

- Psychological Bulletin*.
- Bowers, K. S., & Hilgard, E. R. (1988). Introduction: Some complexities in understanding memory. In H. Pettinati (Ed.), *Hypnosis and memory* (pp. 3–18). New York: Guilford.
- Cialdini, R. (1993). *Influence: Science and practice* (3rd ed.). Glenview, IL: HarperCollins.
- Clark, R. (1971). *Einstein: The life and times*. New York: World.
- Conway, F., & Siegelman, J. (1979). *Snapping: America's epidemic of sudden personality change*. New York: Delta.
- Crews, F. (1993, November 18). The unknown Freud. *New York Review of Books*, pp. 55–66.
- Crews, F. (1994a, November 17). The revenge of the repressed (Pt. 1). *New York Review of Books*, pp. 54–60.
- Crews, F. (1994b, December 1). The revenge of the repressed (Pt. 2). *New York Review of Books*, pp. 49–58.
- Crews, F. (1995, April 20). [Letter to the editor]. *New York Review of Books*, pp. 72–73.
- Deikman, A. J. (1994). *The wrong way home: Uncovering the patterns of cult behavior in American society*. Boston: Beacon.
- Dyer, G. (1985). *War*. New York: Crown.
- Fletcher, G. J. O. (in press). Realism versus relativism in psychology. *American Journal of Psychology*.
- Frank, J. D. (1973). *Persuasion and healing: A comparative study of psychotherapy* (Rev. ed.). Baltimore: Johns Hopkins University.
- Freud, S. (1953). Fragment of an analysis of a case of hysteria. In J. Strachey (Ed. & Trans.), *The standard edition of the complete psychological works of Sigmund Freud* (Vol. 7, pp. 7–122). London: Hogarth. (Original work published 1901)
- Green, G. (1994). Facilitated communication: Mental miracle or sleight of hand? *Skeptic*, 2, 68–76.
- Kukla, A. (1989). Nonempirical issues in psychology. *American Psychologist*, 44, 785–794.
- Lifton, R. J. (1963). *Thought reform and the psychology of totalism*. New York: Norton.
- Loftus, E., & Ketcham, K. (1994). *The myth of repressed memory: False memories and allegations of sexual abuse*. New York: St. Martin's.
- Lyons, W. (1986). *The disappearance of introspection*. Cambridge, MA: Bradford.
- Moore, R. K. (1964). Susceptibility to hypnosis and susceptibility to social influence. *Journal of Abnormal and Social Psychology*, 68, 282–294.
- Nisbett, R., & Wilson, T. D. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review*, 84, 231–254.
- Ofshe, R., & Watters, E. (1994). *Making monsters: False memories, psychotherapy, and sexual hysteria*. New York: Scribner's.
- Pendergrast, M. (1995). *Victims of memory: Incest accusations and shattered lives*. Hinesburg, VT: Upper Access.
- Spanos, N. P., Cross, P. A., Dickson, K., & DuBreuil, S. C. (1993). Close encounters: An examination of UFO experiences. *Journal of Abnormal Psychology*, 102, 624–632.
- Spanos, N. P., Menary, E., Gabora, N. J., DuBreuil, S. C., & Dewhirst, B. (1991). Secondary identity enactments during hypnotic past-life regression: A sociocognitive perspective. *Journal of Personality and Social Psychology*, 61, 308–320.
- Tavris, C. (1993, January 3). Beware the incest survivor machine. *New York Times Book Review*, p. 1.
- Woody, E. Z., Bowers, K. S., & Oakman, J. M. (1992). A conceptual analysis of hypnotic responsiveness: Experience, individual differences and context. In E. Fromm & M. Nash (Eds.), *Contemporary hypnosis research* (pp. 3–33). New York: Guilford.
- Woody, E. Z., Oakman, J. M., & Drugovic, M. (1995). *A re-examination of the role of nonhypnotic suggestibility in hypnotic responsiveness*. Unpublished manuscript, University of Waterloo, Waterloo, Canada.
- Yapko, M. D. (1992). *Suggestions of abuse*. New York: Simon & Schuster.

The Construction of Space Alien Abduction Memories

Steven E. Clark

*Department of Psychology
University of California, Riverside*

Elizabeth F. Loftus

*Department of Psychology
University of Washington*

Carl Sagan (1993) suggested that the “pay dirt” of space alien abduction accounts is not in what they might tell us about alien visitation but in what they might tell us about ourselves. We (Clark & Loftus, 1995) echoed this view in a recent review of Mack’s (1994) *Abduction: Human Encounters With Aliens*. In their target article, Newman and Baumeister present a large shovelful of just the kind of pay dirt that Sagan and we described.

Newman and Baumeister present an impressive review of the abduction literature—a literature that presents itself as strong evidence against the authenticity of space alien abduction narratives. Newman and Baumeister argue that space alien abduction narratives are a variety of false mem-

ory, reconstructed with the suggestion of hypnosis, with details drawn from popular culture (and perhaps an obsessed subculture) that is filled with images of space alien visitation. The critical question for the skeptic of space alien abduction stories is: How can so many people (Newman & Baumeister give a high estimate of 3.7 million) hold so tenaciously to detailed narratives of their own lives that are false not merely in their details but at their very core? The skeptic of the skeptic might argue that surely 3.7 million people can’t be making these stories up. Can human memory invent such stories?

Yes. With some help.

In our commentary, we briefly review the research that provides the foundation for the false memory phenomenon. A large research literature shows a reliable result that has become known as the *misinformation effect*. We suggest that unidentified flying object (UFO) abduction memories are a variant of this misinformation effect—on a very large scale.

The Misinformation Effect: From Stop Signs to Space Aliens

The misinformation effect is illustrated with the following classic experiment (Loftus, Miller, & Burns, 1978). Subjects are shown a slide presentation of a car-pedestrian accident in which the critical slide shows an intersection with a yield sign. Later, subjects are subtly presented with misinformation—that there was a stop sign at the intersection. When later asked whether there was a stop sign or a yield sign at the intersection, a high proportion of subjects incorrectly indicated that it was a stop sign. The error is made with high confidence. The acceptance of misinformation has been reliably demonstrated in dozens of experiments.

Of course, it's one thing to accept misinformation about a small detail like a stop sign and quite another to come to believe that one has been abducted by space aliens. Yet, the empirical path from the former to the latter is clearly established. There is strong evidence—from laboratory studies, case studies, and historical anecdotes—that people can come to believe they have experienced events that in fact did not occur.

Loftus and her colleagues (Loftus & Coan, in press; Loftus & Pickrell, in press) developed a procedure using pairs of relatives, in which the older relative, in collaboration with the experimenters, tells four stories about the younger relative, one of which is a made-up story about the younger relative's becoming lost in a shopping mall around the age of 5 or 6. In the Loftus and Pickrell (in press) study, the 24 subjects (the younger relative in each pair) remembered something about 49 of the 72 true memories (3 true memories for each of the 24 subjects) or about 68% of the true memories. Six of the 24 subjects "remembered" the false event (25%).

Loftus and Coan (in press) illustrated how a person, having accepted a false memory, might fill in additional false details. In one case, the "lost" subject came to "remember" details that he had been lost in a Kay-Bee toy store and that the man who had found him had been balding and worn a blue flannel shirt and glasses. In addition, the subject remembered some of his own thoughts at the time as well as conversations with others.

One may argue that the acceptance of the false lost-in-the-mall memory is due to its not being an unusual or memorable event (although this might also be the case for obscure episodes of *The Outer Limits*). How-

ever, Hyman, Husband, and Billings (1995) showed that a more unusual event, such as an overnight trip to the hospital, might also be falsely accepted as a memory of one's own past, although it took more time for their subjects to "recover" their false hospital memories.

Some of the most dramatic implantations of false memories have not come from the laboratory, and they range from humorous to sinister. In his 1962 autobiography, the pioneering developmental psychologist Jean Piaget described the false memory of a kidnapping attempted when he was an infant. Only years later was this event revealed as a hoax, when his nanny confessed to having made it up.

More sinister is the case of Paul Ingram of Olympia, Washington (Ofshe & Watters, 1994; Wright, 1994), who was accused of, and confessed to, the ritual sexual abuse of his children. Initially, Ingram denied everything; with pressure from detectives, however, he began to remember and confess to each new allegation as it was presented, creating the vivid details of each crime. However, in a test of Ingram's credibility, Ofshe presented Ingram with an accusation of sexual abuse that was entirely made up by Ofshe (and that was denied by Ingram's children, who had made the original accusations of abuse). As before, Ingram initially denied the accusation, but, after some reflection, he confessed to it and filled in a wealth of details.

The Makings of an Abduction Memory

Given that humans can cook up false memories, we still are left with the question: Why a false memory about space alien abductions? From what thread is such a memory spun? Newman and Baumeister suggest several possibilities—hypnogogic and hypnopompic hallucinations, nightmares, and missing time—all of which are consistent with the fact that so many abduction stories revolve around sleep or long, solitary drives. It is important to emphasize that such hallucinatory experiences are not a mark of psychopathy but are a common experience, produced as a natural consequence of sleep-related brain activity. With this, the abduction narrative might be the product of a source- or reality-monitoring problem (Johnson & Raye, 1981) in which the "abductee" does in fact have a memory for a seemingly strange event; however, the source of the memory might be intracranial rather than extraterrestrial.

The monitoring problem might be complicated by the cultural fascination with alien visitation. It is not surprising that the number of abduction stories has increased at an exponential rate as the abduction myth is weaved ever deeper into our cultural fabric. It is difficult to turn on the television or to pass by an array of supermarket tabloids without coming upon a "real story" about alien abduction. The space alien

abduction tale has by now raised itself alongside the famous restaurant script (Bower, Black, & Turner, 1979) as a well-known activity whose actions and order are well known.

Interestingly, Newman and Baumeister suggest that it is the more obscure science-fiction tales that might wind their way into abduction stories, rather than more popular images (i.e., Mr. Spock). As a source-monitoring problem, it is unlikely that one would be confused about the source of a memory about Mr. Spock, whereas the source of a vague image from a single episode of *The Outer Limits* might be unknown and might be confused as a memory of one's own experience. This is consistent with laboratory results that show that subjects are less likely to accept blatant misinformation than misinformation for peripheral details (Loftus, 1979, p. 124).

What turns the reality-monitoring problem into a full-blown abduction story? In almost every case, the tool of choice is hypnosis. Newman and Baumeister cite a study by Bullard (1989) in which 71% of 104 "high-quality" abduction stories were produced under hypnosis. All of the cases discussed by Mack (1994) and Fiore (1989) were produced under hypnosis. Yet, decades of research on hypnotically induced memory reveal that hypnosis does not result in increased memory accuracy but merely increased output. Hypnotically induced testimony has been ruled inadmissible in most courts, because it greatly increases the witness's vulnerability to suggestion and because it is based on a false theory of memory. The Council on Scientific Affairs of the American Medical Association (1985), the International Society of Hypnosis (1979), and the Society for Clinical and Experimental Hypnosis (1979) have published strong warnings concerning the use of hypnosis as a tool in memory retrieval.

Given what is known about hypnosis, we are not surprised by analyses suggesting that the variation among abduction stories tends to be between rather than within investigators (Klass, 1988; Vallee, 1990, cited by Newman & Baumeister). Mack (1994) believed in the authenticity of his clients' abduction tales based in part on their consistency—a point we (Clark & Loftus, 1995) argued was more likely due to the suggestion of the hypnotist. Many of Mack's clients revealed in their abduction stories a warning from their alien abductors about the violent course of humanity—a warning curiously consistent with Mack's several published works on that very topic.

Maintenance of Abduction Memories

An important characteristic of abduction memories is that their owners hold on to them tightly. They are memories that are held with high confidence. How could someone believe in a false memory with such high confidence? The very question reflects the intuition that confident memories should be accurate mem-

ories—a position also held by the U.S. Supreme Court (Neil v. Biggers, 1972). Decades of research, however, have shown that this intuition is false—that the relation between confidence and accuracy in memory is in fact not strong and sometimes negative (Deffenbacher, 1980; Wells & Murray, 1984). A recent analysis by Clark (in press) suggests that dissociations between confidence and accuracy might be a consequence of basic memory functioning.

In the case of space alien memories and other hypnotically induced retrieval, the mental product often involves strong visual imagery. These visual images might persist over time, so that abductees do indeed experience a strong memory for their abduction. However, it is a memory for an abduction that occurred in the hypnotist's office rather than one perpetrated by gray, sullen creatures.

The confidence-accuracy dissociation might be produced by social factors as well. Newman and Baumeister suggest that this might be due to a kind of cognitive dissonance (Festinger, 1957, 1964), manifest as a need to bolster a threatened belief. Many "abductees" seek out support groups of other "abductees"; Newman and Baumeister note the Communion Foundation, UFO interest groups, and other forms of "proselytizing."

Social factors have been demonstrated in the laboratory as well. Luus and Wells (1994) showed that a witness's confidence in an inaccurate identification can be artificially inflated or deflated, depending on whether the witness is informed that another witness picked the same or a different person from the lineup. Such results underscore the importance of support groups in maintaining one's beliefs in the face of skepticism.

Concluding Remarks

We have presented a small portion of a very large literature that demonstrates the malleability of human memory. With this foundation, it is not difficult to see how elaborate (but false) memories of space alien abduction might be created. It is not difficult to imagine such a memory being constructed from bits and pieces of sleep-related hallucinations, nightmares, and media attention and fixed solidly into place with the suggestion of hypnosis and the validation of support groups.

Newman and Baumeister argue that another element is necessary, in addition to those just listed, in order for one to construct a false memory of space alien abduction. Specifically, they suggest that such false memories reflect sadomasochistic fantasies and an escape from self. Evaluation of this claim is outside our area of expertise (memory research). A question one may raise is whether this component is necessary for the construction of abduction memories or whether it serves to create certain details of abduction memories.

Irrespective of the answer to this question, we argue that these are the kinds of questions to be asking with regard to space alien abduction memories—questions about the workings of the mind. This is where we will find the pay dirt in alien abduction stories.

Notes

Steven E. Clark, Department of Psychology, University of California, Riverside, CA 92521-0426. E-mail: clark@citrus.ucr.edu.

Elizabeth F. Loftus, Department of Psychology, University of Washington, Seattle, WA 98195. E-mail: eloftus@u.washington.edu.

References

- Bower, G. H., Black, J. B., & Turner, T. J. (1979). Scripts in memory for text. *Cognitive Psychology*, *11*, 177–220.
- Bullard, T. E. (1989). Hypnosis and UFO abductions: A troubled relationship. *Journal of UFO Studies*, *1*, 3–40.
- Clark, S. E. (in press). A familiarity-based account of confidence–accuracy inversions in recognition memory. *Journal of Experimental Psychology: Learning, Memory, and Cognition*.
- Clark, S. E., & Loftus, E. F. (1995). The psychological pay dirt of space alien abduction memories. *Contemporary Psychology*, *40*, 861–863.
- Council on Scientific Affairs of the American Medical Association. (1985). Scientific status of refreshing recollection by the use of hypnosis. *Journal of the American Medical Association*, *253*, 1918–1923.
- Deffenbacher, K. (1980). Eyewitness accuracy and confidence: Can we infer anything about their relationship? *Law and Human Behavior*, *4*, 243–260.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford, CA: Stanford University Press.
- Festinger, L. (1964). *Conflict, decision, and dissonance*. Stanford, CA: Stanford University Press.
- Fiore, E. (1989). *Encounters: A psychologist reveals case studies of extraterrestrials*. New York: Doubleday.
- Hyman, I. E., Husband, T. H., & Billings, J. F. (1995). False memories of childhood experiences. *Applied Cognitive Psychology*, *9*, 181–197.
- International Society of Hypnosis. (1979). Resolution. *International Journal of Clinical and Experimental Hypnosis*, *27*, 452.
- Johnson, M. K., & Raye, C. L. (1981). Reality monitoring. *Psychological Review*, *88*, 67–85.
- Klass, P. J. (1988). *UFO abductions: A dangerous game*. Buffalo, NY: Prometheus.
- Loftus, E. F. (1979). *Eyewitness testimony*. Cambridge, MA: Harvard University Press.
- Loftus, E. F., & Coan, J. (in press). The construction of childhood memories. In D. Peters (Ed.), *The child witness in context: Cognitive, social, and legal perspectives*. New York: Kluwer.
- Loftus, E. F., Miller, D. G., & Burns, H. J. (1978). Semantic integration of verbal information into a visual memory. *Journal of Experimental Psychology: Human Learning and Memory*, *4*, 19–31.
- Loftus, E. F., & Pickrell, J. E. (in press). The formation of false memories. *Psychiatric Annals*.
- Luus, C. A. E., & Wells, G. L. (1994). The malleability of eyewitness confidence: Co-witness and perseverance effects. *Journal of Applied Psychology*, *79*, 714–723.
- Mack, J. E. (1994). *Abduction: Human encounters with aliens*. New York: Scribner's.
- Neil v. Biggers. (1972). 409 United States Supreme Court 188.
- Ofshe, R., & Watters, E. (1994). *Making monsters: False memories, psychotherapy, and sexual hysteria*. New York: Scribner's.
- Piaget, J. (1962). *Plays, dreams, and imitation in childhood*. New York: Norton.
- Sagan, C. (1993, March 7). What's really going on? *Parade Magazine*, pp. 4–7.
- Society for Clinical and Experimental Hypnosis. (1979). Resolution. *International Journal for Clinical and Experimental Hypnosis*, *27*, 452.
- Vallee, J. (1990). *Confrontations: A scientist's search for alien contact*. New York: Springer-Verlag.
- Wells, G. L., & Murray, D. M. (1984). Eyewitness confidence. In G. L. Wells, & E. F. Loftus (Eds.), *Eyewitness testimony: Psychological perspectives* (pp. 155–170). Cambridge, England: Cambridge University Press.
- Wright, L. (1994). *Remembering Satan*. New York: Knopf.

Escaping the Self or Escaping the Anomaly?

Robert L. Hall

St. Michaels, Maryland

Newman and Baumeister are to be commended for their courage in facing this perplexing phenomenon and seeking a plausible explanation, and *Psychological Inquiry* is to be commended for seeking public discussion of the complex issues involved. Unidentified flying object (UFO) reports are an emotion-laden topic in science. Simply by studying reports of UFOs and UFO abductions, one risks ridicule and damage to one's reputation. Yet, the basic behavioral facts are rather well documented and have persisted over decades.

Newman and Baumeister correctly point out that reports of UFO abductions occur regularly by the hundreds, and certain themes are found repeatedly in these accounts. No one who has looked into this and interviewed self-reported abductees doubts the sincerity of the subjects' beliefs in the great majority of cases. Although many who have this experience show psychological symptoms that resemble posttraumatic stress disorder, they do not show any symptoms of delusional illness other than claiming to have had this

