

Exercise walk-through

19.1

Thinking, problem solving and intelligence: evidence and transfer

GRE · GRE Subject Test · GRE Psychology

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.

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.

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.

Exercises 2.1·2.2

2.1 After heavy news coverage of plane crashes, a person judges air travel deadlier than driving. This best illustrates: [1]

A. anchoring B. the availability heuristic C. functional fixedness D. the serial position effect E. proactive interference

2.2 A quiet, bookish stranger is judged more likely to be a librarian than a farmer, although farmers vastly outnumber librarians. The error is: [1]

A. anchoring on the description B. representativeness neglecting base rates C. confirmation bias D. framing E. mental set

Exercises 2.1·2.2

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2.1 Answer: B. Vivid, easily recalled examples inflate the judged frequency. The other options do not satisfy the stated defining conditions.

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2.2 Answer: B. Similarity to the librarian prototype overrides the low base rate of librarians. Compare the exact process, design or evidence, rather than an associated keyword.

Exercises 2.3-3.1

2.3 Revisit the worked case. State one conclusion its evidence supports and one stronger conclusion it does not support. Explain the difference. [2]

3.1 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. Give the interpretation, supporting reasoning, a relevant alternative or limitation, and an appropriate check. [4]

Exercises 2.3-3.1

2.3 Revisit the worked case. State one conclusion its evidence supports and one stronger conclusion it does not support. Explain the difference. [2]

2.3 Use the worked case evidence to support a bounded claim and explain why a causal, universal or stronger claim needs additional evidence. The claim must fit the specific design and observed process.

3.1 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. Give the interpretation, supporting reasoning, a relevant alternative or limitation, and an appropriate check. [4]

3.1 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. Award B1 each (authored) for the interpretation, its reasoning, a relevant limitation/alternative and an appropriate check, up to four points. Accept a different justified answer satisfying these demands.