# The Nature and Nurture of Creativity in Science

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# Nature and Nurture

- For nature I focus on personality dispositions and their biological basis
- For nurture I focus on organizational qualities of scientific labs

# Personality Traits of Creative/Eminent Scientists

- Meta-analysis of 26 studies on personality and creativity (Feist, 1998)

| Scientists' Traits | | |
|---|---|---|
| **Social** | **Cognitive** | **Motivational** |
| Dominant | Open | Driven |
| Arrogant | Flexible | Ambitious |
| Hostile | | |
| Self-confident | | |
| Autonomous | | |
| Introverted | | |

# Biology of Introversion: Eysenck

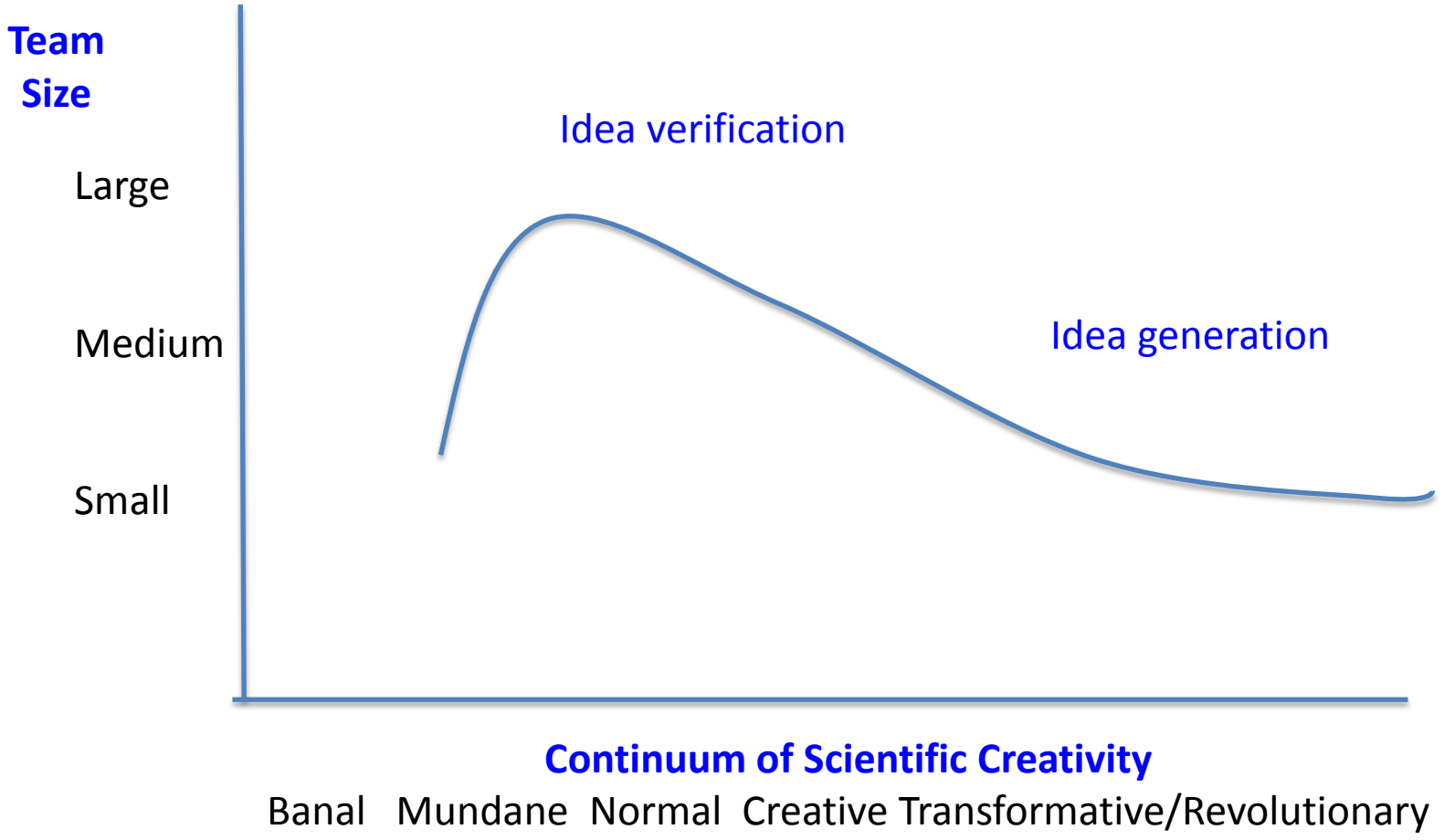
- Introverts have higher baseline cortical arousal than extraverts
- Introverts have lower sensory stimulation thresholds
- Therefore, they regulate optimal arousal levels by minimizing external stimulation
- Creative scientists seek these kinds of environments

# Organizational Structure of Creative Science Teams

- Heinz et al. (2009)
  - Small group teams (4-6)
    - Curvilinear relationship, with peak at around 4-6
  - Effective mentor-mentee relationships
  - Research autonomy
  - Complementary variety of team members
- Hemlin et al (2004) (hinders scientific creativity)
  - Bureaucratic management
  - Narrow range of disciplinary expertise
  - Excessive evaluation and accountability

# Continuum of Creativity and Team Size:

## Hypothesized Curvilinear Relationship



# Discussion Questions

- How does solitude foster scientific discovery?
- Under what conditions does teamwork support scientific discovery?
- What are the advantages and disadvantages of individual vs. team approaches?