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19. ABSTRACT (Continue on reverse if necessary and identify by block number) A conference was held on February 2-3, 1990 in Atlanta on the Emory campus on the topic of Affect and Flashbulb Memories. Fourteen speakers presented their research or discussed research presented by other conferees. The primary focus was on "flashbulb memories" of the Space Shuttle Challenger explosion of January 1986. Research was reported concerning peoples memories for information related to the disaster, including memory for their personal circumstances surrounding how they heard the news as well as their memory for the facts of the event. Primary attention was given to whether a special memory mechanism underlies vivid memories, whether these memories are established immediately at the time of the event rather than in subsequent recounting, whether these memories are as accurate as is presupposed by the flashbulb metaphor, and to the relationship between affect and memory. The results of the conference will be published as an edited volume in 1991 Cambridge University Press.					
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Report AFOSR-89-0431

CONFERENCE ON AFFECT AND FLASHBULB MEMORIES

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FINAL REPORT
Conference on Affect and Flashbulb Memories

The conference was held at Emory on February 2 and 3, 1990 and took up two full days as well as, informally, the evening before, February 1, and the evening of February 3. The program is listed below.

Friday AM:

Eugene Winograd (Emory U.). Introductory Remarks
J. Neil Bohannon (Butler U), Arousal and memory: Quantity and consistency over the years
Paul Gold (U. of Virginia), Neurobiological regulation of memory storage: A basis for flashbulb memories?
Daniel Reisberg (Reed College), Discussion

Friday PM

Ulric Neisser & Nicole Harsch (Emory U.), Phantom Flashbulbs: False recollections of hearing the news about Challenger
Steen Folke Larsen (U. of Aarhus), Flashbulb memories in context: Remembering everyday news and autobiographical events
Michael McCloskey (Johns Hopkins University), Discussion

Saturday AM

Amye Warren (U. of Tennessee at Chattanooga), Flashbulbs, fabrications, and forgetting: Children's recollections of the Challenger event
David Pillemer (Wellesley College), Memories of personal circumstances: Functional and developmental perspectives
Elizabeth Loftus (U. of Washington), Discussion

Saturday PM

Sven-Ake Christiansen (U. of Stockholm), Discussion
David Rubin, (Duke University), Discussion

General Discussion

There was lively discussion both among the conferees and from the floor throughout the conference after each presentation and at the end of each session. Among the active memory researchers attending the conference were Darryl Bruce (Mt. Allison University, New Brunswick), William Brewer (U. of Illinois), Henry Ellis (U. of New Mexico), Joseph Fitzgerald (Wayne State University), and John Robinson (U. of Louisville). In addition, a number of post-doctoral and graduate students from the institutions noted so far attended.

Summary of the Presentations

Bohannon presented a summary of his intensive research into memories of the Challenger explosion. The focus was on



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new data from repeated testing of the same subjects months apart. The study of repeated testing of the same informants is critical with respect to the question of the accuracy of these memories. If informants give contradictory accounts of how they heard the news about Challenger at two tests, at least one of the accounts must be inaccurate. There were two interesting findings reported by Bohannon. The first is that one third of his informants were inconsistent in recalling the location where they had first heard the news about Challenger. This lack of consistency casts doubt on the accuracy of their memories, of course. The second interesting finding is that consistent reporters of location ("where I heard the news") also reported higher initial affect to the news than did inconsistent reporters. Bohannon argued that perfect recall is an unreasonable criterion for considering a memory to be considered a "flashbulb"; instead, he suggested that better recall associated with high affect is all that is required.

Paul Gold gave a tutorial presentation about neurobiological regulation of memory storage. This research is relevant for the strong form of the original Brown & Kulik argument that flashbulb memories may be mediated by a special mechanism. Since Brown & Kulik's seminal article in 1977, a great deal has been learned about various chemical regulators of memory. Some of this work suggests that there is some basis for Brown & Kulik's speculations. Gold reviewed research with both animals and humans, including recent research from his own laboratory on the role of glucose in human memory. However, he was cautious in postulating that the same memory mechanisms demonstrated in the laboratory were at work in remembering the assassination of President Kennedy or Challenger. Gold's view is that flashbulb memories are not unique. Rather, they are a special case of neurobiological processes in memory storage.

Reisberg discussed the problem of affect and memory in the light of his own research on the laboratory study of emotion and memory. Rather than use naturally occurring events such as Challenger, Reisberg presents naturalistic materials, such as scenes from films contrived to induce strong affect, in a laboratory setting. He argues that this approach combines the advantages of laboratory control and the use of realistic material.

Neisser presented the results of work done in collaboration with Nicole Harsch on memory for Challenger. They distributed questionnaires about the shuttle explosion the morning after it happened to a large class of psychology students and, after a lapse of nearly three years, asked the same informants the same questions again. The most noteworthy outcome of this study was the inconsistency shown in recall by about 40% of the informants. No correlation was found between initial emotion and recall,

although there was a correlation between emotion and later confidence. The outcome of this study brings into question both the accuracy of, and the role of affect in, flashbulb memories.

Larsen's presentation of a diary study on his own memory during a six month period also undermines the notion that flashbulb memories are necessarily accurate. During the period of his study, each night Larsen recorded two major events of the day, one news event and one more personal. It so happened that this time period included, Challenger, the Chernobyl nuclear disaster in Russia, and the assassination of Olof Palme, the Prime Minister of Sweden. These events, and many others, were recorded in Larsen's event diary. When testing his memory months later, Larsen misrecalled basic details of how he heard the news about these events. He reports that his memories were vivid, but inconsistent with the records he made at the time. Nevertheless he argues that highly significant events can still be distinguished from other, less significant news events because they are forgotten at a significantly lower rate. Thus, even though such recollections may be neither permanent nor accurate, the category of "flashbulb memories" may have some limited viability.

In his discussion of the Neisser & Harsch and Larsen presentations, McCloskey remained a consistent critic of the postulation of any special properties warranting the acceptance of a category called "flashbulb memories". He was critical of both the methodology and theorizing surrounding the concept.

The second day began with a presentation by Amye Warren of her research into the memories of Challenger of children who were in school at the time of the event. The children ranged from kindergarten to eighth grade and her design incorporated repeated testing of the same children at intervals as long as two years. Among the interesting findings reported by Warren were a strong effect of recounting one's memory. The more times the children had reported their memory of the event the more they recalled later. An effect of type of informant was significant as well; children recalled more if they had originally heard the news from a media source rather than another person.

Pillemer discussed children's memories for highly significant events in the context of the question of what functions are served by autobiographical remembering. He distinguished between the necessity, for some purposes, of remembering events accurately with other functions of memory that do not necessitate an accurate record of prior events. Thus, Pillemer suggests that remembering can have a directive function, a psychodynamic function, or a communicative function. For example, recall may play a

psychodynamic function in allowing affect to be expressed, whether or not the recall is faithful to the event recalled. By evoking the original context, reliving of emotions may be accomplished; telling stories may be cathartic.

In her presentation, Elizabeth Loftus presented new data obtained from a very large sample of people visiting a science museum where she supervised a memory installation. While interacting with the exhibit, the visitors left a record of their performance behind. A large effect of age was found, with recall generally increasing with age except for the intriguing finding of a drop associated with adolescence. The very young and the elderly were least accurate and were most susceptible to having subsequent misleading information alter their recall of prior events. Loftus noted that Warren's data did not seem to show high levels of recall of Challenger and questioned the basis for regarding the children's memories as being "flashbulb memories" in any sense.

In the final session, Christiansen raised several issues in the form of questions about the relationship between affect and flashbulb memories. Are emotional events remembered differently than ordinary events? Yes, was his answer, on the basis of a review of much of the literature on affect and memory. He went on to ask: Are flashbulb memories a special kind of emotional event? No, he argued. He presented a framework that distinguishes between core and peripheral aspects of events. Christiansen's point was that core information such as how you heard the news and where you were when Challenger exploded is more likely to be retained than peripheral information about how you were dressed at the time. He also suggested, partly on the basis of research he and E. Loftus have published, that the retention of core and peripheral information about an event interacts with the length of the retention interval, with peripheral information forgotten more rapidly. Questioning focused on problems of specifying what information about an event has "core" status and what has "peripheral" status.

In his discussion, Rubin started with the methodological problem of how to define a flashbulb memory. He reviewed the different criteria that have been offered, including vividness, confidence, accuracy, consistency, and function. He noted that a theme of the conference had been the related question of what memories should serve as the baseline for presumed flashbulb memories. Rubin suggested that the following constraints could be identified with regard to the class of memories commonly regarded as "flashbulbs": good narrative structure, good fit to the culture, rich imagery, emotionality, and rehearsal. He observed that these operate over time; thus, it takes time to develop one's own narrative of "how I heard the news" and that rehearsals are distributed over time. Rubin postulated

that it takes at least one week for the future flashbulb memory to solidify into a coherent whole satisfying the constraints just noted.

Roger Brown had been scheduled as the final discussant but, unfortunately, was unable to attend the conference. Ulric Neisser offered some observations instead. He summarized the conference as showing that there is no need to postulate a special mechanism underlying flashbulb memories. The question remains, however, of understanding the ordinary memory mechanisms at work, particularly of understanding the role of emotionality more adequately. Neisser further suggested that the very flashbulb metaphor, suggesting a clear snapshot that endures in memory, is wrong. Rather, these memories are built up over time, in accord with some of the work reported by Gold and others. The the sequelae are as important as the original event, including the media attention, the sharing the stories with friends, and the internal rehearsal. Finally, Neisser emphasized that emotion plays a role in memory but we do not understand it at the present time. He speculated that, among other functions, affect lends authenticity to the way we perceive our memories even though it may not increase accuracy.

This summary of the formal presentations omits the lengthy discussions from the floor and the informal discussions over meals and in the hotel lobby. It is hard to say when the conference actually ended, in that many conferees and visitors remained until Sunday and continued to go over the issues raised during the conference until they left. The conference achieved the goals set out for it. By focusing on memories of Challenger, the conference allowed for a scrutiny of the present status of the flashbulb memory phenomenon, including the question of whether it is indeed a special kind of memory. In so doing, the role of affect in memory was explored more fully.

Publication Plans

A contract has been signed with Cambridge University Press to publish an edited volume based on the conference. It will appear (in 1991 or 1992) as: E. Winograd & U. Neisser (Eds.), Affect and Accuracy in Recall: Studies of "Flashbulb Memories".

The support of the Air Force Office of Scientific Research and the Office of Naval Research will be acknowledged in the book.