzheimer's disease). In this entry, the focus is restricted to key components of nonpathological memory failure, including information loss during encoding, the nature and causes of forgetting, and false memory.

Information Loss During Encoding

Which color appears at the top of a traffic light? Does Lincoln face right or left on a U.S. penny?

If it is difficult to answer those questions based on memory alone, it is likely because of a failure to properly encode those details into long-term memory. Exposure alone is not enough to ensure that something makes it into memory. Memory is not like a video camera, passively recording every detail for later viewing. To remember something later, one must direct one's attention to the relevant information in the environment. To foster effective storage, that information must be encoded in such a way as to relate it to information already in long-term memory—a process sometimes called *elaborative rehearsal*.

Imagine a woman surrounded by multiple conversations at a party. Although the sound waves from all those conversations arrive at her ears, she pays attention only to her own conversation and is able to ignore competing conversations. To have a good chance of later remembering information within that specific conversation (such as the name of a new acquaintance who was part of the conversation), she must build meaningful associations between her current knowledge and the new information.

For example, she might effectively remember a new name by trying to relate that name to information she already has stored about that person, about the person's profession or conversational habits, or about the ongoing party. The nature of that specific association will have ramifications for later situations in which she will be able to remember the name and the likely errors she will make if she fails to do so (such as by mixing up that name with the name of another person at that party). Many common memory failures are a reflection of choices about *what* and *how* to encode—and what to ignore.

Forgetting

Once information is encoded into long-term memory, memory failure can occur through forgetting, which is the inability to access previously learned information. Most forgetting occurs immediately after acquiring the information and then drops off in the shape of a power function (see Figure 1). Thus, one is most likely to forget information shortly after studying it, but if that information remains in long-term memory for a longer period of time, it is less likely to be forgotten. For example, a man who studied Spanish for 2 years in high school and then did not study it again likely had a high rate of forgetting for Spanish vocabulary during high school. However, 20 years later, he is likely to remember almost as much Spanish vocabulary as he did 19 years after high school. His rate of forgetting slowed with time.

Decay Theory

One of the more intuitive theories about how forgetting occurs is the *decay theory of forgetting*. This theory posits that memories grow weaker (or decay) over time, which causes forgetting. Certainly one's memory for an experience just encountered is generally stronger and more vivid than for an experience 10 years ago. The weakening of memories over time falls in line with such results. However, the decay theory cannot explain other findings in the field of memory. For example, sometimes people remember things after having previously "forgotten" them—a phenomenon called *hypermnesia*. Being unable to remember the name of a high school classmate, only to recall it successfully a few hours later, indicates that some failures to remember are not due to memory decay but rather to a *retrieval failure*. The decay theory of forgetting has no way of accounting for recovery of previously forgotten memories, nor does it capture why some conditions lead to more rapid forgetting than others, as discussed later.

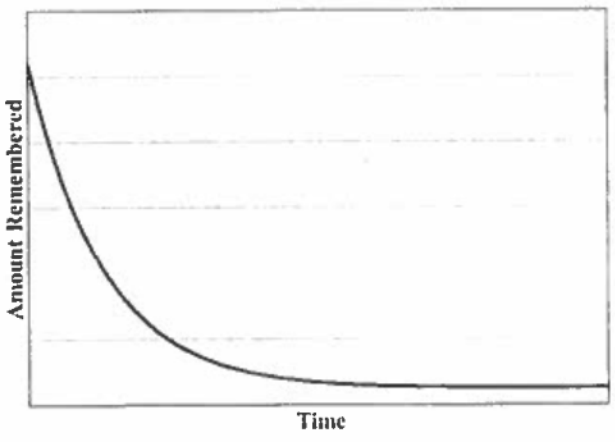

Figure 1 General Forgetting Function

Interference Theory

The *interference theory of forgetting* posits that competing memories hinder one's ability to retrieve a target memory. The greater the similarity between the competing memories and the target memory, the greater the interference and the more likely one is to be unsuccessful in accessing that target memory. Imagine searching for a specific key in a pile of other keys. The more keys there are and the more similar they are to the target key, the more difficult it is to find the target key (and the more likely it is that the wrong key will be picked). Similarly, potentially interfering memories "clutter" the search for a target memory. Forgetting occurs when the interfering memories block access to the target memory or are unintentionally accessed.

There are two main types of interference that vary with respect to the timing of the interfering items: proactive and retroactive interference. *Proactive interference* occurs when previously learned material hinders one's ability to successfully recall later-learned material. In contrast, *retroactive interference* happens when later-learned material hinders one's ability to successfully recall previously learned material. In proactive interference, the interfering items come *before* the target item; in retroactive interference, the interfering items come *after* the target item.

If one were to read a textbook straight through, both retroactive and proactive interference would likely occur. Difficulty remembering information from Chapter 3 due to competing information in Chapter 4 is an example of retroactive interference. Difficulty recalling information from Chapter 3 due to competing information in Chapter 2 is an example of proactive interference.

Notably, the degree of interference from competing items is related to the similarity between those competing items and the target item. The more similar they are, the more interference will occur. In the previous textbook example, if the content of Chapter 2 was significantly different from that of Chapter 3 (e.g., research methods in psychology versus biological psychology), Chapter 2 would be less likely to proactively interfere with memory for Chapter 3. Using the earlier key example, similar memories are like similarly colored keys, but less similar memories are like keys of different colors. It is much easier to find a red key amid blue keys than a red key amid red keys.

Imagine going to a party and meeting 10 new people. The next day, you are easily able to recall five of their names, but it is difficult to remember the rest. Part of the difficulty in recalling the rest of the names is due to *retrieval-based interference*, which occurs when the retrieval of some of the target items hinders the retrieval of others. In other words, retrieving some of the names actually makes it more difficult to access the other names.

A related effect is *part-set cuing impairment*. If one is given part of a set of target memories without having to retrieve them (e.g., a list containing the names of five of the people met at last night's party), it is more difficult to successfully retrieve the other target memories than if one was never initially given a partial set of target memories. The influence of part-set cuing impairment is prevalent in everyday life. For example, trying to remember the name of a famous actor after a friend says similar (but not quite right!) names induces part-set cuing impairment.

All the previous examples of interference are incidental; they occur without intentionally trying to forget. However, sometimes the goal *is* to forget. In these cases, people often rely on *motivated forgetting*. Remember that time you tripped on the stairs in front of your crush? Or you witnessed a tragic car accident? When faced with painful memories, it is common to avoid successful retrieval of those memories. This can occur through inhibiting retrieval of the memory or by intentionally thinking about something other than that memory.

False Memory

Although memory failure is most often associated with errors of omission (forgetting), *false memory* effects are also prevalent. False memory errors occur when one "remembers" something, but that memory is not entirely accurate. The distortion of the memory can be due to a variety of causes. A few examples are discussed here, including schematic errors, misinformation errors, and source confusions.

Because one *thinks* he or she is remembering an item—and believes that memories are usually correct—false memory errors are often more easily overlooked than forgetting is. False memory errors are particularly difficult to detect in everyday life

compared with forgetting because the inaccurate memories often feel "right" to the rememberer. For example, a woman might give a very confident, convincing testimony of meeting Bugs Bunny at Disneyland as a young girl. However, Bugs Bunny is not a Disney character, so she would not have met him at Disneyland.

Schematic Errors

Every day, people rely on general schemas to interact with novel situations. For example, when one goes to a new restaurant, a more general "restaurant schema" is activated so that one knows to wait to be seated, order items from a menu, and so on. Reliance on schemas enables the application of limited resources for attention and encoding to novel aspects of the situation—say, making lively conversation—and not to the stereotyped aspects.

However, reliance on schemas to fill in unattended details can lead to memory errors. For example, if your usual routine when coming home is to unlock the door, set the keys on a side table, take off your coat, and greet your family, you might later falsely remember setting the keys on the table when you actually left them in the door lock. Unlike a video recording, many memories reflect the "gist" that is stored about events or procedures.

The Misinformation Effect

Simply encountering false information about an event after it is experienced can change memory for the original event. The *misinformation effect* occurs when exposure to information after an experience alters memory for the original event. For example, a witness to a car accident will give a higher estimate when asked how fast the cars were going when they "crashed" into each other compared with when they "bumped" into each other. The word *crashed* implies a more dramatic accident than the word *bumped* and, in turn, influences the original memory for the severity of the accident.

As this example illustrates, it is particularly important for officers of the law to avoid biasing eyewitness testimony via the misinformation effect. However, the influence of misinformation pervades everyday life. Talking to optimistic or pessimistic friends after watching a soccer game together can, in turn, alter one's original memory for the actual game.

Source Confusion

A final example of false memory is when the memory itself is accurate but the source of the memory is lost or misattributed (*source confusion*). For example, one might forget where he or she originally heard a specific piece of information and then later give that information more weight than it merits when making a decision. Slanderous information about a political candidate from an unreliable source should not be used to decide for whom to vote on Election Day. However, if one cannot remember where the information originated, it might still factor into one's decision at the polling place.

Failures of memory occur in a variety of ways—from the commonly encountered forgetting of everyday, inconsequential information to unintentional false memory errors in important eyewitness testimony. Although memory failures are ubiquitous, it is important to consider them in light of the vast duties of the general information-processing system that is the brain and the many, competing demands on that system. Such a view highlights that *failure* is really the wrong term to describe those moments when memory leads to error and that such events should not be disheartening but rather serve as a reminder of just how much the memory does.

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See also Exceptional Memory and Expertise; Long-Term Memory: Processes; Memory as Reconstructive; Short-Term and Working Memory; Signal Detection Theory; Working Memory, Improvement of

Further Readings

Anderson, M. C., & Levy, B. J. (2009). Suppressing unwanted memories. *Current Directions in Psychological Science, 18*(4), 189–194.

Baddeley, A., Eysenck, M. W., & Anderson, M. C. (2009). *Memory*. New York, NY: Psychology Press.

Ebbinghaus, H. (1913). *Memory: A contribution to experimental psychology*. New York, NY: Teachers College Press.

Loftus, E. F., & Pickrell, J. E. (1995). The formation of false memories. *Psychiatric Annals, 25*(12), 720–725.
Underwood, B. J. (1957). Interference and forgetting. *Psychological Review, 64*, 49–60.

Feminist Approaches to Psychology and Gender

Feminists are people who are committed to the social, political, and economic equality of the sexes. In the United States, feminists first organized to obtain the vote for women, a campaign that spanned more than three decades. It was during this time (the latter part of the 19th century and the early 20th century) that psychology emerged as an independent discipline. This entry reviews the emergence of feminism in psychology.

Although few women were permitted to study psychology and even fewer were granted academic positions, some of them spoke against the characterizations of women in the psychological literature. In a 1910 article published in the *Psychological Bulletin*, for example, Helen Thompson Woolley lambasted psychological theories about female nature as little more than "logic martyred in the cause of supporting a prejudice, unfounded assertions, and even sentimental rot and drivel . . . run riot" (p. 340).

Confronting the Question of Sex Differences

Questions about whether and how women's psychological makeup differs from men's arise at times when women are challenging ideologies about their proper place in the social order. The 1960s and 1970s—the era of the Women's Liberation Movement—was such a time in the United States. To address these questions, the developmental psychologists Eleanor Maccoby and Carol Jacklin undertook the monumental task of assessing the extant psychological evidence. Their book, *The Psychology of Sex Differences*, published in 1974, examined more than 1,600 research studies that compared women and men on more than 80 traits and behaviors. In only four instances did they find credible evidence for male–female differences. Moreover, like Woolley, the researchers found that large corpus of work riddled with conceptual and methodological flaws.

Roughly 30 years later, in 2005, Janet Shibley Hyde, using the statistical technique called meta-analysis, demonstrated yet again that scientific studies reveal few psychological differences between men and women. Still, paradoxically, dramatic claims of innate differences in the cognitive, emotional, and relational capacities of the two sexes never fail to garner popular attention.

Making the Personal Political

The 1960s and 1970s were times of social unrest and progressive social movements. Discontent erupted among middle-class suburban women consigned to being full-time homemakers, making Betty Friedan's 1963 *The Feminine Mystique* a runaway best seller. At the same time, left-leaning young women rose up in anger when they were shunted to the side in student protest movements. Such discontents galvanized the Women's Liberation Movement (as the U.S. feminist movement of the 1970s was called).

A watchword of the Women's Liberation Movement was the slogan "The personal is political." This slogan proved to be remarkably durable and capacious. Its spirit has animated much of the psychology of gender. Consider an influential article by Naomi Weisstein, first published in 1971 and republished subsequently three dozen times: "*Psychology Constructs the Female.*" Weisstein did not mince words: "Psychology," she said, "has nothing to say about what women are really like . . . because psychology does not know" (1993, p. 197). Weisstein argued that psychologists' claims about female nature were little more than recycled cultural myths. Knowing about women required taking close account of the context of their lives—their societal, political, cultural, and material circumstances and the relations of power of which they are part.

The insistence that psychologists train their eyes on the social context has been central to feminist psychology, paving the way for an expansive and rich research program. Researchers have examined interpersonal situations (such as romantic relationships and job interviews) and local settings (such as classrooms, gyms, and online chat rooms). Others have examined women's place in societal hierarchies