Creativity in Science:

Dispositional and Developmental Correlates
Outline

- Magnitude of Creative Output
  - The Phenomenon
  - The Correlates
    - Dispositional
    - Developmental

- Domain of Creative Output
  - The Phenomenon
  - The Correlates
    - Dispositional
    - Developmental

- Discussion
Magnitude of Creative Output: The Phenomenon

- Skewed Cross-sectional Distribution
  - Dennis’ Percentages
  - Lotka’s Law
  - Price’s Law

- Quantity-Quality Relation
  - Mass Producers and Perfectionists?
  - No … the Equal-Odds Rule
  - Quantity ⏰ Quality ⏰ Eminence
Magnitude of Creative Output: The Phenomenon

- Longitudinal Distribution of Output
  - Single-Factor Model
  - Equal-Odds Rule
- Career Landmarks
  - First Major Contribution
  - Best Contribution
  - Last Major Contribution
Magnitude of Creative Output: The Correlates

- Dispositional
  - Intelligence: Threshold Effect
  - Motivation:
    - General Energy/Drive
    - Domain-Specific Curiosity/Mastery
    - Task-Specific Persistence/Determination
  - Introversion
    - Desurgency - “introspectiveness, restraint, brooding, and solemnity of manner”
    - Schizothymia - “withdrawn, skeptical, internally preoccupied, precise, and critical”
Magnitude of Creative Output: The Correlates

- Developmental
  - Stimulating Environment
  - Expertise Acquisition
    - Ten-Year Rule
    - Role Models and Mentors
  - Precocious Development
    - General Knowledge: Omnivorous Reading
    - Domain Specific Expertise: Accelerated Mastery
Domain of Creative Achievement: The Phenomenon

- Bipolar Dimensions Classic and Contemporary
  - Dionysian vs. Apollonian
  - Primary vs. Secondary Process
  - Primordial vs. Conceptual Thought
  - Autistic vs. Directed Thought
  - Intuition vs. Analysis
  - Parallel vs. Sequential Processing
  - Divergent vs. Convergent Thought
  - Stochastic vs. Deterministic
  - Chance vs. Constraint
Domain of Creative Achievement: The Phenomenon

- Hence distinctions between
  - Artistic vs. Scientific Creativity (AC v SC)
    - Romantic/Expressive vs. Classical/Formal Art (RAC v CAC)
    - Non-Paradigmatic vs. Paradigmatic Science (NSC v PSC)
      - Revolutionary vs. Normal Paradigmatic Science (RPSC v NPSC)
  - Or, RAC > CAC > NSC > RPSC > NPSC
Domain of Creative Output: The Correlates - Dispositional

- **Cognitive Processes**
  - unconstrained vs. constrained
  - illogical vs. logical
  - unpredictable vs. predictable
  - intuitive vs. conscious
  - involuntary vs. voluntary
  - complex vs. simple
  - versatile vs. non-versatile
Domain of Creative Output: The Correlates - Dispositional

- **Openness to Experience**
  - unrestricted vs. restricted experience
  - defocused vs. focused attention
  - broad vs. narrow interests
  - serendipity common vs. rare

- **Psychopathology**
  - high vs. low incidence rate
  - severe vs. mild symptoms
Domain of Creative Output: The Correlates - Developmental

- **Home Environment**
  - unconventional vs. conventional
  - unstable vs. stable
  - heterogeneous vs. homogeneous

- **Birth order**
  - later born vs. first born
Domain of Creative Output: The Correlates - Developmental

- Education and Training
  - inferior grades vs. superior grades
  - less formal training vs. more formal training
  - marginal vs. non-marginal

- Role Models and Mentors
  - numerous vs. few
  - heterogeneous vs. homogeneous
Domain of Creative Output: The Correlates - Developmental

- Sociocultural Zeitgeist
  - politically unstable vs. stable
  - culturally diverse vs. uniform
Discussion

- Identification?
  - Multivariate?
  - Nonlinear?
  - Nonadditive?
- Intervention?
  - Development?
  - Disposition?
- Application?