When Photographs Create False Memories

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ABSTRACT—*Photographs help people illustrate the stories of their lives and the significant stories of their society. However, photographs can do more than illustrate events; in this article, we show that photographs can distort memory for them. We describe the course of our "false-memory implantation" research, and review recent work showing that photographs can sometimes increase—while other times decrease—false memories. First, we discuss research showing that a doctored photo, showing subjects taking a completely fictitious hot-air-balloon ride, can cultivate false memories for that experience. We hypothesize that the photograph helps subjects to imagine details about the event that they later confuse with reality. Second, we show that although photographs are indeed powerful sources of influence on memory, they are not necessarily as powerful as narrative. In fact, in certain circumstances, photographs might constrain imagination. Third, we discuss research showing that true photographs can also cultivate false memories. Finally, we present recent work showing that photographs can create false memories for current events.*

KEYWORDS—*memories; false memories; photographs*

Memory is the way we keep telling ourselves our stories, said the writer Alice Munro. People tell their stories in words and pictures; they write letters, pull out childhood photo albums at family reunions, and talk about what happened when, where, and to whom. Sometimes people are told stories by others—socially significant, newsworthy stories in the paper or on television. Whether they are the stories of individual lives or of society as a whole, important stories are often illustrated with photographs, which give the imprimatur of authenticity. In this paper, we review the research showing that photographs can create false stories. Photographs can distort memory.

A decade ago, Loftus and Pickrell (1995) showed how easily people can be led to remember wholly false events. They asked subjects to read stories of some childhood events, one of which described each subject getting lost in a shopping mall. That event was false, but by the end of the study, 25% of subjects falsely remembered at least some details about it. In the scientific community, the paradigm has proven both popular and powerful, with nine similar narrative-based studies showing a mean false recall of 33% (see Garry & Wade, 2005, for a brief review).

Considered as a whole, research using this "lost in the mall" paradigm shows us how easy it is to implant false memories using remarkably simple technology. Yet we live in a world of increasingly sophisticated technology. For example, not so long ago, only Hollywood studios and advertising agencies had the skill and the equipment to doctor photographs. These days, it seems that everyone has a digital camera and image-editing software. While it may seem like harmless fun to airbrush an annoying ex out of a photo or to cobble together a photo of little Theo meeting his favorite action figure, recent evidence suggests that doctored photos can doctor memory, too.

FALSE PHOTOGRAPHS AND FALSE MEMORIES

"It isn't trustworthy simply because it's a picture," the photographer Pedro Meyer told *Wired* magazine. "It is trustworthy if someone we trust made it" (Rosenberg, 1995, p. 171). Meyer is right, of course—yet people do trust photos. People think they reliably capture the past. Yes, they may know that photographs can be doctored, and they may not trust the famous, allegedly doctored photo of Lee Harvey Oswald holding a rifle in his backyard,[1] but they still think their personal photographs are real. What might be the power of a doctored childhood photograph on memory?

To answer this question, Wade, Garry, Read, and Lindsay (2002) adapted the Loftus and Pickrell (1995) "Lost in the mall"

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[1]This photograph is widely available on the Internet; for example, at John McAdams' JFK Assassination Home Page: http://mcadams.posc.mu.edu/photos.jpg
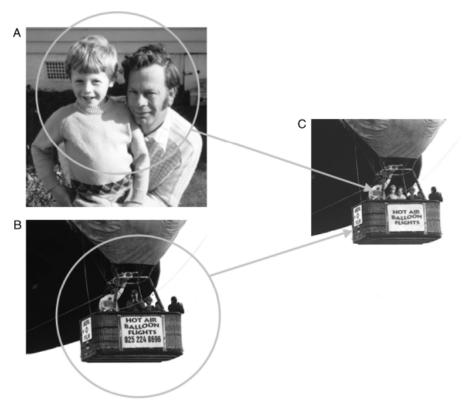
Fig. 1. Demonstration of the doctoring process as used in Wade et al. (2002). Subjects are "cut" from an original photo (A) and "pasted" into a dummy balloon photo (B). Subjects are shown the false photo (C) and asked how much they remember about the event over three interviews.

method, but replaced narratives with photographs. The question was simply whether showing subjects a doctored photograph—with no supporting narrative—would lead them to remember a false experience. They showed each subject four photos: Three were real childhood photos and one was fake, showing the subject taking a childhood hot-air-balloon ride. The doctored photos were created for each subject by using Photoshop and an assortment of additional childhood photos. Wade et al. "cut" the subjects and at least one family member out of these additional photos and "pasted" them into a dummy photo of a hot-air-balloon ride (see Fig. 1). Family-members verified that the balloon ride never happened. After subjects reviewed each photo three times over a maximum of 2 weeks, 50% remembered something about the ride. Often these reports were rich with detail, and at the end of the study, subjects tended to express genuine astonishment when they learned the photo was a fake.

Wade et al. (2002) speculated that photographs might give subjects some kind of cognitive "springboard," allowing them to generate thoughts, feelings, details, images—the hallmarks of genuine memories—more easily than is possible than with verbal descriptions. Subjects confused these mental products for genuine experience, a process called *source confusion* (Johnson, Hashtroudi, & Lindsay, 1993). In fact, the comparatively high rate of false recall led them to wonder which medium is better at cultivating false memories: photos or narratives? To answer this

question, Garry and Wade (2005) combined the methods of Loftus and Pickrell (1995) and Wade et al. (2002) such that half the subjects saw a photograph of themselves taking a balloon ride while the other half read a description of the same false event. To make sure the description and the photo conveyed the same information, other researchers were asked to extract all the information they could from the balloon photo and use that information to create the narrative. By interview three, 80% of the subjects who read a false narrative reported memories of the event, compared to 50% of those subjects who saw a false photo. Moreover, when subjects were asked whether photographs or narratives were better at "jogging" their memories during the study, there was an interesting interaction: Narrative subjects said that photos were better memory joggers, while photo subjects said that narratives were better memory joggers.

Taken together, these studies suggest that photos alone are powerful enough to elicit false memories on their own but that they are not necessarily more powerful than narratives. In fact, they might be less powerful than narratives. If, as Wade et al. (2002) hypothesized, photographs do make it easier for people to imagine—and then come to believe—the false event depicted, then how do we account for Garry and Wade's (2005) finding that narratives actually elicited more false memories than photographs? The answer may lie in the fact that the photo provided a concrete visual depiction of the balloon ride, making it more

difficult for subjects to construct information about the trip. While narratives allowed subjects to generate their own details about their balloons, the detail in the false photographs demanded that subjects generate details about the experimenters' balloon. Thus, subjects who saw the photograph would have found it more difficult to produce information they later might take to be a real memory.

TRUE PHOTOGRAPHS AND FALSE MEMORIES

The fact that doctored photographs can elicit false memories does not help explain situations in which there is no real attempt to mislead. For example, it does not say much about whether there are dangers in looking at real family photos. However, a common psychotherapeutic technique directs clients to look at real photos so that the people, places, and experiences captured in them will jog memories of previously unremembered traumas (Dolan, 1991; Weiser, 2002).

Concerns about these techniques led Lindsay, Hagen, Read, Wade, and Garry (2004) to examine the effect of a real photograph to cultivate a false memory. Using a variation of the "lost in the mall" method, they asked subjects to remember three school experiences. Two of the experiences were real, and one was false; the false event described the subject putting Slime (the goopy green children's toy) into the teacher's desk drawer. All the subjects read a description of each event, and half also saw their real class photo to "help" them remember. While slightly fewer than half of the description-only subjects developed mental images of the Slime story or full memories, over 70% of the photo subjects did. These results show that even true photos can lead people to remember false events.

PHOTOGRAPHS AND MEMORY FOR THE MEDIA

In 2004, Britain's *Daily Mirror* newspaper published photos showing soldiers torturing Iraqi prisoners—photos the paper claimed to have received from other soldiers. Although accusations of such abuse were widespread, the photos were taken as proof that they were true. But the British Armed Forces noted a number of dubious details in the photos: They showed a vehicle never sent to Iraq, the prisoners looked too neat to have been beaten, and a trail of urine aimed at a prisoner by a soldier seemed to have had detail and shadows added to it. In short, the overall quality suggested trickery. A few weeks later, the *Daily Mirror*'s headline proclaimed, "Sorry . . . we were hoaxed" (2004, May 15, p. 1) and the editor lost his job.

Research shows that photographs are eminently believable, even though people know they can be faked. For example, Kelly and Nace (1994) showed subjects bogus news stories from the the *New York Times* and the supermarket tabloid *National Enquirer*. Although the *Times* was rated as a much more believable publication than the *National Enquirer*, the photographs in the *Enquirer* were rated as much more believable than the tabloid

itself. More importantly, subjects who saw a lengthy video about Photoshop's image-manipulation capabilities still maintained their belief in the relative veracity of both publications' photographs.

People are also more likely to remember the content of a news story when it is accompanied by a photograph. David (1998) showed subjects news stories that were or were not accompanied by a photograph and found that subjects were more likely to remember the stories when the stories had photographs.

Considered as a whole, the research suggests that photos enhance both the credibility of the news and people's memory for it. These findings led Garry, Strange, Bernstein, and Kinzett (2005) to examine the effect of different photographs on memory for a newspaper story. They asked subjects to pretend to be a newspaper editor and to study three news articles. One of the stories—the target—described a hurricane that tore through a Mexican coastal town, causing major property damage. While acting as editors, subjects proofread the stories, identifying and correcting minor typographical errors. They also received a photo that would accompany the each article, and they had to mark on the article where in the layout of the newspaper they thought the photo would look best. For half the subjects, the photo accompanying the hurricane article showed part of the town before the hurricane struck; for the other half, the photo showed the exact same spot after the hurricane struck.

The next day, subjects returned to the lab for a surprise memory test. On the test, they read a number of statements and indicated whether they had read each statement in one of the articles the day before. There were two types of statements on the test: old statements, which really had been in the articles, and new statements, which had not been in the articles but were related. For the hurricane story, some of the new statements described severe injuries to people in the story—even though the hurricane story recounted only property damage and no personal injuries.

Garry et al. (2005) found that although subjects had equally good memories for statements in the other stories, those who saw the "after" photo for the hurricane story were far more likely to claim they had read the descriptions of serious personal injury. In fact, fewer than 10% of subjects who saw the "before" photo falsely remembered reading about personal injury, while approximately a third of subjects who saw the after photo did. The choice of photos did not affect memory for other kind of statements. This study suggests that photographs can influence the way people remember the news.

CONCLUSIONS

If memory is the way people keep telling themselves their stories, then photographs are one of the ways people keep those stories alive. We have shown that both doctored and true photographs can cultivate false memories for personal experiences, and true photographs can lead to false memories for the news.

The research on photographs and memory has raised significant questions that warrant attention from many areas of inquiry. For example, in the area of psychological science, we do not know if, or how, photographs affect source monitoring in different situations. Do photographs, for instance, enhance imagination in some circumstances while constraining it in others? Does it matter if a photograph depicts the event itself (such as in the balloon studies) or merely depicts the protagonists (such as in the Slime study)? How do these two issues affect fluency, the ease with which the fictitious event is processed and springs to mind?

People often mistake a rush of surprising fluency as an indicator of truth (Bernstein, Whittlesea, & Loftus, 2002). In cognitive philosophy, the close relationship between photographs and memory relates to a question Clark and Chalmers (1998) raised about where one's mind stops and the rest of the world starts. That is, when can one say that an external device is actually part of—an extension of—one's own memory? People rely on some technologies so much, they argued, that to dismiss them as extensions of memory simply because they are external to the physical body seems like nitpicking.

In the area of personal identity, the act of remembering experiences that do not fit with people's personal identity causes more change in how they see themselves than does remembering experiences that do fit with their identity (Neimeyer & Metzler, 1994). Perhaps that change would be accelerated or magnified if the incongruent remembering were accompanied by a doctored photograph as evidence. Real photos certainly can have this impact, particularly when they contain a mix of known and unknown information. For example, Wigoder (2001) describes the case of man who, nearly 50 years after WWII ended, came across a photo of himself as an emaciated young boy in a concentration camp. Confronted with the photo—evidence he recognized as being of a genuine experience but had never seen before—the man began to change the way he remembered life at the camp.

In the area of psychotherapy, can doctored photographs help clients reframe unpleasant personal history and, if so, is such a technique ethical? We know of at least one worrying example. Weiser's PhotoTherapy approach (Weiser, 2002) treats photographs as projective tests, with the therapist's job being to identify the client's common themes. Weiser eagerly anticipates the "exciting possibilities . . . for using photos as counselling tools with clients who have scanners . . . [and] photo-manipulation software" (p.24). On the other hand, doctoring images may lead to useful memory distortions. Kehle, Bray, Margiano, Theodore, and Zhou (2002) review research showing that when clients who engage in maladaptive behaviors—such as selective mutism (when a child speaks only in some contexts but not others), stuttering, or disruptive classroom behavior—view videos of themselves in which the unwelcome behaviors have been edited out, the maladaptive behaviors reduce. Kehle et al. propose a false-memory account of the effect: For example, stutterers who see manipulated videos of themselves speaking fluently may falsely remember speaking fluently more often than

they really do, causing them to become more confident that they can speak well—and thereby reducing their stuttering.

Finally—and regardless of the psychological mechanisms at play—research on the ways doctored photos can tamper with memory raises important questions about what people might confess if they are confronted with false evidence that they did or saw something that never happened.

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