

The Conjunction Fallacy

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I. Extensional vs. intuitive thinking

Probability primer.

'Extensional' thinking: how likely something is depends on how 'big' the set of possibilities is where it happens.

Any such approach validates the **conjunction rule**: $P(A\&B) \leq P(A)$.

Q: Does people's thinking respect this rule?

First pass: maybe not. It seems like more-specific events can be easier to think of; and if we use how 'available' examples are to estimate probabilities, we can get apparent violations.

- How many people are killed by fish each year?
- How many words on this page fit the form `____n_`?

This isn't yet strong evidence for violation of the conjunction rule. Different ways of asking questions can give people different evidence.

Partitions. Non-neg numbers summing to 1. Conditioning as zeroing-out and renormalizing. Think: mud.

Example: ____mt

II. Basic Result

Linda is 31 years old, single, outspoken and very bright. She majored in philosophy. As a student, she was deeply concerned with issues of discrimination and social justice, and also participated in anti-nuclear demonstrations.

Linda is a teacher in elementary school.

Linda works in a bookstore and takes Yoga classes.

Linda is active in the feminist movement. [F]

Linda is a psychiatric social worker.

Linda is a member of the League of Women Voters. Linda is a bank teller. [T]

Linda is an insurance salesperson.

Linda is a bank teller and is active in the feminist movement. [T&F]

Direct-subtle: rank each by probability.

→ 88% violated conjunction rule.

'Indirect': receive only one of T, F, or T&F. Compare ranks. No differences.

Direct-transparent: Which of the following do you think is more likely?

Linda is a bank teller.

Linda is a bank teller and is active in the feminist movement.

85% chose the second.