

UC Merced

Proceedings of the Annual Meeting of the Cognitive Science Society

Title

Propositional Representation In The Analysis of Clinical Problem Solving

Permalink

<https://escholarship.org/uc/item/26d263zm>

Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 6(0)

Authors

Patel, Vimla L.

Groen, Guy J.

Publication Date

1984

Peer reviewed

PROPOSITIONAL REPRESENTATION IN THE ANALYSIS OF CLINICAL PROBLEM SOLVING

Vimla L. Patel
Guy J. Groen

Centre for Medical Education,
McGill University

We consider a model of clinical reasoning based on theories of cognitive processes in text comprehension which views expert diagnostic reasoning as driven by case comprehension. Our principal means for identifying the cognitive processes underlying case comprehension is through the application of the propositional analysis techniques of C.H. Frederiksen. In an analysis of inferences that subjects produced in recalling case information, Patel and Frederiksen have shown that there is a difference in case representation and interpretation by physicians and medical students.

In this paper we focus on procedures which look directly at problem solving and the relationship of problem solving to case comprehension. Here, problem solving is viewed as a sequence of frame transformations, the final transformation being the one that generates the diagnosis. We investigate the physicians' ability to shift between various frames, using specific questions as probes. The task involves presenting a physician with a clinical problem text (infectious endocarditis) to read and then recall. Next, the physician is asked to summarize the pathophysiological aspects of the clinical problem. Finally, the physician is required to make a diagnosis. The frame construction during a problem solving task revealed in the subjects' responses to specific probes provides the "baseline" information against which all question-induced shifts in frame processing are assessed.

This procedure directly manipulates the frame construction (or transformation) processes through the use of probes that require processing a problem solving text according to a particular frame structure, and we use this procedure to study the extent to which there is a frame shift with respect to specific probes in physicians' clinical reasoning process.

SYMPOSIUM: THE BIOLOGICAL CONSTRAINT

James L. McClelland, Carnegie-Mellon University, Chair

Neal Cohen, Johns Hopkins University

Jerry Feldman, University of Rochester

Paul Rozin, University of Pennsylvania

Terry Sejnowski, Johns Hopkins University

