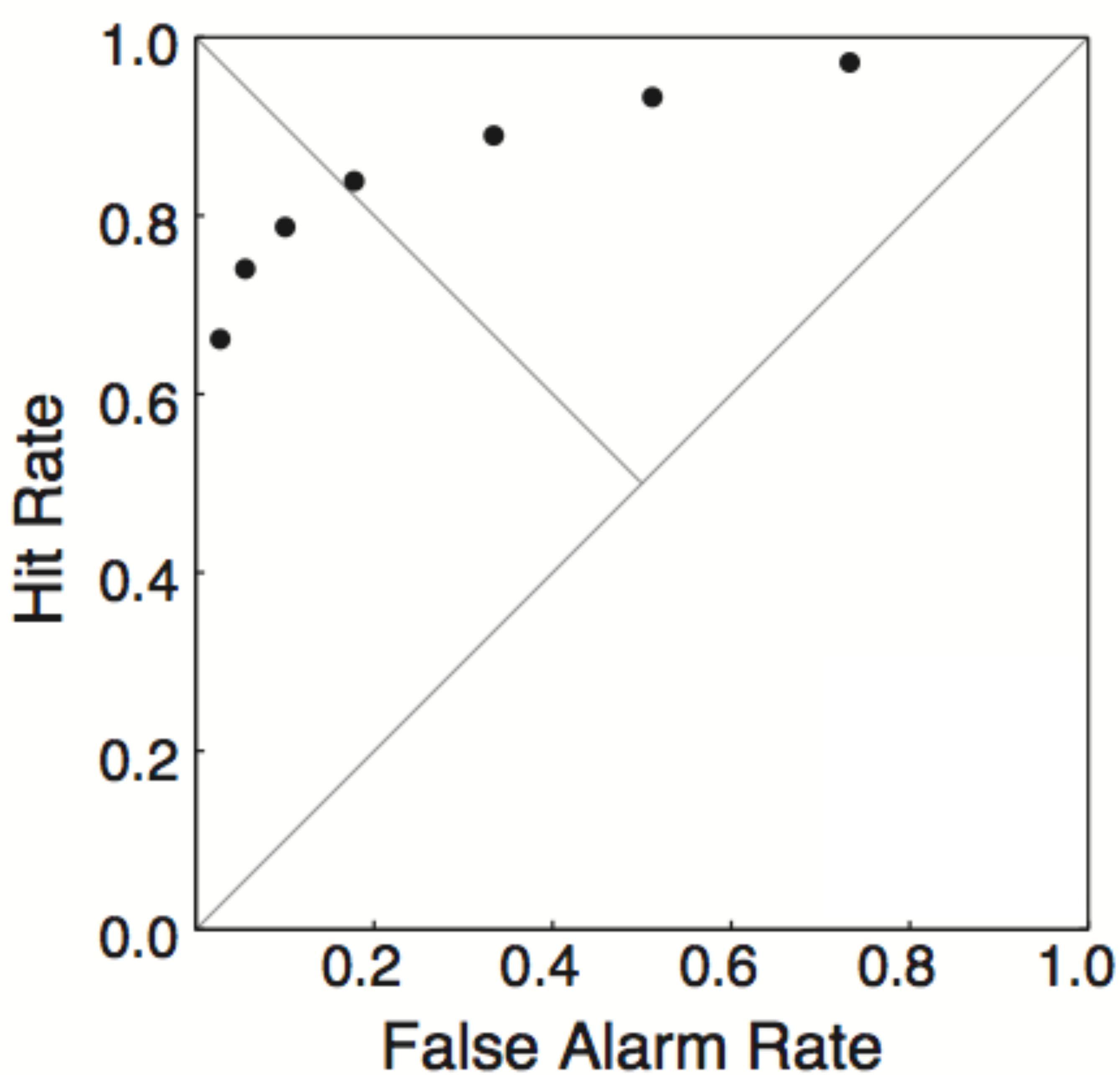
Recap

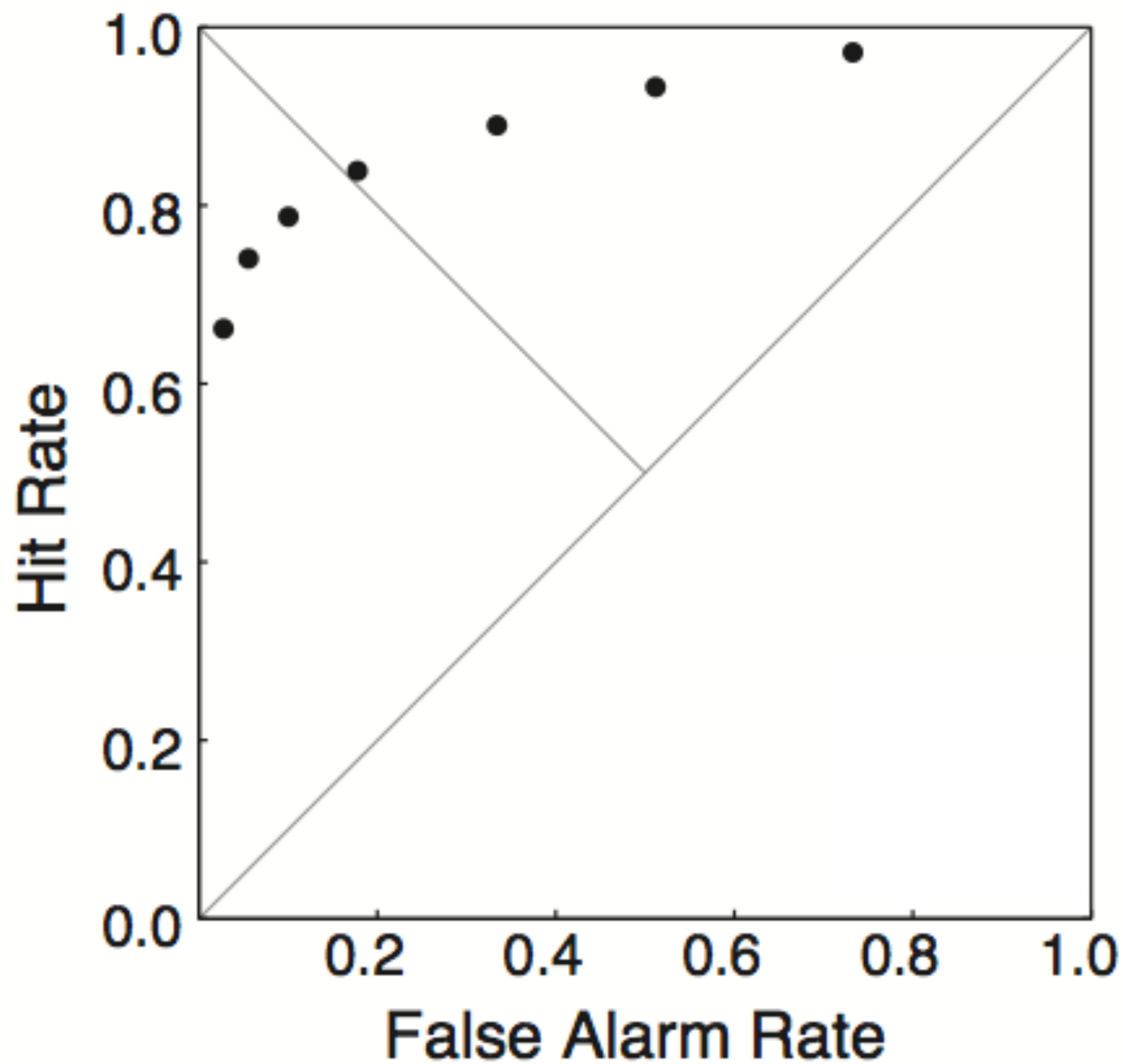
- Strength theory
- μ, σ, a, C
- ROC curve

What does (0, 0) mean?



1. Always say “yes”
2. Always say “no”
3. Say “yes” and “no” equally often
4. None of these

How does the ROC change when d′ increases?



Signal Detection Theory (SDT)
AKA Statistical Decision Theory

- Strength theory is an example
- Real world SDT applications:
  - College admissions
  - Doctors evaluating test results
  - “If you SEE something, SAY something”
  - Investing in the stock market (buying vs. shorting shares)
- **Given two noisy alternatives, how do you pick between them (and how difficult is it)?**

Is strength theory too simple?

- We’ve assumed constant strength increments
- We’ve assumed constant thresholds
- We’ve assumed decisions are based on single strength values
- Another possibility: several sources of information could contribute to decisions about whether we’ve seen something; we could combine them to make our response

The Yonelinas Familiarity-Recollection Model

- Idea: when people make recognition judgements, they can respond using two **distinct** sources of evidence:
  - A feeling of general "**familiarity**" with an item (or event/situation) without remembering specific details of studying it
  - "**Recollection**" the experience of studying the item, including specific details, contextual cues, etc.
- Familiarity judgements are analogous to memory strength judgements from strength theory.
- There's an additional "all or none" recollection process: either you remember the details or you don't.

The Yonelinas Familiarity-Recollection Model

- You recollect details with probability R. You *don't* recollect the details with probability 1 - R.

- If you recollect an item, you say "yes" to whether you've seen it before. (Effectively the item has infinite strength.)

- If you *don't* recollect an item, you now rely on familiarity. If the item's strength is above a threshold, you respond "yes" (with probability F_{target}) and otherwise you respond "no" (with probability $1 - F_{lure}$)