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Repression: A mistaken impression?

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Abstract
How do clinical observations of repression square with experimental evidence suggesting that emotionally arousing memories are especially enduring? This discrepancy can be understood by examining three kinds of memory distortions that give the impression in a clinical context, of repression. Potentially traumatic events such as childhood sexual abuse (CSA) may be subject to ordinary forgetting. Recent research suggests people who fail to understand the sexual nature of CSA report that they remember it less well. In other words, the event occurred and it was forgotten, but not "repressed." In addition, people may be wrong about experiencing a period of forgetting, i.e. the event occurred but was never forgotten. Finally, people may believe that a particular traumatic event occurred and was repressed when, in fact, it did not happen in the first place. Under certain circumstances, some combination of these distortions could lead to situations that are mistakenly interpreted as repression.

How do people recall the past, especially traumatic experiences? There is a popular notion that extremely traumatic memories are suppressed or repressed (i.e., that because they are so painful to remember the mind pushes them underground and completely obliterates conscious awareness of them). However, much of the empirical evidence tends to point in the opposite direction suggesting that such memories are actually *more* enduring, in the long run, than everyday memories, even if some of the details get distorted.

This is the conclusion of a number of laboratory studies which demonstrate that the central facts of emotionally arousing events are remembered more accurately than less arousing events, although often the peripheral details are remembered less well (Bradely and Baddeley, 1990; Bradely, Greenwald, Petry, & Lang, 1992; Burke & Reisberg, 1990; Christianson & Loftus, 1990; Dutta & Kunungo, 1967). Moreover, when pleasant and unpleasant memories are compared directly there is little or no difference in accuracy between them (Bradely, Greenwald, Petry, & Lang, 1992).

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Laboratory studies have been criticized for failing to elicit the same degree of emotion as do real life events. Perhaps, the argument goes, the impact of real life events is sufficiently great that a completely different set of coping mechanisms is enlisted outside of the laboratory. Such coping mechanisms could conceivably submerge rather than enhance memory for profoundly traumatic events. This question is explored in a body of work that analyzes memory for real life trauma by capitalizing on naturally occurring events. However, it tends to come to the same conclusion as laboratory studies: Memories for emotionally arousing events are especially enduring.

Crime scene witnesses, for instance, interviewed 5–6 months later, demonstrated remarkably accurate memory for facts central to the event (Yuille & Cutshall, 1986). Victims of the 1989 San Francisco earthquake had highly accurate memories several years later (Neisser, Winograd, Bergman, Schreiber, Palmer, & Weldon, in press). Furthermore, their memories were more accurate than those of people in Atlanta who learned about the earthquake in the news and had been presumably far less traumatized.

As with laboratory studies, there is work that suggests that in real life events, some de-

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tails of the memory are lost. A study of Nazi concentration camp victims compared interviews conducted immediately upon release to interviews taken 40 years later. Memory for many camp experiences was accurate, although some specific details were forgotten, such as the names and appearances of torturers and even witnessing a murder (Wagenaar & Groeneweg, 1990). However, no one forgot having been in the camp. A study of crime victims (Kuehn, 1974) suggests that memory for details may be associated with degree of personal involvement. People who were assaulted personally had less complete recall of the event than those who were simply robbed. One might be tempted to invoke a form of "repression" to explain these findings; however, a more plausible explanation is that physical involvement prevents one from encoding many aspects of the event in the first place. In other words, apparent forgetting may arise because no memory for these facts was laid down in the first place. Perhaps a person in pain simply does not bother to notice the color of the assailant's attire.

In addition, degree of involvement may lead to systematic distortions in traumatic memories. Pynoos and Nader (1989) interviewed 113 elementary school children who had been involved in a sniper attack at their school. During the incident, a child and an adult were murdered and 14 others were injured. Pynoos and Nader found that the children's memory for proximity to the danger, in both in a literal and figurative sense, was distorted. They found that children who had been closest to the violence tended to minimize the danger to themselves by either increasing the distance or neglecting to report the most dangerous event in the sequence. On the other hand, children who were relatively safe tended to increase the threat in their retelling.

Other work suggests that memory distortions are related to the person's present emotional adjustment to the event. Adult victims of a sniper attack who experienced increased stress 18 months after the incident reported memory distortions increasing their initial danger while those who experienced decreased stress 18 months later reported memory distortions decreasing their initial danger (Schwartz, Kowalski, & McNally, 1993).

Some traumatic memories are highly intrusive, that is, they constantly invade consciousness unbidden. This is a common symptom of post traumatic stress syndrome, and was especially noted among soldiers, such as Vietnam veterans. Intrusive memories were also reported by victims of the 1981 collapse of two skywalks in the Hyatt Regency Hotel in Kansas City. There, 114 people died and 200 more were injured. Most of those who witnessed the event, when interviewed later, said that the memory was repeatedly activated, some to the degree that it interfered with daily functioning (Wilkinson, 1983).

Thus, a common finding in both laboratory and naturalistic studies is that the central facts of highly arousing events can be more memorable than everyday events. Like all memories they are subject to loss of some specific, especially peripheral, details and to distortion. However, there is very little empirical evidence that such memories are ever completely obliterated.

Why is it then that people persist in believing that traumatic events, such as childhood sexual abuse (CSA), are *often* repressed (i.e., completely obscured from consciousness). The reason may have to do with anecdotal evidence and clinical case studies that are offered to support the phenomenon of repression (Rieker and Carmen, 1986; Schuker, 1979; Williams 1987). In fact, some scholars have argued that, from a clinical standpoint, "the evidence for repression is overwhelming and obvious" (Erdelyi & Goldberg, 1979, p. 384). In addition, based on such evidence, repression is regarded by some as a fairly common reaction to traumatic events (Blume, 1990; Fredrickson, 1992; Ratican, 1992).

How do clinical observations, taken as evidence that repression of traumatic memories is common, square with opposing experimental evidence? We explore this apparent contradiction here. We submit that this discrepancy can be explained by three kinds of memory distortions that accompany traumatic events and may give the impression in a clinical context, of repression. The first of these has to do with distortions about the nature of the event.

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Recent research suggests that CSA may be remembered less well by people who fail to understand the sexual nature of the event when it originally occurred. There is also evidence that people who remember the event fail to classify it as sexual abuse.

This may lead to a second kind of memory distortion involving the assessment of one's own past memory states. In large part, the evidence that memories for traumatic events are repressed comes from people's claims in the present about forgetting in the past. Put another way, people say there was a period in the past when they could not remember the event (i.e., when it was repressed). The accuracy of such reports depends on the ability to assess past memory states. Yet, the literature on past mental states suggests that such assessments are indeed fallible.

Finally, we discuss the kind of distortion that arises when someone believes that a particular traumatic event occurred when, in fact, it did not. This phenomenon can be explained by source amnesia. The event was suggested to the individual, in the context of therapy perhaps, and the individual came to believe that it actually happened. The original source of the information, the suggestion, was forgotten although the memory of the suggested event endured. The person comes to believe that the memory was established by an actual past event. We argue that under certain circumstances, some combination of these distortions could lead to situations that are mistakenly interpreted as repression.

Distortions About the Nature of the Event

Evidence for enhanced memory of emotionally arousing events, although it casts doubt on the notion of a repressive memory mechanism, does not deny forgetting altogether. Obviously we forget things all the time. In addition, it is quite likely that CSA is sometimes forgotten. However, there is a sharp distinction between the mechanisms posited by repression and the processes thought to underlie ordinary forgetting.

The popular theory of repression is that the mind has a special psychological mechanism that identifies memories which are too painful for the individual to endure on a conscious level and pushes them underground into some inaccessible corner of the unconscious. It is an extremely intelligent mechanism in that it can evaluate the harmfulness of memories and selectively submerge only those memories with especially destructive potential, all before the rememberer is even aware of them.

Ordinary forgetting, by contrast, is neither selective nor intelligent. Both negative and positive events are vulnerable. In addition, rather than being motivated by protection of the fragile consciousness, ordinary forgetting may not be particularly motivated at all. The underlying causes of ordinary forgetting are better described as a collection of failures or inadequacies of the general memory system, i.e. mistakes. One major reason we forget is that we fail to encode the proper details when originally experiencing the event. Without those details it is difficult to retrieve the memory among other memories at some later time. Sometimes we fail to encode the proper details because we fail to pay sufficient attention and other times its is because the event is in fact extremely similar to other events (did I turn off the coffee pot this morning?). Sometimes it is because insufficient understanding of the original event prevents us from knowing which *are* the proper details to encode. Stock market quotes on the radio mean nothing to those who do not know or care about them and are unlikely to be remembered. The uninitiated at a baseball game may notice the weather or the array of refreshments but be unable to make any sense of the activity on the field, thereby encoding and remembering none of it. Memory researchers have known for decades now that what people do not understand is very difficult for them to remember (Bransford & Johnson, 1972).

For events that occur in very early childhood, lack of memory may be due to childhood amnesia. Childhood amnesia refers to the observation that, in general, memories before the age of about two or three are unavailable to us as adults. Although the fact of childhood amnesia is uncontroversial, the explanation is debated. None the less, it is important to note that childhood amnesia encompasses virtually *all* early memories regardless

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of whether they are positive or negative. Memory for sexual abuse, although it may come under the veil of childhood amnesia, has no special status in this regard.

When children are a bit older, they begin to establish memories that will endure a lifetime, the birth of a sibling, a tonsillectomy, a move to a new house. Many believe the enduring memories dating from this period are due to the emergence of new skills developing in a social context. Work by Fivush and her colleagues, for instance, suggests that in "conversations of remembering" between children and their caregivers, children learn to create coherent narratives that provide a context for the memory event (Fivush & Hudson, 1990). Such conversations may also serve to model memory search skills (i.e., how to locate and retrieve the memory again).

However, even after children begin to establish enduring memories, there is still much that is forgotten. Some things are forgotten for the same reason adults forget events, they did not pay attention to them in the first place or the event itself was too mundane to be memorable. However, an even greater proportion of forgetting among young children can be explained by lack of understanding. As we said before, the less well an event is understood when it originally occurs, the fewer event-crucial features are encoded reducing the chances the memory will be identified among similar memories at a later time. In addition, the less well the event is understood, the less well it is connected with related information in the overall structure of memory. This is crucial for memory retrieval because, under normal circumstances, we remember things, in large part, because of connections with other memories. We remember a Randy Johnson no-hitter in context of other baseball games, in context of great pitchers, in context of other Mariner team members, in context of Seattle and summer. The connections between memories become pathways by which the memory is retrieved later. When you think of baseball games you have attended, great pitchers, the Mariners or summer past times, you are the more likely to think of that particular Randy Johnson no-hitter. One memory draws a connected memory along with it into consciousness. Thus, the more connections to a given memory, the greater the opportunities for retrieval. The organization of connections in autobiographical memory is thought to follow a hierarchy of broad life time periods (Conway, 1990) (e.g., *Randy Johnson no-hitter* filed under *baseball games* under *summer we lived on 34th Avenue*). Regardless of the specific structure of the web of connections, the more elaborately a particular memory is connected to other memories the more potential pathways lead to it and the easier it is to retrieve. This can only happen, however, if one understands the event well enough to know *how* it is connected with other information in memory.

The first step in embedding an event in the overall framework of memory is determining what type of event it is. This may be particularly difficult for young children with limited experience of common events. Is it a a baseball game? a birthday party? a trip to the dentist? an evening with the babysitter? The child must identify the general "script" the event is following. The notion of scripts, introduced Schank and Abelson (1977), is that we have a generalized understanding of the components of common everyday events. It comes from the idea of a script for a play. The classic example is a trip to a restaurant. The roles include diner, maitre d', wait person, chef, and bus boy. The props are the table, menu, and food. The first step is being seated at the table, the next is making a selection from the menu, etc. These are the components that are included in almost all trips to restaurants. Anticipation of these components helps us organize and remember the details of specific trips to a restaurant. We all have hundreds of similar scripts for the many repeatedly experienced events that make up our everyday lives. They are very useful from a cognitive perspective in that they help us understand the event as it unfolds. They help us choose and organize the details to encode in memory. Moreover, they help us see the event in context of the "big picture" (i.e., where it fits in the over all structure of memory). It is a trip to a restaurant.

Children must learn these scripts just like anything else. As children gain experience

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with the world they continue to add new scripts to their repertoire. However, very young children may understand only a few rudimentary scripts specific to their own daily routine. The poverty of scripts among preschoolers may well have a negative effect on their memory. Not only will the child lack the benefits to memory of common scripts, but also the quest to build a repertoire of scripts may cause them to intentionally ignore the aspects of events that make them memorable. Fivush and Hudson (1990) have suggested, for instance, that very young children may initially focus on routine aspects of events in an attempt to relate them to other events and extract the underlying script. An excellent example is the description by one preschool participant of a family camping trip "We eat dinner, then go to bed and then wake up and eat breakfast." Clearly the child was most interested in the similarities between the unique experience and the daily routine. Unfortunately, from the standpoint of later memory retrieval, focusing on and encoding the aspects of an event similar to those of other events creates a memory which will be indistinguishable from them.

Events which are not understood by the child, for which the child has no script, may well be less memorable. This relationship of understanding and memory was demonstrated in a study by Goodman et al. (1994). Children who underwent a urinary tract catheterization made more memory errors the less their parents attempted to explain the procedure, suggesting that children with less understanding of the event were more likely to misremember it. It is quite possible that sexual abuse is confusing to a child in a similar manner. At the time the memory is recorded, the child, having no script for CSA (like catheterization) may not understand what is going on or how it relates to other more familiar events. This fact may be compounded, in the case of CSA, by what the perpetrator says in an effort to disguise his or her true intentions. As a result, the abuse memory may form few connections with other memories and remain poorly embedded in the overall structure of memory. Because there are so few connections that lead to it from other memories, the abuse may remain forgotten for several years. This leads to the hypothesis that CSA is forgotten not because it was actively repressed but rather because it was inadequately recorded in the first place.

Table 1. *Questions presented to participants in questionnaire*

1. During childhood, were you ever exposed to anyone's sexual private parts in a way that made you uncomfortable?
2. During childhood, did anyone ever masturbate in front of you?
3. During childhood, did anyone ever touch your body, including your breasts or private parts in a way that made you uncomfortable?
4. During childhood, did anyone rub their private parts against you in a way that made you uncomfortable?
5. During childhood, did anyone put their mouth on your body in a manner that made you uncomfortable?
6. During childhood, were you ever forced to touch anyone's sexual private parts in a way that made you uncomfortable?
7. Were you forced to have intercourse against your will during childhood?

Forgetting of this sort was explored in a questionaire study (Joslyn, Carlin, & Loftus, 1997) in which college students were asked about several specific CSA events occurring before their 15th birthday (Table 1). Those who reported specific CSA events were also asked questions about their subsequent memory for the event and questions about their understanding of the sexual nature of the event, on the assumption that it would be least understandable to young children. As predicted, participants who who did not understand the events as sexual at the time they occurred, reported less memory for them in the intervening years. These results suggest a hypothesis: Participants, as children lacking the concept of sexual abuse, had little idea how the CSA event related to other events they had experienced. As a result, the memory may have been isolated in the overall memory structure and remained unconnected and infrequently, if ever, retrieved.

What about later when people come to understand the phenomenon of sexual abuse?

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The memory may continue to be difficult to recall, even after the idea of sexual abuse is understood and the groundwork is laid for remembering the event, for another reason. The abuse memory may contradict the person's current self-view. That is to say, the rememberer may have difficulty recalling the event because he or she is reluctant to view him or herself as having been a victim of sexual-abuse in childhood. People's reluctance to assume what is perceived as a negative label is a well documented (Knutson & Selner, 1994; Savin–Williams, 1989). In addition, there is strong evidence that the way in which we view ourselves, sometimes referred to as the "self-schema," influences perception and memory (Markus, 1977). The idea of a self-schema is similar to that of a script discussed above. It is a generalized view of one's personal qualities, abstracted from many individual experiences. It is essentially a theory about oneself (Epstein as cited in Greenwald, 1980). "I love my job; I like art, dance and classical music; I'm not very good with machines and I can't spell; I had a normal middle-class childhood." Memories that contradict one's self-schema are brought to mind less easily than those that are consistent with it. It may well be that, for some people, being a victim of CSA is a negatively perceived label. As such, CSA may not be remembered, in part, because it contradicts the self-schema. This is not to say that the CSA memory is actively repressed. On the contrary, it is simply another reason the memory is less-well connected with other memories, less retrievable. CSA is an event in one's childhood, but it does not fit with the general theme of one's childhood (i.e., that it was "normal" and happy). As a consequence, it is not connected with the other happy childhood memories, fewer pathways lead to it, and it is more difficult to recall.

This explanation of forgetting of CSA was also supported in the questionnaire study described above (Joslyn, Carlin, & Loftus, 1997). In addition to the seven questions about specific events, respondents were asked a generic abuse question: "Were you ever sexually abused in childhood?" Remarkably, only a quarter of those who reported specific sexual abuse events (Table 1) responded "yes" to the generic question. One possible explanation for this was that they were reluctant to classify themselves as sexually abused. One might argue, however, that participants did not report being sexually abused because their definition of sexual abuse excluded the event they experienced (i.e., for that person, that particular event did not constitute sexual abuse). To evaluate this possibility we also asked them whether, in the abstract, they regarded each of the seven specific events as sexual abuse. Ninety percent of those who reported a specific abuse event but denied that they had ever been abused *included* that specific item in their definition of sexual abuse. In other words, in the abstract, they regarded the event that they had experienced as sexual abuse. However, when evaluating the same event in their own lives they were unwilling to place it in that category. Perhaps it contradicted their current self-schema.

If reluctance to regard personally experienced events as CSA is as widespread as this study suggests, it might conceivably give rise to a situation in which reclassification of the event is mistaken for remembering it. Imagine, for instance, that a woman enters therapy and is asked this question on intake: "Were you sexually abused as a child?" The results reported above suggest that in all likelihood she will say "no" even if she had. Later, however, she might recall some specific incident of unwanted sexual attention. With her therapist's help, she might identify the experience as sexual abuse. Discovering the true nature of an event in her own past may well be accompanied by a rush of emotion. The emotional impact of realizing that she had been sexually abused, perhaps by someone she loved and trusted, could easily be misinterpreted as the impact of remembering something that was previously completely forgotten.

We believe that this scenario may be behind some of the anecdotal evidence for repression of childhood sexual abuse. This is not to say that the CSA event did not actually occur but rather that it was never actually repressed. It may well have been forgotten for a time, in the ordinary sense of the word. On

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the other hand, it may never have been completely forgotten, but rather never completely understood.

Distortion of One's Own Assessment of Past Memory States

How could one possibly believe that something was forgotten when it wasn't? This hypothesis not as far fetched as it initially seems. In such situations the memory of the event is quite valid. It is the memory for a period of *forgetting*, which is erroneous. The rememberer believes, falsely, that there was an extended period in the past when they could not remember the event. A good example is a case study reported by Schooler, Bendiksen, and Ambadar (1997), in which an individual claimed to be remembering an abusive event for the first time. However, other people close to her reported that she had in fact talked about the event several times in the past.

This highlights the odd position in which psychologists find themselves when studying repression: We are asking people about a memory for forgetting a memory. Repression involves, by definition, a period of lack of memory. However, in most cases (including our own study reported earlier), we have only the persons unsubstantiated report that such a period ever existed.

Assessing one's past memory depends on the ability to remember not a past event, but rather a past *mental state*. Evidence suggests that people are relatively inaccurate when making this kind of judgement. A good example is the "knew it all along effect" or hindsight bias. People remember, for instance, predicting the Clarence Thomas (Dietrich & Olson, 1993) and Rodney King (Gilbertson, Dietrich, Olson, & Guenther, 1994) outcomes more accurately than they did. Their present knowledge of the actual outcome, Clarence Thomas was approved and Rodney King's assailants were acquitted, influences their assessment of their previous prediction. They are more likely to believe they predicted those outcomes, even when they didn't.

In a similar manner, people remember their initial impressions of dating partners as being more consistent with their present impressions than they really were (McFarland & Ross, 1987). Likewise, people judge their past political attitudes as being more consistent with their present views than they really were (Marcus, 1986). What this suggests is that people are fairly inaccurate in judging past mental states and often exhibit biases toward consistency with their present mental state.

Preliminary results from a new study by two of us, Joslyn and Loftus, investigating people's memory for past memory performance suggest that people are inaccurate approximately 30% of the time after only a few weeks have passed. In this study participants read a series of short passages to learn relatively obscure facts about various topics such as the life of photographer Diane Arbus and horseback riding techniques. The following day they were tested on what they had learned as well as facts about the testing session itself (e.g., time and place). Then, 6 weeks later, participants were asked to remember whether or not they had remembered the facts in the previous session (i.e., whether they could remember their previous memory performance).

It was especially difficult for participants to remember their performance when they failed to remember in the previous session. In this situation they did not do much better than chance. In addition, as question difficulty increased, memory for memory performance decreased. When trying to remember their previous memory performance on very difficult questions, participants made errors as much as 42% of the time. For very difficult questions, the pattern of errors changed as well. Although the pattern is similar in memory for previous *lack* of memory (they are essentially at chance) the percentage of errors in memory for correct memory performance increased to almost 30%. For 30% of the questions, participants said that they did NOT remember the correct answer in the previous session when in fact, they had. This is memory for memory performance only a few weeks early—what happens when many decades have passed?

We contend that, in a similar manner, inaccuracy in judging past memory is responsible for some claims of previous repression. Peo-

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ple mistakenly believe that they were not able to remember the event in the past. In this case, however, their judgment is not biased toward their present memory state but rather against it. People are remembering an event in the present and erroneously reporting that they *failed* to remember it in the past.

Why would people mistakenly say they forgot an event that they are currently remembering?This may well have to do with the type of event it is. Perhaps, because of lack of understanding of the nature of the event, it constitutes a very difficult question. In addition, as we mentioned earlier, it is quite possible that "sexual abuse victim" is perceived for some as a negative label. People may be reluctant, for much of their young adulthood, to categorize an event in their own childhood as sexual abuse. There may come a time however, in reevaluating the experience, that they realize that is precisely what it was. The realization may be accompanied by a rush of emotion that is interpreted as the impact of remembering something for the first time. If they are remembering it for the first time, they *must not* have been able to remember it before. Coupled with the hazy quality of past mental states and the popularity of the idea of repression (Golding, Sanchz, & Sego, 1996) this could be enough to convince them: The abuse must have been repressed. Thus, inability to recall past memory states lends to the appearance that the present reclassification as abuse is really the lifting of repression. In fact, however, the incident was never completely forgotten, it was simply misunderstood.

Belief in an Event That Has Not Really Occurred

Another possible explanation for the anecdotal and case study evidence in favor of repression is that the CSA was not remembered in the past because it did not actually occur in the first place. Although this may seem like an implausible explanation for repression, there is a preponderance of evidence that memories can be altered by more recent information. In what has become known as the misinformation effect, Loftus and others have repeatedly shown that misleading post event information can change memory for events witnessed in films or slide shows, turning stop signs into yield signs, straight hair into curly hair and changing the colors of books (Bekerian & Bowers, 1983; Belli, 1989; Loftus, 1975; Loftus, Miller, & Burns, 1978; Loftus & Palmer, 1974; Weingardt, Loftus, & Lindsay, 1995). Upon recall, people apparently fail to identify the proper source of the post-event information attributing it to the original event.

Although the effect of post-event information upon recall is now well established, until recently there was little evidence that an entire fictitious memory can be created. This changed with a study reported by Loftus and Pickrell (1995). Pairs of siblings, one enlisted as a confederate, engaged in describing events in their mutual childhood. Some of the events recounted by the confederate were completely fictitious. In one case, for instance, the confederate described a detailed account of the younger sibling, as a preschooler, being lost in a shopping mall. Approximately a quarter of participants came to believe in the occurrence of such fictitious events. Completely false memories have also been created for fairly bizarre and unusual experiences (Hyman, Husband, & Billings, 1995). Similar effects have been demonstrated with children. Ceci, Huffman, Smith, and Loftus (1994), for instance, asked young children about a series of events, such as getting a hand caught in a mouse trap. Approximately one-third of children assented to false events, and some even added convincing details of their own to the story.

If people's memories are so malleable, how can they ever distinguish their fantasies or imaginings from memories of actual events? Some argue that the distinction is made on the basis of perceptual details. Memories for actual events, according to this view, have many more visual, auditory, olfactory, and tactile details than do memories whose sources are suggestion or imagining. This claim makes sense in that memories for actual events originate from sensory experience; it is through sights, sounds, and smells that one learns of an event in the outside world in the

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first place. This claim is supported in laboratory studies (Johnson, Hashtroudi, & Linday, 1993). People tend to supply more perceptual details for memories of actual events than events events experienced indirectly or imagined. There is even physiological evidence to support this claim. PET scans of people's brains recorded while they are remembering words that were previously read out loud to them, show activation in several areas of the brain including a portion of the left temporal and parietal areas that has been linked in previous studies with phonological processing. On the other hand, when people are remembering words they only imagined earlier, although many similar areas are active, the portion of the left temporal area and parietal area is not (Schacter, Verfaellie, & Pradere, 1996). This suggests that only when remembering words they actually heard do people recall the very sounds of which the word is composed.

Perhaps this is the standard then, memories with sensory level details are the ones that originated in the world outside the mind. Perhaps true memories have sensory level details that make them qualitatively different than a false memories. Unfortunately there is a catch. Especially vivid *imaginings* may well be processed in the very same areas of the brain that process perceptions of the outside world. Visual imagery, for instance, is processed by the same regions of the brain that are active when vision takes place (Kosslyn, 1994). This suggests that memory for a vivid image could easily be mistaken for the memory of an actual event. And indeed, when people are instructed to imagine false memories they are much more likely to mistake them for the real thing. (Ceci, Huffman, Smith, & Loftus, 1994; Dobson & Markham, 1993; Garry, Manning, Loftus, & Sherman, 1996; Hyman, Husband, & Billings, 1995; Hyman & Pentland, 1996).

Thus, although memories for real events may well have rich sensory details this is also true of vividly imagined events. Hence vivid imagery may well give rise to especially convincing false memories. We propose that some repressed memories are false memories of this sort. This is not to say the the person recovering the false memory is consciously lying about the event but rather that the person is quite convinced that it is true, relying on the very same kind of evidence that often points to true memories.

Many believe that especially vivid false memories of CSA can be created in psychotherapy as a result of suggestive memory recovery techniques. The necessity for memory recovery techniques is justified by the popular theory that repression leads to complete submersion of particular memories but gives rise troublesome symptoms that can only be eradicated by exposing the underlying cause (i.e., the memory). To this end, some therapists have engaged in techniques such as age regression and hypnosis, which encourage imaginary exploration of one's own past. Although this may well be a good way to elicit recalcitrant memories, it is also, as we have seen, a very good way to create false memories.

What effect might such a false memory of CSA have on the rememberer? It is difficult to tell. At this point, it is virtually impossible, without corroboration, to determine, in a clinical setting, whether a given uncovered memory is true or false. As a consequence, the distinct effects of false memory retrieval are not well known. One hypothesis is that, to the extent that the person believes in the false memory the effects might be similar to those of the actual event. The believability of false memories is something for which there is evidence. Ceci, Loftus, Leichtman, and Bruck (1994), for example, asked preschoolers to try to remember certain events in their past. In actuality only half of the target events were parent-supplied "true" events, whereas the others were experimenter-contrived. After 11 weeks of visualizing both false and true memories children were claiming that 43% of the fictional events were real. The children's descriptions of the false memories were apparently extremely convincing. A group of professional psychologists, observing a video of one of the final sessions, was unable to distinguish the false from true accounts. In a similar study, Ceci et al. (1994) report that even after a thorough debriefing by the child's own parents, some children continued to hold on to their inaccurate belief. It is clear that

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these children whole-heartedly believed their false memories. If subjects in experimental settings can remain committed to false memories even after debriefing, perhaps a similar situations arise in therapy induced false memories of CSA.

Therapy-induced false memories are suggested by the fact that numerous cases have been reported in which people uncover CSA memories and later retract them (Gavigan, 1991; Lief & Fetkewicz, 1995; Loftus, 1997; Loftus & Ketcham, 1994; McElroy & Keck, 1995; Ofshe & Watters, 1994; Wassil–Grimm, 1995; Yapko, 1994) (i.e., they say that the CSA memories were not true). It is important to note that people may retract CSA memories for reasons other than realizing a memory is false. For instance, the person may still be convinced the CSA took place but retract the accusation in order to restore family life. It is not certain that all retractors are victims of false memory. In several cases, however, the retracted memories are inherently questionable. For some there is a complete lack of physical evidence although the memories involve satanic ritual abuse (SRA) and crimes so heinous that complete absence of physical evidence is quite implausible. In addition, some retracted memories involve events taking place well before the offset of childhood amnesia (e.g., in infancy) when is is unreasonable to expect enduring memory (Lief & Fetkewicz, 1995; Loftus, 1997).

Although we cannot be certain that retracters are actual victims of false memory, examining the effect of their experience may provide some insight. It must be noted at the outset, however, that retracters are generally people who had emotional problems to begin with. They are, for the most part, people who initially entered therapy because of relationship problems or feelings of unhappiness. Many displayed symptoms such as major depression, alcohol or drug abuse, anxiety, eating disorders, or dissociative disorders. Yet many came from families that were relatively "functional" prior to therapeutic experience (Wakefield & Underwager 1992). In addition, many report getting worse after recovering abuse memories in therapy. The flashbacks and vivid memories of CSA, although they may not be based in fact, are very real and distressing to the patient. In most cases there is severe disruption to interpersonal relationships which may exacerbate existing problems. Some developed psychotic symptoms and some lose their jobs (Gavigan, 1991; Mc Elroy & Keck, 1995). Moreover, while attempting to uncover these memories, other pharmacological and psychological treatments may be postponed. Some scholars believe the final consequences of therapy-induced false memories are extremely negative including depletion of financial resources, the complications of legal involvement, as well as feelings of guilt resulting from the impact the situation has had on other's lives (Mc Elroy & Keck, 1995). Lief and Fetkewicz (1995, p. 432.) state, for instance, that "enormous harm is being done to these patients and their families. Patients get sicker instead of better and huge sums of money are spent for years of therapy based on the erroneous assumption that the recovery of memories of sexual abuse in childhood is a healing process." Although these arguments are very persuasive, from a purely scientific perspective, it is not yet possible to distinguish the effects of false memories from those of actual abuse. What is clear, as suggested in part by research on the malleability of memory, is that suggestive memory recovery techniques are risky and potentially catastrophic. Until more research is provided on both the positive and negative effects of repressed memory therapy, the numerous cases in which there is no apparent benefit but many deleterious effects from this treatment, suggest that its widespread use should be curbed.

Conclusion

We have argued that three kinds of memory distortions that may well lead to the impression that traumatic memories are often repressed. The first is probably best described as ordinary forgetting. Because CSA is difficult for a child to understand, it is not well encoded in memory in the first place. The child does not know how to integrate it with other memories and thus it is not remembered in the intervening years. In this case the event

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is truly experienced and it is truly forgotten, but it is not repressed. It is forgotten the way a multitude of perfectly ordinary memories are forgotten every day of our lives, it was not well encoded in the first place.

Another kind of distortion that may lead to the impression of repression occurs when people attempt to assess their own past memory states. In this case the abuse event truly occurred and it was remembered all along, but the rememberer has the false impression that there was an extended period in the past when he or she could not remember it. This is in large part because he or she failed to classify it as sexual abuse. In other words he or she remembered it all along but not as CSA.

Finally it is possible that the event is only remembered in the present because the memory itself was established in the present. In other words, the past event itself is the product of memory distortion. A combination of these factors may well account for a large proportion of the anecdotal and case study evidence for repression.

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