

Thinking, problem solving and intelligence

Supported GRE teaching and original transfer practice

Identify the evidence

Identify the evidence

Distinguish concepts, schemas and scripts as representations

Use the overview measurement lesson VI for research inference.

Concepts 1 (1)

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Concepts group instances; natural concepts have fuzzy boundaries organised around prototypes, so a robin is a "better" bird than a penguin and is verified faster. Schemas are organised knowledge structures about domains; scripts are schemas for event sequences (the restaurant script). Schemas guide encoding and also distort recall toward the expected. An algorithm guarantees a solution by exhaustive rule; heuristics trade certainty for speed. Availability estimates frequency by ease of recall, so vivid events are overestimated.

Concepts 1 (2)

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Representativeness judges by similarity to a prototype and neglects base rates. Anchoring drags estimates toward an initial number. Framing changes choices between logically equivalent descriptions, and confirmation bias seeks only supporting evidence.

Concepts 2

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Problem solving fails in characteristic ways: functional fixedness (objects only in usual roles), mental set (old solutions to new problems), and missing insight restructuring. Means-end analysis reduces the difference to the goal; working backward suits problems with a clear goal state.

Intelligence theories differ on structure: Spearman's general factor g , Cattell's fluid versus crystallised abilities, Gardner's multiple intelligences, Sternberg's triarchic analysis. Test interpretation follows the psychometrics of earlier units: scores are reliable for prediction within their validation samples, but a score measures performance on the test, not a fixed essence.

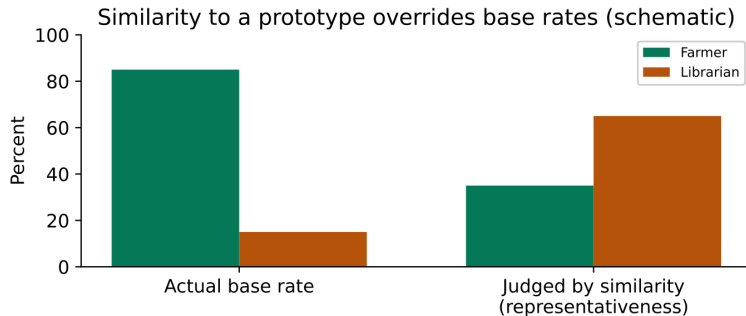
Reason through the worked case

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A description fits a rare occupation. A pupil chooses it without checking how many people have each occupation. Identify the reasoning risk.

Representativeness can override base-rate information: similarity to a stereotype does not by itself determine probability. Combine relevant likelihood information with prior frequencies if available. A vivid description supplies neither a population count nor proof of group traits.

Read the reviewed representation



Original schematic for Thinking, problem solving and intelligence. Illustrative relationships and numbers are not research results.

Attempt an unfamiliar case

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A method works on nine puzzles and fails on a tenth with different constraints. Explain how to decide whether the method is an algorithm or heuristic and propose a response.

Pause and write the explanation before continuing.

Check the transfer argument

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Check its stated domain and guarantee, not the number of past successes. A heuristic may be useful without guaranteeing a solution; an algorithm may fail if applied outside its domain or implemented incorrectly. Re-read the constraints, represent the new problem and test alternative operations rather than repeat the old method mechanically.

Accept a different explanation when its evidence and limits are justified.

Limit the conclusion

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Calling a heuristic an error in itself; heuristics are efficient defaults whose costs are predictable. Do not equate a test score with a fixed measure of worth or potential.

Original classroom cases are not official questions or personal clinical advice.

Check yourself

Independent retrieval

Two intelligence tests correlate strongly. Why does this not by itself establish one fixed inherited cause?

Write your reasoning before comparing it with the methods and limits taught in this lesson.