was observed for overlearned small multiplication facts. These results are discussed in the context of research on the role of error in learning, on the one hand, and studies on false memories, on the other hand.

(5022)

All or None: The Effect of Serial Repetition on False Recognition. JOHN P. TAYLOR, SARA HABER, JESS REIS, & WILLIAM P. WALLACE, *University of Nevada, Reno* (sponsored by William P. Wallace)—The DRM false recognition effect (study lists consisting of the words THREAD, EYE, HAYSTACK, etc. lead to high false recognition of NEEDLE) is a robust phenomenon. The present experiment sought to diminish this effect by using one, three, or eight serial repetitions of study lists. At test, participants rated number of times they saw the word (0 corresponded to a response of *new*). Results indicated that after eight presentations, the false recognition effect persisted, although at a significantly reduced level, and that the effect may be all or none. That is, when participants judged that a critical lure for an eight-repetition list was old, the frequency rating to the lure was higher, as compared with one- and three-repetition lists. However, the proportion of old judgments to eight-repetition lures was above those to weak associate lures and unrelated controls but substantially lower than old responses to critical lures for one- and three-repetition lists.

(5023)

Piece-Wise Repeated Measures Poisson Regression Illuminates Time Course of Differential Outcomes Effect in Adult Humans. LEH WOON MOK, *Nanyang Technological University* (sponsored by J. Bruce Overmier)—When outcomes/feedback are uniquely correlated with each type of correct choices in the conditional discrimination choice task, animals, children and mentally challenged adults have been found to learn better, faster, and/or to a higher asymptote than when outcomes are nonspecific to correct choice responses. This is the differential outcomes effect (DOE). Here, the DOE was demonstrated in normal human adults, using a novel concurrent-task within-subjects design and biologically neutral rewards. Demonstrating the DOE in normal adults posed a set of peculiar challenges, because the benefit afforded by outcome-specific expectancies peaked early in training. In addition, the anticipated faster learning by application of differential outcomes, rather than a single common outcome, was most evident at the very beginning of training. These significant results were obtained only when trials were grouped into small sequential time blocks giving number correct nonnormal count data that were piece-wise modeled using repeated measures longitudinal Poisson regression.

• False Memories •

(5024)

Encoding Context Effects on False Memories: Deep Versus Generative Processing. MICHAEL T. CARLIN, *University of Massachusetts Medical School*, MICHAEL P. TOGLIA, *SUNY, Cortland*, YVONNE WAKEFORD, *Tufts University*, CHARLES A. GOODSELL, *University of Alabama*, & LISA E. HASEL, *Iowa State University*—With the DRM false memory paradigm, previous research has indicated that deeper processing leads to increased memory for old items and increased false memories, whereas generative encoding contexts lead to higher true memory rates without increases in false memories. Comparisons of deep and generative encoding are problematic, however, because the two effects are based on comparisons with differing control conditions (shallow vs. read). This study compared true and false recognition across deep, shallow, generate, and read encoding contexts. Results replicated the "no-cost" pattern for generate versus read conditions. For levels of processing, deeper processing led to increased recognition of old items, without an increase in false memories. Direct comparison of deep and generate conditions indicated that deep processing led to greater recognition of targets, with only a slight increase in false memories. Distinctions between deep and generative processing and the implications for theories of false memory will be discussed.

(5025)

The Modality Effect on False Memory: Now You See It, Now You Don't. REBEKAH E. SMITH, *University of North Carolina, Chapel Hill*, R. REED HUNT, *University of North Carolina, Greensboro*, & PATRICK GALLAGHER, *Wake Forest University*—High levels of memory errors can be produced in a paradigm in which participants study a list of words—e.g., *candy*, *sugar*, *bitter*—that are all highly associated with nonpresented critical words—for example, *sweet* (Deese, 1959; Read, 1996; Roediger & McDermott, 1995). Participants often falsely recall or recognize the nonpresented critical items. Smith and Hunt (1998) found that visual presentation of the study list reduced, relative to auditory presentation, the likelihood of false remembering in this paradigm. The effect of modality on false memory has been replicated by other researchers (e.g., Cleary & Greene, 2002; Gallo, McDermott, Percer, & Roediger, 2001; Kellogg, 2001). However, the size of the modality effect can vary (e.g., Gallo, et al., 2001), and in one experiment, visual presentation did not reduce false recognition, relative to auditory presentation (Maylor & Mo, 1999). The present experiments investigated possible boundary conditions of the modality effect in false memory.

(5026)

The Role of Encoding in False Memories With the Misinformation Paradigm. YOKO OKADO & CRAIG E. L. STARK, *Johns Hopkins University*—False memories are frequently demonstrated using the misinformation paradigm, in which a person's recollection of a witnessed event is altered after exposure to misinformation about the event. Here, five behavioral experiments using this paradigm with varying retrieval cues (original, misinformation, or novel item) on recognition/cued recall memory tests showed that a simple model based on the probability of encoding predicted the distribution of responses across experiments, regardless of the different retrieval cues. In addition, encoding the original and the misinformation events in separate experimental contexts had no effect on false memory rates. Furthermore, fMRI results showed that the strength of neural activity during encoding, particularly in the left hippocampus, predicted subsequent true and false memories. Together, these results suggest that the strength of encoding of the original and the misinformation events together predict what is later remembered, and it is during the retrieval process that distortions and misattributions of memories occur.

(5027)

Imagery, Pictures, or Rehearsal: The Interplay of Encoding Processes in Determining False Recall. DESIREE BUDD, MICHAEL DONNELLY, KIMBERLY SCHULTZ, KRISTIE LONSDORF, ROB SCHWEISTHAL, & PETE ZIOLKOWSKI, *University of Wisconsin, Stout*—The effect of type of encoding process on false recall of theme-related associates was examined. Participants were shown two lists of words, each containing items associated with a theme (e.g., kitchen), but in which words highly related to the theme (e.g., stove) were not present. Either participants were given rehearsal instructions (repeat each word until the next word appears) or imagery instructions (create a mental image of each word), or they were shown a picture of the item named by the word. Preliminary analyses (15 participants per group) indicate that the imagery group recalled more words from the memory list than did the rehearsal and the picture groups and that participants in the rehearsal group were more likely to falsely recall theme-related words not on the memory list than were either the imagery or the picture group. We believe that these results can be accounted for by item-specific versus relational encoding processes.

(5028)

False Memories and Level of Processing: Effect of Personally Relevant Processing on the Development of Illusory Memories. JENNIFER L. TOMES, *Mount Allison University*—This study explored the effect of level of processing on the generation of false memories, using DRM word lists. The "more is less effect" suggests that processing that leads to better retention of words from the lists also leads to in-