

**Research Note**

**REST AND EYEWITNESS MEMORY RECALL**

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To maximize the completeness and accuracy of memory recall, it is logical to assume that an eyewitness should be ready emotionally, physiologically, and cognitively to participate in an investigative interview. Toward achieving complete and accurate recall, there are several factors commonly studied within the field of eyewitness psychology that would suggest an eyewitness should be interviewed as soon as possible following an event. These factors include ordinary forgetting, contextual changes, mood changes, and post-event influences (see 1, for a review of these factors). Perhaps the most obvious factor in favor of delaying an interview is the extreme level of stress experienced by some eyewitnesses soon after the event. In recognition of these possibly counteracting factors, I have recommended to detectives that a decision about when to conduct a full investigative interview must be made on a case-by-case basis. If the witness is in apparent shock, is incoherent, sweating, or pacing, then obtain some basic elements from the witness to begin the investigation and return for a full investigative interview later. Otherwise, conduct the full interview as soon as possible before the retrieval environment has changed and memory has faded.

However, the eyewitness's level of stress at the time of an interview may not be the only factor worthy of consideration in favor of delaying the full investigative interview. The eyewitness's level of rest at the time of an interview may also be a significant factor. It is somewhat common, for example, in cases of officer involved shootings that the officer involved would be without sleep for more than 24 hours prior to participating in a full investigative interview (2, 3). The purpose of the present research report is to present some previously unpublished data from past research projects which suggest that an eyewitness's level of rest at the time of recall is related to the eyewitness's ability to recall information accurately in detail.

The data come from three research projects (four experiments, five comparisons) conducted between 1995 and 2001 in which a range of methodologies was employed and a range of performance criteria was measured. In the first project, Geiselman et al. (4) staged a realistic classroom disruption and altercation where the students believed the event to be authentic, and the measure of eyewitness performance was photo array identification accuracy. In the second project, Geiselman et al. (5) showed a videotape of a staged robbery, and the measure of eyewitness performance was the completeness and accuracy of the descriptions of the persons involved. In the third project, Geiselman et al. (6) showed a videotape of a purse snatching, and the measure of eyewitness performance was photo array identification accuracy. In each of these studies, the eyewitnesses were administered the same comprehensive questionnaire just prior to the test of their recollections. One of the many items on the questionnaire was, "How well rested are you right now?" The participants responded to this item on a 5-point rating scale.

While none of the three research projects was designed specifically to examine the relationship between rest at the time of test and memory recall performance, the participants' responses on the question about rest were found to be significantly related to the memory measures in each study. In the Geiselman et al. (4) Experiments 1 and 2, the Point-Biserial correlation between the participants' ratings of rest at the time of test and photo array identification accuracy was .40,  $p < .001$  (Experiment 1, sample size = 238) and .44,  $p < .001$  (Experiment 2, sample size = 111). In the Geiselman et al. (5) Experiment 2, the Pearson correlation between participants' ratings of rest at the time of test and the number of elements included in the participants' verbal descriptions of the perpetrator was .38,  $p < .001$  (sample size = 160). From the same experiment, the Pearson correlation between the ratings of rest and the accuracy rate (percent correct) for the elements in the descriptions of the perpetrator was .51,  $p < .001$ . In the Geiselman et al. (6) experiment, the Point-Biserial correlation between participants' ratings of rest at the time of test and photo array identification accuracy was .43,  $p < .001$  (sample size = 100). In sum, across these three research projects, participants' ratings of rest at the time of test were consistently related to the memory-recall measures.

It is important to note that these observations from each of the three projects are correlational in nature. Level of rest at the time of test was not manipulated systematically in any of the experimental designs such that a causal connection could be drawn between level of rest and eyewitness recall performance. Nonetheless, the present observations based on over 600 eyewitnesses are consistent with the idea that allowing an eyewitness to rest before being interviewed is an important consideration. This relationship is worthy of further study in experiments where causality can be established. Based on the present observations in relatively low-stress situations, it is reasonable to expect that a well-rested eyewitness would exhibit more complete and more accurate recall than would a less-rested eyewitness (especially in higher-stress situations).

Obtaining the needed rest prior to a full investigative interview could be difficult to achieve in some situations such as officer involved shootings. Klinger (3) reports that 46% of officers involved in shootings experience difficulty sleeping within the first 24 hours and approximately one-third of the officers still experience difficulty sleeping after one week. In addition, the decision to possibly delay the full investigative interview to allow for rest must be made based on surface indicators of officer stress only. It is well documented within the field of eyewitness psychology that police officers show the same deleterious effects of heightened stress on memory performance as civilians (7). Artwohl (8) cautions that some officers might appear quite calm shortly after participating in a shooting and may prefer to give a full interview at that time. Nevertheless, "often it is best for officers to sleep first and give their statement later. This does not preclude their providing enough brief information during an immediate on-scene 'walk-through' to get the investigation started." The present observations concerning rest and memory recall from the three Geiselman research projects are consistent with Artwohl's assessment and recommendation.

How might rest contribute to more complete and accurate eyewitness recall? One hypothesis is that REM (rapid eye movement) sleep plays an important role in the consolidation of memories and therefore recall should be more complete following sleep (see 9, for a review). Recent research also suggests that sleep deprivation may contribute to the generation of false memories (10). Interestingly, the generation of false memories caused by

sleep deprivation has been found to be largely reversed with the administration of caffeine, “indicating that adenosinergic mechanisms can contribute to the generation of false memories associated with sleep loss” (11). In light of these research data showing positive effects of rest and negative effects of sleep deprivation, the expression “let me sleep on it” appears to have some validity as it applies to eyewitness memory recall performance.

If a full investigative interview is delayed to allow for rest, investigators should consider using the cognitive-interview protocol to conduct the interview (12). The cognitive-interview protocol contains techniques for reconstructing the sensory and emotional context that existed at the time of the event as well as techniques for enhancing memory retrieval following some forgetting. These techniques also have been found to circumvent certain post-event influences (13). Therefore, a cognitive interview could help to counter any negative effects on memory recall caused by a delay of the full investigative interview to allow for rest.

#### REFERENCES

1. Geiselman RE: *Eyewitness Expert Testimony*. Laguna Hills, CA, American College of Forensic Psychology Press, 1996
2. Christensen LW, Artwohl A: *Deadly Force Encounters: What Cops Need to Know to Mentally and Physically Survive a Gunfight*. Boulder, CO, Paladin Press, 1997
3. Klinger D: *Police Responses to Officer-involved Shootings*. U.S. Department of Justice, National Institute of Justice, NCJ 192285, Washington, DC, October 2001
4. Geiselman RE, Haghghi D, Stown R: Unconscious transference and characteristics of accurate and inaccurate eyewitnesses. *Psychology, Crime and Law* 1995; 2:131-141
5. Geiselman RE, Schroppel T, Tubridy A, Konishi T, Rodriguez V: Objectivity bias in eyewitness performance. *Applied Cognitive Psychology* 2000; 14:323-332
6. Geiselman RE, Tubridy A, Blumkin R, Schroppel T, Turner L, Yoakum K, Young N: Benton facial recognition test scores: index of eyewitness accuracy. *American Journal of Forensic Psychology* 2001; 19:1:77-88
7. Zimmerman LA: Effects of stress on police and citizen eyewitness recall. *The Canadian Journal of Police and Security Services* 2003; 1:4:377-380
8. Artwohl A: Perceptual and memory distortion during officer-involved shootings. *FBI Law Enforcement Bulletin*, October, 2002; 18
9. Stickgold R: Sleep-dependent memory consolidation. *Nature* 2005; 437:1272-1278

10. Fenn KM, Gallo DA, Margoliash D, Roediger HL, Nusbaum HC: Reduced false memory after sleep. *Learning and Memory* 2009; 25:509-513
11. Diekelmann S, Landolt H-P, Lahl O, Born J, Wagner U: Sleep loss produces false memories. *PLoS One* 2008; 3:10: e3512 doi:10.1371/journal.pone.0003512
12. Fisher RP, Geiselman RE: Memory enhancement techniques for investigative interviews: the cognitive interview. Springfield, IL, Charles C. Thomas Publishers, 1992
13. Geiselman RE, Fisher RP, Cohen G, Holland HL, Surtes L: Eyewitness responses to leading and misleading questions under the cognitive interview. *Journal of Police Science and Administration* 1986; 14:31-39

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