ERRORS IN AUTOBIOGRAPHICAL MEMORY

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ABSTRACT. Memory is always constructive. People create the past based on the information that remains in memory, their general knowledge, and the social demands of the retrieval situation. Thus, memories will often contain some small errors and occasionally some large errors. In this article, we describe several different types of memory errors and consider how these errors may influence therapy. © 1998 Elsevier Science Ltd

IN HIS STORY “Funes, The Memorious,” Jorge Borges (1967) described a fictional man with complete and accurate memory. Funes had perfect memory for everything that he had read, seen, heard, and done. He could describe exactly when something happened, what it was, and what everyone and everything looked like. He could read a book once and remember the entire book. He could use his memory skills to learn a new language. The story is interesting because we recognize that this would be unusual—our memories are not perfect. We wish we could read a book once and remember all the content. We would like to always remember a person’s name and when and where we met them. We would like to never need reminding to do something after once being asked to do it.

Unfortunately, we forget things and some of the things we remember are wrong. Memory is a constructive activity. Unlike Borges’s fictional character, people do not retrieve a complete and accurate record of a personal experience. Instead people construct a version of the past based on remaining memories, general schematic knowledge, and the demands of the remembering context. Thus memories will often include errors. In many contexts these errors are not important: the goal may not be to remember accurately, but rather to define one’s self, tell an entertaining story, or fit in with a group (Hyman, in press). Memory errors, however, can lead to problems in certain settings, including those involving therapy.

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Memory is an integral aspect of therapy. People are asked to report their personal history, their medical history, and their current troubles. They may be asked to remember what occurred during therapy, what activities to try before the next therapy session, and what happened since the last session. Obviously, a good part of therapy involves talking about the past; whether it be recent or distant past. When attempting to remember the past, sometimes we do so accurately and sometimes we do not. Sometimes errors in autobiographical remembering have minimal consequences, but sometimes errors can be critical and potentially harmful to clients and their families. The debate over the accuracy of memories, particularly memories recovered in therapy, has been an important issue for psychologists and society in general in the last several years. Thus we begin our discussion of autobiographical memory errors by describing the research on false childhood memories (e.g., Hyman, Husband, & Billings, 1995; Loftus & Pickrell, 1995). Although the concern over false childhood memories is very important, there are other forms of memory errors that may also be important considerations in therapy (for recent reviews of research on memory errors, see Hyman, in press; Roediger, 1996). The memory errors we describe occur for a variety of reasons. Some errors are made because people remember an event, but not the event that someone asked them about—a time-slice error (Brewer, 1988). Other errors occur because we recreate a version of the past consistent with our current attitudes and self view (Greenwald, 1980; Ross, 1989). People will also inaccurately represent their previous knowledge states—sometimes falsely claiming to have recently recovered a memory that was previously unavailable (Schooler, Bendiksen, & Ambadar, 1997). In sum, the reconstructive nature of memory means that many small and some large errors will occur when people report their past.

FALSE CHILDHOOD MEMORIES

Although the fictional Funes never forgot anything and remembered everything accurately, this is not the case for real people. The conflict over recovered and false memories has focused on these memory problems. If a person suddenly has a memory come to mind that has not been thought of for a long time, is that memory accurate or is it false? The question has become important in therapy contexts: when a client has a memory of childhood trauma come to mind, is that memory a true recovered memory or a false created memory? When this question is applied to a particular client’s memory, it often is an either-or question. On the one hand, the person may have experienced a childhood trauma that has shaped much or their psychological functioning and the perpetrator of the abuse may be in a position to abuse others. On the other hand, the client may have created a false memory in response to repeated suggestions and may falsely accuse an innocent person. In part because the recovered memory/false memory question is often presented as an either-or question when applied to one person, much of the debate has been very passionate.

When the recovered memory—false memory question is applied to the science of memory, however, these are two separate questions. First, is it possible for someone to forget an event, even something comparatively important or traumatic, and then recover the memory of that event many years later? Second, can an individual be led to create a false memory of a childhood experience? We feel that the answer to both of these questions is yes. In this issue, Brewin and Andrews have reviewed the evidence for recovered memories and have suggested possible mechanisms for memory recovery. In this article, we will review evidence for memory creation.
In arguing that people can create false childhood memories, memory researchers (Lindsay & Read, 1994; Loftus, 1993) have cited evidence concerning the misinformation effect: a common memory error. In a typical misinformation effect study, participants (usually college students) are shown videotapes or slide shows of crimes or accidents. Later, the participants are given postevent misleading information about the event (the “misinformation”). The misinformation might be the suggestion that the participant viewed a stop sign instead of a yield sign, a hammer instead of a screwdriver, or a man with a mustache instead of one clean shaven. Upon further questioning, participants often unintentionally incorporate the suggestions into their recollections of the original event. These studies demonstrate that suggestions can modify pieces of an observed event.

The misinformation studies, however, do not provide clear evidence that a false memory of a complete event can be created by suggestion. There are several differences between the misinformation experiments and the creation of false childhood memories that make generalization risky. In particular, misinformation experiments demonstrate that aspects of an event can be changed in response to misleading suggestions, but not that entire life events can be created in response to misleading suggestions. In addition, in most of the misinformation studies, the event is not related to the self nor is the self involved in the event, whereas for false childhood memories the self is intimately involved. Finally, in misinformation studies the participant usually has little or no emotional involvement with the event whereas in the creation of false childhood memories the event being suggested might be very emotional. Misinformation studies can, however, be very powerful. For example, Crombag, Wagenaar, and van Koppen (1997) asked people about seeing a TV film of a dramatic and well-known plane crash in Amsterdam. Crombag et al. found that simply asking the misleading question led over half of the participants to remember and describe the TV film—even though no film of the actual crash existed. Nonetheless, an important question remained: Can people be led to create a false memory of entire event if the event includes the self and is emotional?

In response to that question, several researchers have investigated whether people will create memories of complete, self-involving, emotional events. Most researchers investigating the creation of false memories have used similar methodologies (Ceci, Huffman, Smith, & Loftus, 1994; Ceci, Loftus, Leichtman, & Bruck, 1994; Hyman & Billings, 1998; Hyman et al., 1995; Hyman & Pentland, 1996; Loftus & Pickrell, 1995; Pezdek, Finger, & Hodge, 1997). In general, the researchers solicit from parents or other family members information about real events that happened to the participant. The participant is then asked to remember these true events and a false event—an event that the researchers are fairly sure did not happen to the participant. The false event is presented as if it is also a true event according to the information from a relative. The participants are usually interviewed repeatedly about the true and false events and told that they will remember more over time. The most important outcome is how the participants respond to the false events—do the participants come to believe that the event occurred? Do they also describe the event as a personal memory? If so, this would constitute evidence for the creation of an entire, self-involved, and possibly emotional event.

As a concrete example of false memory research, we describe one of the experiments from Hyman et al. (1995). In that experiment, the researchers obtained information about some true childhood events by surveying the parents of introductory psychology students concerning events that happened to their child between the ages
of two and ten. When the questionnaires were returned, the researchers asked the students to participate in a series of autobiographical memory interviews. The researchers told the students that the questions were based on information from their parents, that their responses would be compared with their parents’ responses, and that they were expected to remember more over time. In each of three interviews with the same interviewer, the students were asked to remember several true events and one false event presented as if it were a true event. For all events, the interviewer provided the students with a basic description (including age, event, a few actions, other people involved, and a location) and asked the students what they remembered about the event. Three different false events were used in this study. For example, one was the punch bowl event: when you were 6 years old, you were at the wedding of a friend of the family; you were running around with some other kids when you bumped into the table the punch bowl was sitting on and spilled punch on the parents of the bride. All were self-involving and would have been somewhat emotional at the time of the event, although none were traumatic events.

The participants generally recalled the true events and remembered more of the true events over time. There are two ways to explain the increased recall of the true events. One possibility is that by thinking about events, the students provided themselves with additional memory cues that led to the recollection of previously unretrieved memories—a form of hypermnesia (see Erdelyi, 1990) or another example of the recovery of memories (Brewin & Andrews, this issue). Another possibility is that the participants created, rather than recalled, memories that match the cues provided.

With respect to the false events, no participants remembered the false event during the first interview and 25% remembered the false event by the third interview. Six of these reports were very clear and included the critical information (such as turning over the punch bowl) and consistent elaborations (such as parents being upset). Five reports were less clear, in that the students included little of the critical suggested information although they elaborated in a consistent fashion. Two of the students created clear images of the interviewer’s suggestions yet were not sure whether they were remembering or simply imagining the events (more description of these categories and examples are provided in Hyman et al., 1995).

The creation of false memories is a reliable phenomenon: It occurs with a variety of events and populations. In addition to having participants create memories of spilling a punch bowl at a wedding, Hyman and his colleagues have used overnight hospital visits for earaches, clowns at birthday parties, minor car accidents, and sprinkler systems going on in grocery stores. Loftus and Pickrell (1995) used being lost in a mall. Pezdek et al. (1997) also used being lost in a mall and additionally events associated with different religious activities. On the other hand, Pezdek et al. were unable to induce participants to create memories of receiving an enema, suggesting that the types of suggested events will matter. Pezdek et al, however, used an interview format that may have been less demanding than that used in other studies. Under heavier demands people may create memories of receiving an enema—in other words, the limits of memory creation are not yet clear. This caveat seems reasonable given some of the real world false memories that some individuals apparently have created; for example, memories of past lives, alien abduction, and Satanic Ritual Abuse. What Pezdek and her colleagues have shown is that events that are more similar to experiences a person has had, or events that are more plausible, are easier to suggest than events about which a person knows little. We say that this investigators “may be show-
something about similarity or plausibility because there are so many differences in the way that this study was conducted, compared to others, that it is not clear what produced the differing results.

In much the way that false memory researchers have used a variety of events, they have also studied a variety of populations. Hyman et al. (1995) used college students. Loftus and Pickrell (1995) and Pezdek et al. (1997) used adults of different ages in their studies. Ceci and his colleagues (Ceci, Huffman, Smith, & Loftus, 1994; Ceci, Loftus, Leichtman, & Bruck, 1994) used preschool aged children in studies of false memory creation. They found that young children will create a variety of false memories and that the younger the child, the more likely the child will create a false memory. In sum, memory creation is robust across a wide variety of events and populations.

Once the creation of false memories for entire, self-involving, and emotional events was clearly demonstrated, the next step was to develop an understanding of the factors that make memory creation more or less likely to occur. Hyman et al. (1995) found that how the students responded to the false event in the first two interviews predicted who would eventually create false memories. They classified participants based on whether or not they provided any related self-knowledge in response to the false events—such as talking about whose wedding it could have been, which other kids would have been there, or where the wedding would have been held. Individuals who talked about related self-knowledge were more likely to create false memories than individuals who did not describe self-knowledge. The creation of false memories may involve combining false suggestions with some true information in a constructive process.

In addition, using the same basic methodology, Hyman and Pentland (1996) found that mental imagery increases the creation of false memories. Hyman and Pentland repeatedly interviewed college students about true events and one false event (the false event for all students was the spilled punch bowl at the wedding), and varied how the interviewer responded when a student failed to recall an event. The interviewer asked those in the imagery group to form a mental image of the event and describe the image. In contrast, the interviewer asked those in a control group to sit and think about the event for one minute. The interviewer told both groups that their activity would help them remember the experience. Interestingly, the imagery group recovered more true memories than the control group. Therefore, either the imagery manipulation aided in the recovery of memories or aided in creating memories that matched the true suggestions—it is difficult to tell which happened. With respect to the false event, students in the imagery group created more false memories than the students in the control group; nearly 40% of the imagery students created false memories. In a similar fashion, Garry, Manning, Loftus, and Sherman (1996) have shown that simply imagining events, even without describing them, can increase people’s estimation that the event occurred.

In addition to situational aspects, individual differences also play a role in the creation of false childhood memories. Hyman and Billings (1998) found that false memory creation is related to the Dissociative Experiences Scale (r = .48) and the Creative Imagination Scale (r = .38). People who are higher in dissociation, that is who more frequently have interruptions of the typical integration of consciousness, are more likely to create false memories. In addition, the Creative Imagination Scale is a measure of imagery ability and hypnotic susceptibility and suggests that imagery ability may be related to memory creation. Other researchers have found that dissociation is
related to memory errors in other research paradigms, such as errors in memory for word lists (Winograd, Peluso, & Glover, in press) and source monitoring errors in autobiographical memories (Hyman, Wilkinson, & Thom, 1997).

Most of the false childhood memory studies share one methodology that may limit generalizability—family members generated the true events and the false event was presented as if drawn from the same information. In contrast, Kelley, Amodio, and Lindsay (1996; Lindsay, 1997) developed a new methodology that relies on false feedback rather than family members as the source of the false event suggestion (see also Loftus, 1997). In this methodology the participants take a test and receive feedback supposedly based on the test. They are then told that people like them often have had experiences of a certain type and are asked to try to remember such experiences. For example, Kelley et al. gave participants a test to measure their innate handedness—whether they were born to prefer their left or right hand. All of the participants were right-handed and the test did not really measure natural handedness. The researchers told the participants that the test was still being worked on and that they were not sure if it was reliable. Nonetheless, half of the participants were told that the test indicated that they were born left-handed while the others were told that they were born right-handed. The researchers asked all participants to try to think of instances in which their hand use had been shaped. Many more of the participants who were told they were left-handed came up with hand shaping instances. Similarly, Loftus and her colleagues (described by Loftus, 1997, and based on an idea by the late N. Spanos) gave participants a test of visual acuity and told some participants that their results indicated that they might have been exposed to an exceptionally colorful mobile at birth. Those participants were very likely to come up with memories of gazing at such a mobile while they were in the hospital immediately after birth. Admittedly, the events on hand-shaping supplied by Kelley et al.’s participants may have been events that actually occurred that have been re-interpreted to fit the information supplied by the participants. This view of memory re-interpretation as opposed to memory creation does not, however, fit well with the memories of mobiles at birth because people are unable see such objects clearly at birth much less to remember anything from the first few days of life. Thus the memories cannot be re-interpretted memories from the first few days of life.

From this sampling of the research on false memory creation, it is clear that memories for entire events that are self-involving and emotional can be created. Further, the variations in methodology, suggested events, and populations studied offer convergent validity that this is a robust phenomenon.

Hyman and Kleinknecht (in press) suggested that three processes are involved in the creation of false childhood memories: plausibility judgment, memory construction, and a source monitoring error of claiming the constructed narrative as a personal memory. For a person to create a false memory, the person first needs to accept the suggested event as plausible. In other words, the event needs to be something that the person believes could have happened. For example, some individuals may not have created memories of spilling a punch bowl at a wedding because they believed that they had never attended a wedding as a child (Hyman & Billings, 1998; Hyman et al., 1995; Hyman & Pentland, 1996). They refused to accept the event as a plausible personal experience. Similarly, Pezdek et al. (1997) found that less plausible events are less likely to lead to memory creation.

Several factors may influence whether a person sees an event as plausible. For example, the source of the suggestion will affect plausibility assessments. In addition,
the event itself will matter—whether a person views this event as something that happens. For most people suggestions that they have been abducted by extraterrestrials may not be considered plausible, while for others this may be an event that they consider common. Spanos, Cross, Dickson, and DuBreuil (1993) found that belief in alien visitations was the primary variable that differentiated people who claimed memories of UFO experiences from individuals who did not claim such experiences. In addition, implications that the experience is not only generally likely, but also personally likely will increase willingness to believe an event may have occurred. In this fashion, studies using false feedback (i.e., Kelley et al., 1996) are effective in part because the researchers provided reasons for the participants to believe that an experience occurred to them. The point here is that we can affect people’s impression of the likelihood that a suggested event occurred (Garry et al., 1996; Hyman, Chesley, & Thoelke, 1997).

A person can believe that an event is likely, or even that the event occurred, but must still construct a memory; an image with a narrative. Several activities may encourage false memory construction. For example, tying a false event to self-knowledge will encourage false memory creation (Hyman et al., 1995). In addition, encouraging a person to construct and describe an image of a false event also leads to memory construction (Hyman & Pentland, 1996). In fact, probably any activity that encourages people to think about, imagine, and talk about events will lead to the construction of an image and narrative. Thus activities like journaling and dream interpretation may lead to memory creation if the focus is on trying to remember events.

Even if a person believes an event is plausible and constructs an image of the event, he or she still may not think that the event is a memory. All of the participants in the imagery condition of Hyman and Pentland (1996) constructed an image of spilling the punch bowl at a wedding. Many, however, did not claim the image as a memory; instead they correctly noted that this was just an image they had created. In other words, they correctly monitored the source of the image. To have a false memory, the participants must make a source monitoring error—they must claim the image as a personal memory. People sometimes experience difficulties remembering the source of information they have learned (see Johnson, Hastroudi, & Lindsay, 1993). In addition, source misattributions have been suggested as a primary cause of the misinformation effect—people remember the misleading postevent information and incorrectly claim that the information was part of the original event (e.g., Zaragoza & Lane, 1994). The error for a false memory is claiming that the suggestion and/or constructed image is a personal memory.

Situational demands may affect whether a source monitoring error occurs. For example, if a person shares an image and denotes that they are not sure if it is a memory, others (an experimenter, members of a group) may tell the person that the image is a memory. Time since a false suggestion may also affect source monitoring errors. Memory for the source of information fades more rapidly than memory for the content. Thus people may remember the false suggestion, forget the source, and attribute the source to their own memory. In addition, Zaragoza and Mitchell (1996) found that repetition of false suggestions also increases the likelihood of source monitoring errors.

Many people have written concerning the application of false memory research to therapy situations (e.g., Lindsay & Read, 1994; Loftus, 1993). We echo those concerns. People are likely to make memory errors. When suggestions are made to indi-
viduals in a manner that makes them plausible, the risk of memory creation is increased. When a person is encouraged to engage in activities that enable memory construction (forming images, connecting suggestions to self-knowledge, describing possible events), this also increases the risk of memory creation. Further, if an individual is encouraged to accept most ideas and images that pass through the mind as memories or pieces of memories, the risk of memory creation is also increased.

Memory, however, is always a constructive process. Whenever people are asked to remember, some of the information is likely to be erroneous. The goal in therapy, with respect to the creation of false memories, should be to avoid suggestions. Of course, this may be impossible to achieve completely. Therapy is concerned with memories and remembering. Thus we suggest an alternative goal: learning to live with ambiguity. To this point, we know of no way to discriminate true from false memories. Thus when clients do provide a memory, without corroboration, there is no way to determine the veracity of the memory.

**TIME-SLICE ERRORS**

Even when people do recall a true event, the event they recall may not be the one they were asked to recall. Brewer (1988) referred to these errors as time-slice errors: the retrieval of the wrong slice of time. Brewer observed such errors in his descriptive study of autobiographical memory. In that study, college students were asked to wear beepers for several weeks. Whenever the beeper sounded, the students filled out an index card describing the day and time, where they were, who they were with, what they were doing, and what they were thinking. In a memory test, Brewer presented the students partial information from a card and asked them to provide the missing information. Frequently, the information the students provided did not match what the students had originally recorded. Brewer noted that some of the errors could have been reconstructions; that is, the student answered based on schematic knowledge concerning what they usually would have done. Brewer also believed that the most simple explanation for other errors was that the students had retrieved the wrong time-slice. Often the event that the students described on the memory test appeared to be something that occurred either just before or just after the event originally recorded. The students were slightly off regarding the slice of time chosen from a larger, ongoing event.

Recently, Winningham, Hyman, and Dinnel (1996) have noted similar errors in a different methodology. Winningham et al. asked college students where they were when they heard the news that O.J. Simpson had been acquitted. (For those who do not closely follow the popular press, Simpson is a former football player and television announcer who was accused of murdering his former wife. The trial was closely watched in the United States.) Asking people to recall where they were is the typical question asked in studies of Flashbulb Memory—memory for receiving important news (see Brown & Kulik, 1977; Winograd & Neisser, 1992). The students were asked to remember on the day of the acquittal and again 8 weeks later. Some students recorded what appeared to be different events on the two questionnaires. For example, a student would originally note receiving the news from a friend, and later report having watched the news on TV. When they were asked about the discrepancies, many students claimed that both events occurred. In these cases, the students may have reported an event associated with receiving news regarding the trial, but not the
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event requested. Brewer (1992) offered a similar explanation of some of the memory errors observed by Neisser and Harsch (1992) in their study of Flashbulb Memories of hearing the news that the space shuttle Challenger had exploded.

This type of memory error seems particularly important to consider in clinical settings. For example, Kheriaty, Kleinknecht, and Hyman (in press) asked college students with either dog or blood/injection/injury phobias to describe their memory of phobia onset; their story of why they have a phobia. Most students could supply such an event. Kheriaty et al. then contacted the students’ parents. The parents were asked to first provide their own recollection of phobia onset and then to evaluate the accuracy of the event their child had provided. Over half of the parents confirmed the child's information (no parents claimed that their children were wrong—the most any parent would say is that they did not know if the event occurred). Of particular interest, however, is that just over 20% of the parents described an event related to the fear, that occurred before the event described by the child. These parents would agree that what the child described occurred, but the event the parents knew about occurred first. Apparently, the children have a story about their fear development. The story the child tells may be based on real events. But the story the child tells may not be the complete story of how the fear developed since the parents noted something earlier. The child’s version may be part of the story, but not the entire story. The college students have apparently made a time-slice error: they recalled an early event related to the fear, but perhaps not the first event. The students have developed a narrative truth of fear onset that may reflect only part of historical truth (Spence, 1982).

These time-slice errors may occur for a myriad of reasons. At the very least, part of the problem may be in terms of cue specificity. The cue used to request autobiographical memory may be tied to many different events. Thus the cue is not specific to the particular event being requested. Further, the cue may not even be tied to the event. For example, when a person has a negative experience with some object, such as a dog, that person may not think of the event as representing the beginning of a dog phobia. The fear may not be apparent until some later events. When someone later asks for the fear onset event, the original event may not be related to the questions since it was not thought of in those terms. Instead, other events related to dog fear may be described.

A further part of the problem may be that there is no one event that is the fear onset event. Fear may develop though many experiences; particularly a pattern of negative experiences. Which of these experiences should be reported in responses to the request for the fear onset event? In a sense, both the child and the parent may have accurately reported events that contributed to the fear development. Of course, this means that both have reported only part of the more rich history of fear development.

Finally, one reason for time-slice errors for childhood experiences may be childhood amnesia (see Pillemer, this issue). The actual fear onset event may have occurred before the complete development of autobiographical memory. The individual looking for the event will instead report their earliest recollection of some encounter related to the fear.

Regardless of the underlying cause of time-slice errors, these should be a concern for clinical psychologists and theorists. Whenever a client is asked for some event, the resulting memory, even if generally accurate, may be an instance of a time-slice error. Clients may be describing one portion of their personal history but neglecting other aspects. Perhaps the client does not think of the requested event in the terms used by
the interviewer in the question. Perhaps the actual causal event has been forgotten. Nonetheless, clients may report an event. In addition, the more leading the questions, the less reliable the responses. As we noted previously, leading questions will sometimes lead to memory creation. Further, Kheriaty et al. (in press) employed two different questionnaires to request fear onset memories: one open-ended and the other a leading questionnaire that supplied categories of onset events and asked respondents for examples. Not surprisingly, the leading questionnaire resulted in more information from the students, but that information was less reliable. Parents were much less likely to confirm their child’s responses if solicited by the leading questionnaire. In essence, the leading questions may have encouraged the respondent to describe some event. This event, however, may not have been the true onset event. If obtaining accurate information is important for determining the course of therapy, then time-slice errors may be problematic. Further, if theorists try to determine the causes of various adult pathologies from memory reports, time-slice errors could lead to false theories.

BIASED MEMORY FOR ATTITUDES AND PREVIOUS MENTAL STATES

Often people are asked about their past thoughts and feelings. How much did it hurt when it happened? Did you really love him (or her)? What was your view of Ronald Reagan? Answering such questions requires the individual to have access to previous mental states. Unfortunately, there is little evidence that people actually remember what they used to think and feel. Ross (1989) argued that people reconstruct their previous attitudes based on their current ones and their beliefs concerning whether or not they have changed. Ross termed such beliefs implicit theories of consistency and change. If people believe that they have not changed their attitude concerning some topic, then they claim that they used to believe the same thing that they currently believe. In contrast, if they believe that they have changed, then they adjust their claim about the past away from their current view in the appropriate direction. For example, if I am asked about my past political attitudes, I first consider my current attitudes. If I believe that I have not changed my attitudes during the intervening time, then I report my current attitudes as my past attitudes.

Ross (1989) described several pieces of research that support this view of memory for attitudes and mental states. For example, Goethals and Reckman (1973) surveyed Massachusetts high school students on their political attitudes. In the midst of several questions, they included one question on court ordered bussing to achieve racial equity (an important topic in Massachusetts in the early 1970s). Several days later the students participated in group discussions concerning bussing. In each group, a confederate of the experimenters argued strenuously either for or against bussing. The students were asked about their attitudes concerning bussing afterwards and most students had changed their attitudes in the direction of the confederate’s arguments. The intervention was effective in changing the students’ attitudes. The students then were asked to report the attitudes they had given the experimenters in the previous survey. The experimenters told the students that they would compare their recollections with what they originally wrote—a means of insuring that the students would attempt to be accurate. The question is whether the students could remember their previous attitudes. Goethals and Reckman (1973) found that the students reports of their previous attitudes was more like their current, changed attitudes than their previous attitudes concerning bussing.
Ross (1989) argued that most people believe their political opinions are generally constant, particularly over short periods of time. Thus the students believed that their attitudes concerning bussing had not changed during the 1 or 2 weeks between sessions. When asked about their past views, the students simply reported their current views since they did not believe their views had changed.

Of course, if people believe that they have changed (even if they have not), they will move the past in a direction to conform with their implicit theories of change. For example, Conway and Ross (1984) examined people who participated in a series of study skills workshops on a college campus. Before the workshops the students, and a control group, were asked to evaluate their current level of study skills. The students then participated in the workshops while the control group was on a wait-list for the workshops. As in many cases of short interventions, Conway and Ross found little effect of the workshops on the students’ study skills. After the intervention, both the workshop participants and the control subjects were asked to report their study skills prior to the period of time. The control students exhibited no bias. The workshop participants, in contrast, showed a clear bias to report their previous abilities as worse than what they were. Ross (1989) noted that the participants had a reason to believe that their study skills had changed during the intervening time—they generally believed that the workshop had improved their study skills. Thus, in order to clearly view their current state as an improvement, they reported the past as much worse.

Ross (1989) noted that this basic view of memory for attitudes applies to memory for many previous states: memory for a dating partner, for the impact of the menstrual cycle, for the level of pain in sufferers of chronic headaches. In all cases, people reconstruct their past attitudes and mental states based on their current ones adjusted by their implicit theories concerning constancy and change during the intervening time period. If you believe that the world is going to hell in a handbasket, then the past becomes much more rosy than it ever really was. If you think that your life has been improving, then you are likely to remember the past as worse than it was.

Safer and Kueler (1997) recently reported evidence that the same pattern of memory reconstruction applies to memories of mental functioning prior to therapy. They collected their data from clients in a college clinic. At that university, all clients filled out a report of their current state on their first visit. The report was a checklist of current troubles and it was scored to see how many life difficulties each person noted. At the end of therapy, the students filled out the same checklist. It is worth noting that the students generally checked fewer problems at the end of therapy, indicating some improvement. In addition to these normal procedures, Safer and Kueler asked the students to fill out the checklist one additional time. At the end of therapy, the students were asked to fill out the checklist in exactly the same way they had when they began therapy. Here again, the students have reason to believe that they have changed over time. Thus they should bias their reports of the past in a negative direction to make the effect of therapy even clearer than it was. This is exactly what Safer and Kueler found: the students reported that their level of distress at the start of therapy was much more extreme than what they claimed at the time.

Biased memory for previous attitudes and mental states may affect much of the information reported by clients in therapy. Clients are asked how they felt, what their emotional response was, and what they thought. But Ross (1989) noted that their views of the past may be simply their current views filtered through their beliefs concerning change and consistency. Similarly, Greenwald (1980) noted that one goal of
memory is to preserve a coherent view of the self. Thus he argued that many memories should be reconstructed to fit with one’s current understanding of one’s self. If someone believes that they are insightful and that their previous dating partner was a jerk, then they may reconstruct the past to show that they saw the signs very early in the relationship. The answers that clients provide may reflect their current views more than the past.

THE FORGOT-IT-ALL-ALONG EFFECT

The last memory error that we will describe, has come to light through the ongoing discourse concerning recovered and false memories. Schooler et al. (1997) investigated the claims of several individuals who recovered memories of sexual abuse. In each case, they tried to document that the abuse occurred, that the individual experienced a period during which memory for the experience was unavailable, and that the person recovered the memory in the manner described. In most cases Schooler et al. have been able to document all three stages: the event, a lack of memory, and memory recovery. They argued that these cases studies provide additional evidence that people can forget and later remember even traumatic experiences (see Brewin & Andrews, this issue).

Schooler et al. also documented an interesting new form of memory error—a phenomenon they labeled the “forgot-it-all-along” effect. To document that the person experienced a time when he or she was unable to remember the experience, Schooler and his colleagues would interview people who knew the person at that time and ask if they knew about the abuse. In a few cases, when individuals claimed a period during which the memory was unavailable, Schooler et al. found evidence that the person talked about the experience during that time period. In contrast to their claims, these individuals had remembered during the time when they claim to have not been able to remember. The people falsely claimed to have forgotten the experience for much longer and more completely than the evidence indicated.

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Schooler et al. named the forgot-it-all-along effect based on an opposite effect often found in memory studies: the knew-it-all-along effect. In this case, when people learn a new piece of information, they may eventually forget having recently learned it and then incorrectly report having always known it. Jacoby and his colleagues (Jacoby, Kelley, Brown, & Jasechko, 1989; Jacoby, Woloshyn, & Kelley, 1989, Kelley & Jacoby, 1996) have argued that such errors are due to false inferences based on the familiarity of the information. For example, Jacoby and his colleagues have used familiarity as a means of creating overnight fame. On the first day of an experiment, people are shown several nonfamous names. On the second day, people are shown several names, some of famous people and some of the names seen the previous day, and asked to judge whether the people are famous. Typically people will claim that a previously seen, nonfamous name is a name of someone famous. In this case the name is familiar. The real reason the name is familiar is because it was seen the previous day. The people incorrectly infer that the reason the name is familiar is because it belongs to a famous person. With respect to the knew-it-all-along effect, people are now familiar with the piece of knowledge and incorrectly infer that they have known that fact for much longer than they actually have.

Schooler et al. argued that the forgot-it-all-along effect is also caused by incorrect inferences from familiarity. In this case, the event being remembered feels unfamiliar
instead of familiar. Perhaps the person has reinterpreted the experience, labeled the experience as abuse for the first time, or is feeling the emotions attached to the memory for the first time. For some reason, the experience no longer feels familiar. The person then incorrectly infers that the memory feels unfamiliar because it has not come to mind for a very long time.

This memory error may be related to biased memories of attitudes and previous mental states (Hyman, in press). In both cases people are asked about their previous mental states: what was your attitude; could you remember this then. In both cases people draw inferences based on the current contents of memory. For attitudes, the person infers the previous state from the current mental state corrected by implicit theories of change and consistency. In reporting whether the experience was available to memory previously, the person infers based on the current familiarity of the memory.

CONCLUSION

We have described a variety of memory errors. Remembering is a creative, constructive process. In response to suggestion, people will change aspects of events and create entire false memories. When asked for a particular experience (what caused a phobia, for example), people may respond with an event related to the question, but not the event requested. When asked about their past attitudes, beliefs, and memory states, people may draw incorrect inferences based on their current state. Normal memory is not like the spectacular fictional character described by Borges (1967). People do not remember the details of every experience. They do not always retrieve the relevant experience.

Although memory errors are the result of normal memory construction, this does not mean that everything a person remembers is erroneous. Most memories will be generally accurate. Memories are reconstructed based on an individual’s general knowledge or schemata. To the extent that the general knowledge is built from personal experience, when the person reports typical experiences, the memory will be right at a general level (although many details will likely be incorrect reconstructions and unusual experiences may revert to the more common). Memory construction is based on a set of mental building blocks. As long as those building blocks are reliable, then the constructed memories should resemble the original experiences. When, however, the building blocks of memory are not reliable, the memories will misrepresent the past. Suggestions, false beliefs about the past, and knowledge from sources other than one’s own experiences provide unreliable building blocks. The more incorrect information a person uses when constructing a memory, the more erroneous the memory will be.

Memory errors will always be important to consider in clinical contexts. The therapist depends on the client’s memories. The client reports current problems, previous thoughts and emotions, recent experiences and childhood experiences. Thus in the clinical context there is pressure on remembering. The therapist asks about the past and even the questions themselves may make subtle, or direct, suggestions about events that may have occurred. In addition, the suggestions concerning the past may come from a variety of sources: the popular press, other clients, and the news media. Further, the client may feel a desire to make sense of his or her life and this becomes another pressure leading to the construction of memories to fit with the story being
told. Even in the most careful therapy, with few direct suggestions, some memory errors will occur. This is the basic nature of human memory.

For these and other reasons, Spence (1982) argued that the memories individuals construct through therapy are a narrative truth but not necessarily the historical truth. The historical truth is what actually occurred at a particular time and place. The narrative truth is an individual’s version of that past. The memories told to a therapist by a client say something about what the client is currently thinking and feeling. The memories reveal how the client is currently making sense of life. The memories may or may not reflect what actually happened. In general, this should not be a great problem if both the therapist and the client can accept the fundamental ambiguity of memory.

REFERENCES


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