

Information integration in perceptual decision-making

Goals:

- To examine whether different modes of processing can explain conflicting information integration data.
- To determine the factors that lead to optimal or suboptimal integration.

Overview

How do people form a judgment from multiple sources of information?

Heuristics? Judgment and decision-making research has identified numerous situations in which people use heuristics to integrate information.

Bayesian? Research in memory, categorization, and perception often finds that optimal, Bayesian models can explain integration performance.

Hypothesis

These conflicting findings are due to differences in mode of processing.

Automatic: People are good (closer to optimal) at combining information when it can be done automatically.

Intentional: Conscious, cognitive combination results in integration that is farther from optimal.

Method

Participants made judgments based on two sources of information. Each source provided weak, medium, or strong evidence for a response.

Faces normally promote automatic processing, but this processing can be disrupted, e.g., by splitting the face horizontally.

Experiment 1

GOALS

- To explore how different levels of evidence are combined in a perceptual task.
- To encourage different processing modes across conditions.

STIMULI



TRAIN



TEST



RESULTS

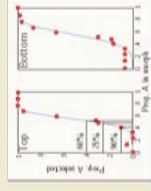


Experiment 2

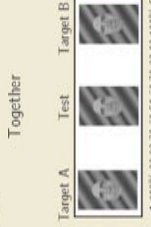
GOALS

- To replicate Experiment 1.
- To minimize reliance on memory.
- To scale evidence for each participant.
- To test individual data.

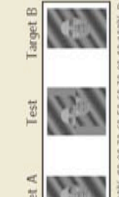
CALIBRATION



TEST



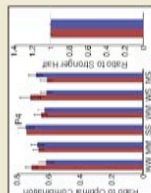
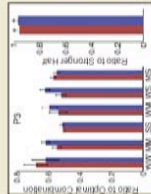
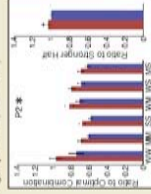
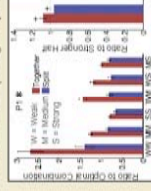
Split



Half



RESULTS (*: log > split; +: log > split; #: alpha = .05)



Conclusions

- People can use different modes of processing, e.g., automatic and intentional, to integrate information.
- Automatic processing results in integration that is closer to optimal, but cannot always be used.
- Different stimuli (quantitative, perceptual, etc.) can facilitate different processing modes, leading to the conflicting findings.

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