

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 - Schizothymia - “withdrawn, skeptical, internally preoccupied, precise, and critical”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?