Defining Creativity

Personal versus Social Definitions

Introduction: My half century as a creativity researcher

- 1969 Oxy College Scholar thesis
- 1972 Harvard "masters thesis"
- 1975-2021 Creativity publications
- 1988ff Editorial Board, *CRJ* (30)
- 1993-99 Editor, *JCB*
- 1999ff Editorial Board, *JCB* (63)
- 2006ff Editorial Board, *PACA* (54)
- 2021 Torrance Roundtable!

Yet during those years I have spotted a persistent problem:

- Researchers exhibit no agreement on what constitutes a "creative idea"
- Can research on creativity be effective without consensus on what it entails?
- Can we really study creative talent or its development without knowing what counts as a creative idea?
- After all, the product, person, and process perspectives on creativity all depend on what counts as a creative idea

Four critical questions that must be explicitly addressed:

- What are the assessment criteria?
- How are the assessments scaled?
- How are the assessments integrated?
- Who makes the assessments?

What are the assessment criteria?

- Two-criterion "standard" definitions
  - Some variation on
    - novel or original, and
    - useful, adaptive, meaningful, or functional
- But I argue that "novelty" conflates "originality" with "surprise"
- If we split the concept into two, then we get a three-criterion definition: originality, utility, and surprise

What are the assessment criteria?

- Similar three-criterion definitions
  - US Patent Office:
    - new, useful, and nonobvious
  - Boden (2004):
    - novel, valuable, and surprising
  - Amabile (1996):
    - novel
    - appropriate, useful, correct, or valuable
    - heuristic rather than algorithmic

How are the assessments scaled?

- Qualitative? Yes/No?
- Quantitative? Numbers?
  - Ordinal? Ranks?
  - Interval? Continuous?
  - Ratio? Zero point?
  - Proportion or probability? 0-1?
    - My preference for the last for reasons that will become evident

How are the assessments integrated?

- Additive? O+U+S?
- Multiplicative? O*U*S?
  - Why the latter > former
    - The reinvented wheel?
      - High U but low O
    - The bank safe made out of soap bubbles?
      - High O but low U

Who makes the assessments?

- The individual?
  - "little-c" or "personal" creativity
    - Cf. "P-creative" (Boden, 2004)
- The field? The society? History?
  - "Big-C" or "consensual" creativity
    - Cf. "H-creative" (Boden, 2004)
- Hence, the need for separate personal- and social-level definitions

Personal-level definition

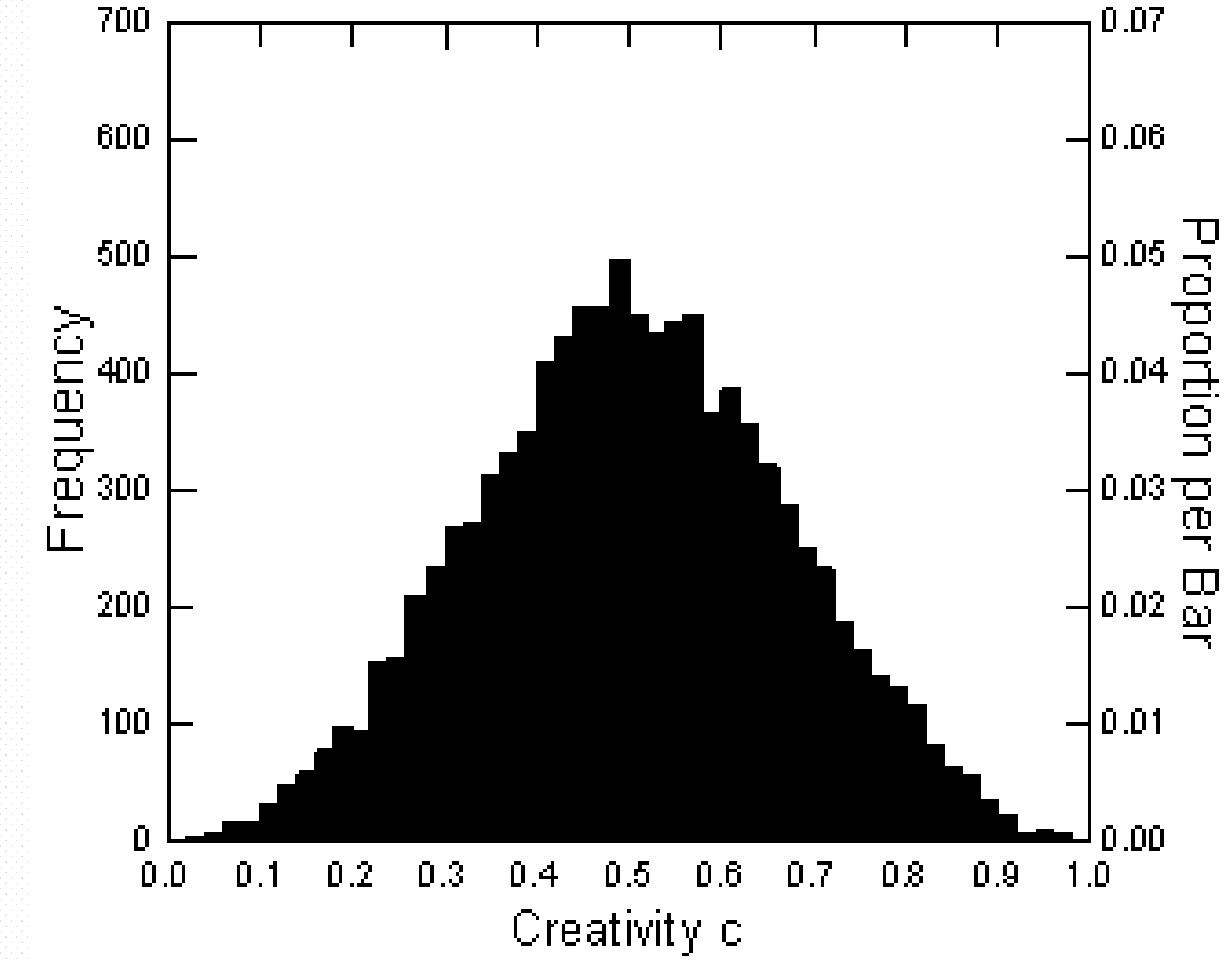
- During a problem-solving episode, any given idea is described by three personal (subjective) parameters:
  - *Initial probability p* ($0 \leq p \leq 1$)
    - e.g. incubation required to instantaneous
  - *Final utility u* ($0 \leq u \leq 1$)
    - e.g. useless to satisficing to maximizing
  - *Prior knowledge of utility v* ($0 \leq v \leq 1$)
    - e.g. ignorance to hunch to full expertise

Personal-level definition

- Derived personal parameters
  - *originality* $(1 - p)$, where $0 \leq (1 - p) \leq 1$
  - *surprise* $(1 - v)$, where $0 \leq (1 - v) \leq 1$
    - i.e. is extensive knowledge *accommodation* required or just easy *assimilation*?
- Therefore, *personal creativity*
  - $c = (1 - p)u(1 - v)$,
    - where $0 \leq c \leq 1$
  - literally "little-c" creativity

Personal-level definition

- Significant implications: 2 examples
  - First – Whereas
    - The additive model for personal creativity yields a normal distribution for creative ideas, making highly creative ideas extremely common, as in


700
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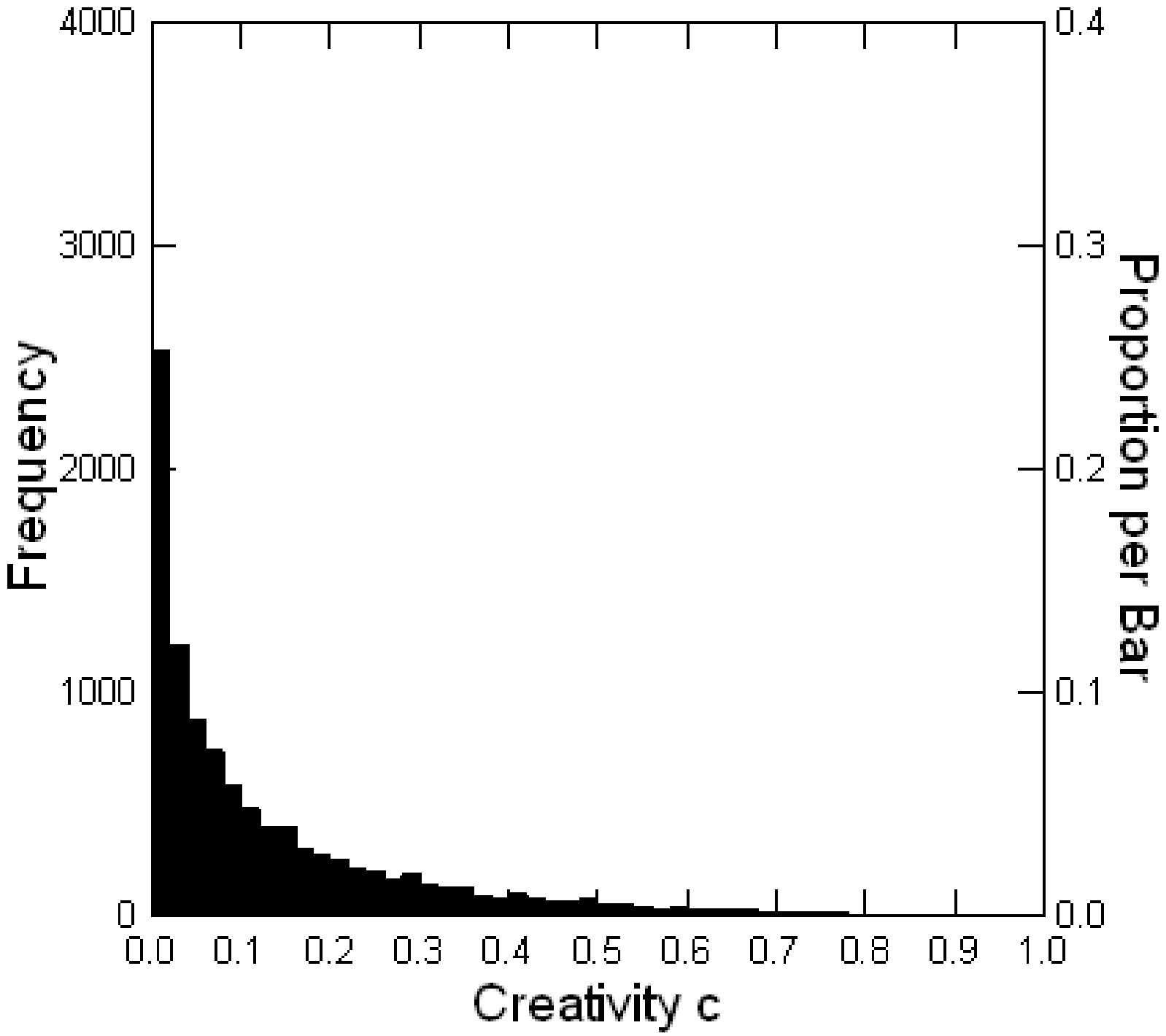
0.04
0.03
0.02
0.01
0.00
Frequency
Proportion per Bar
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Creativity c

Personal-level definition

- Significant implications: 2 examples
  - First – The
    - The multiplicative model for personal creativity yields a skewed distribution, making highly creative ideas extremely rare, as in


4000
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Frequency
0.4
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0.2
0.1
0.0
Proportion per Bar
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
Creativity c

Personal-level definition

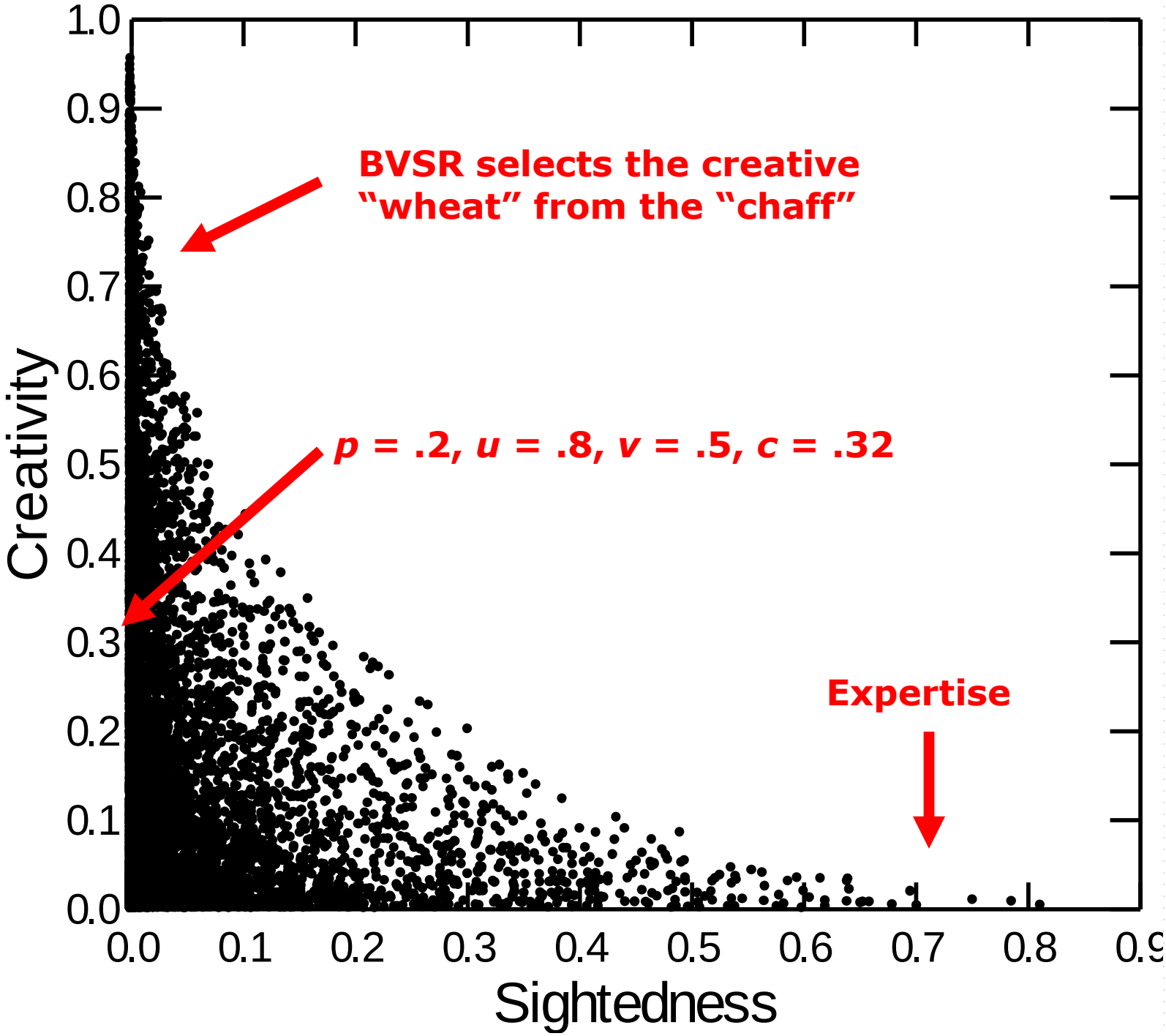
- Significant implications: 2 examples
  - Second –
    - The necessity for BVSR creativity,
    - i.e., blind variation and selective retention (aka trial and error, illumination and verification, generate and test, etc.)
    - That is, ideas that are highly sighted cannot be creative whereas highly blind ideas can vary greatly in creativity, requiring a selection-retention procedure to winnow out the wheat from the chaff

Personal-level definition

- Significant implications: 2 examples
  - Second –
    - To demonstrate:
    - The *sightedness* of any idea is given by
      - $s = puv$, where $0 \leq s \leq 1$
      - 0 = pure ignorance and 1 = pure expertise
      - i.e., an idea is highly sighted to the degree that it is highly probable, highly useful, and highly probable because it is already known to be highly useful
      - Note that as $s \rightarrow 1$, $c \rightarrow 0$, necessarily

Personal-level definition

- Significant implications: 2 examples
  - Second –
    - Hence, *blindness* is given by $b = 1 - s$
    - Implying that
      - as $b \rightarrow 0$, $c \rightarrow 0$; but it also holds that
      - as $b \rightarrow 1$,
        - then max-$c \rightarrow 1$
        - while min-$c = 0$ and thus $\sigma_c^2 \rightarrow 1$
      - as displayed in the following scatter plot …


BVSR selects the creative
"wheat" from the "chaff"
p = .2, u = .8, v = .5, c = .32
Expertise
Creativity
Sightedness
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Big question:

- Given the logic, precision, and explanatory power of the above quantitative and multiplicative three-criterion definition of an idea's personal creativity
- What's required for this definition to be deemed "creative" by my fellow creativity researchers?
- Hence arises the …

Social-level definition

- Ideally, and most simply, if *i* indicates the *i*th member in a field of size *n*, then an idea's consensually assessed creativity becomes the simple average of the separate assessments:
  - $C = 1/n \Sigma c_i$,
    - or literally its "Big-C" creativity
    - where $0 \leq C \leq 1$

Social-level definition

- Even so, this won't work well because
  - Degree of consensus is often too small:
    - e.g. the hierarchy of the sciences
      - physics > chemistry > biology > psychology
    - e.g. relevant extra-field social judgments
      - industry professionals versus moviegoers versus film critics versus cinema historians
    - e.g. gender, ethnic, and ideological biases
  - Consensus is often temporally unstable
    - cf. "going viral" versus "the test of time"

Social-level definition

- The above complications indicate that a social-level definition of an idea's creativity may require the introduction of many interpersonal, disciplinary, cultural, economic, and political factors that go beyond those operating at the personal level, i.e.
- Creativity ceases to be psychological
- Think about that for a moment …

GOOD LUCK!

Postscript

- Arguments for personal-level definition of creativity
  - Simonton, D. K. (2013). Creative thought as blind variation and selective retention: Why sightedness is inversely related to creativity. *Journal of Theoretical and Philosophical Psychology*, *33*, 253-266.
  - Simonton, D. K. (2018). Defining creativity: Don't we also need to define what is *not* creative? *Journal of Creative Behavior, 52,* 80-90.
- Other creativity researchers using the personal-level definition
  - Grosul, M., & Feist, G. J. (2014). The creative person in science. *Psychology of Aesthetics, Creativity, and the Arts*, *8*, 30-43.
  - Tsao, J. Y., Ting, C. L., & Johnson, C. M. (2019). Creative outcome as implausible utility. *Review of General Psychology*, *23*, 279-292.