What Makes a Good Query?
Prospects for a Comprehensive Theory of Human Information Acquisition

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5.1   The Psychology of Human Information Acquisition

Searching for relevant information to support learning and reasoning is central to intelligent and goal-directed behavior. Cognitive development is guided by children's ability to actively acquire information about their physical and social environment. Doctors routinely perform tests to diagnose their patients. And, of course, scientists conduct experiments to test their theories and hypotheses.

Psychological research on how humans acquire information in a self-directed manner began in the wake of the cognitive revolution (Bruner et al., 1956; Mosher & Hornsby, 1966; Wason, 1960). Many of these earlier studies were inspired by Popper's (1959) philosophy of science and his method of falsification: that from a logical point of view scientific theories cannot be proven to be true, but they can be shown to be wrong if their predictions are inconsistent with the outcome of an experiment. Accordingly, queries (e.g., questions, tests, experiments) are only useful if they can yield data that could potentially falsify a hypothesis.

Adopting a logical framework and falsificationism as the normatively correct approach to information acquisition, psychologists devised empirical studies to find out whether people would intuitively seek out potentially disconfirming evidence. A prominent example is the *selection task*, in which participants can acquire information to test whether a conditional rule holds (Wason, 1968). Presented with four cards and a rule such as "If there is a vowel on one side of any card, then there is an even number on its other side," searchers could turn over one or multiple cards to attempt to falsify the rule. Contrary to the prescriptions of a logico-deductive method, and paralleling findings from related tasks (Wason, 1960), few participants selected queries in accordance with a falsificationist strategy. In line with