The present experiment investigated the effects of task processing, historical knowledge of the subject matter, and retention interval on normalization rates, intrusions, and recall of thematic prose. Learners were given 16 sentences about the life and times of either Adolf Hitler or a fictitious character. Half the sentences were historically incorrect for Hitler but were not verifiable in terms of the fictitious character. Learners either paraphrased or copied the sentences verbatim and attempted to recall the sentences at either a zero retention interval or after 48 hours. Normalization and intrusion rates were strongly related to story type and retention interval, while overall sentence recall was influenced by processing task and retention interval. The results are discussed in terms of both the reconstructive schema model and the depth of processing hypothesis.

INTRODUCTION

Reconstructive explanations of recall have been popular since the time of Bartlett (1932). A reconstructive explanation of remembering posits that the central meaning of a passage is stored in memory in schematic form. Furthermore, this schema or superordinate structure provides a "frame of reference" by which discourse is comprehended (Piaget, 1936).

A reconstructive explanation of memory asserts that a strong schema facilitates memory by providing the learner with a context by which to reconstruct the story as to what events probably occurred. For example, in Bartlett's story "The War of the Ghosts," learners were able to recall sizable amounts of the story after a retention interval of many months.

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According to Bartlett, the story was remembered not by rote memorization but rather due to a strong schema that enabled learners to "fill in the gaps" of detail.

Although it has been demonstrated that a strong schema can facilitate recall, counterproductive effects of schemata have also been reported. Such counterproductive effects have taken the form of thematic intrusions, distortions, and normalizations (Bransford & Franks, 1971; Luftig, in press; Luftig & Johnson, 1979; Pitchert & Anderson, 1977; Pompi & Lachman, 1967; Sulin & Dooling, 1974). For example, thematic intrusions were demonstrated for a medical schema by Pompi and Lachman (1967). When given a story about "Chief Resident Jones," who uncovers an "ugly growth too large for removal," learners demonstrated a strong tendency to falsely recognize words related to a "doctor" schema but that had not appeared in the story. Likewise, Sulin and Dooling (1974) demonstrated schematic intrusions for stories about famous people. However, it should be noted that both studies examined intrusions in recognition memory rather than in free recall.

Like intrusions, distortions have been hypothesized to be under the influence of a strong schema. For example, in "The War of the Ghosts" (Bartlett, 1932), two Indians go hunting for seals during the night. However, Bartlett found that this phrase was generally recalled as "One day two Indians went fishing." Bartlett hypothesized that such distortions occurred because of British delineations of an Indian schema, which held that Indians fish and that fishing occurs during daylight hours. Thus, hunting seals and night hunting were distorted to fishing during daylight hours.

A third counterproductive effect of a strong schema on remembering is semantic normalization. These normalizations, or gross distortions, have been shown to occur in isolated sentences where the semantic logic of the sentence did not conform to general world knowledge (Fillenbaum, 1974; Luftig, 1982; Luftig & Johnson, 1979). For example, Luftig and Johnson (1979) found that illogical sentences were strongly normalized but that normalization rates could be depressed under schema-modifying conditions. Furthermore, Luftig (1982) reported that normalization rates could be modified by manipulating the perceived connectiveness of the stimulus sentences. However, these experiments did not investigate normalization of sentences that were logical but nevertheless schematically contrary, nor did they investigate normalization of sentences imbedded in a thematic story.

The current experiment examined the effects of a strong schema on intrusions and normalizations of thematic material that was logically plausible but that nevertheless violated historical fact as interpreted by