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Memory for the Meaningless: Experts' Advantage at Recalling Unstructured Material

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Abstract: The ability to recall domain-specific unstructured material (e.g., random chess positions) is a litmus test for theories of expert memory. Theories emphasising high-level memory structures or holistic processing of stimuli predict no difference between experts and novices at recalling unstructured material, because no large structure or whole are present in such material. Conversely, theories assuming small memory structures (e.g., chunks) predict a skill effect, because even in scrambled material some small meaningful structures occur by chance. This meta-analysis assessed the correlation between expertise and recall of unstructured material in several domains, including board games, programming, sports, and music. We found a moderate but significant overall correlation ($r = .42$, $p < .001$), and the presence of an effect in nearly every domain. This outcome suggests that experts base their superiority on a vaster knowledge of small memory structures, in addition to high-level structures or holistic processing.