



# Creativity

# What is 'creativity'?

- What sorts of people are creative?
- What jobs/careers involve high levels of creativity?

# What is 'creativity'?

- Original thoughts?
- Novel solutions?
- Innovation?

In psychology linked to

- Motivation
  - Intuition
  - Imagination
  - Social influence
  - Leadership
  - Humour
  - Meta-cognition
- 
- Mental illness



## Creativity:

- “the production of an idea or product that is both novel and useful”

(Sternberg and O’Hara, 2000, p.611)

- NOVEL

- Few ideas are entirely new
- Novel viewpoint?
- Novel use?

- USEFUL

- Usefulness - subjective

- Difficulty: we need creativity to deal with difficult tasks, problems etc.
- Agreeing parameters regarding creativity?
- Difficulty is subjective
- Temporal factors  
e.g. posthumous fameVan Gogh's paintings, Eva Cassidy
- Social factors  
e.g. marketing, networking, fashion, politics influence our evaluations relating to creativity

# Psychological approaches and Creativity

## Behavioural

- Identification of the behavioural aspects of new learning processes

e.g. insight – ‘spontaneously synthesized learned associations’ (Chamorro-Premuzic, 2015)

- The effects of experience on insight
- BUT – the idea of an innate level of creativity that can’t be observed is incompatible with this approach

## Biological

- Physiological correlates of creative thinking - brain structure and neural processes

e.g. Einstein's brain

- Right hemisphere the 'creative' hemisphere of the brain?

Recent findings indicate that cortical activity in both hemispheres is required for creativity

Rational thinking, analysis and organisation



## Clinical

- 'Mad genius' hypothesis (Becker, 1978)
- Link between insanity and artistic creativity
- To be considered later in the lecture



## Cognitive

- Importance of cognitive process to creativity (e.g. memory and attention)
- Broader, rather than focused attention enables construction of more creative ideas (Wallach, 1970)
- Absence of pressure (Smith, Michael and Hocevar, 1990)
- Negative correlation between previous knowledge (e.g. expertise) and creativity (Hayes, 1978; Fresch and Sternberg, 1989)
- Brainstorming – contradictory findings regarding the usefulness of this to creativity

## Developmental

- Family characteristics: e.g. birth order, age, family size etc.  
e.g. middle children - more rebellious and creative in their thinking (Sulloway, 1996)
- Gender development: androgynous individuals - more flexible and creative

## Educational

- Impact of different formal educational contexts on the creativity of individuals
- Convergent thinking (correct answer)  
versus
- Divergent thinking (original idea)

# Differential approach

Four major perspectives

- **Person**

- Personality traits and intellectual ability of individuals who are deemed to be creative
- Considers creativity in relation to already established ways of measuring people

## ○ **Process**

- Cognitive mechanisms that may underlie creative thought
- Attempts to identify key aspects of creative thinking in people in general (not 'creative' v. 'non-creative')

e.g. Thrash and Elliott (2003) - inspiration is a motivation state, as well as a trait

## ○ Product

- Focus - the products of creativity e.g. paintings, musical composition, books – and also theories, experiments and discoveries (Simonton, 2004)

## ○ Press

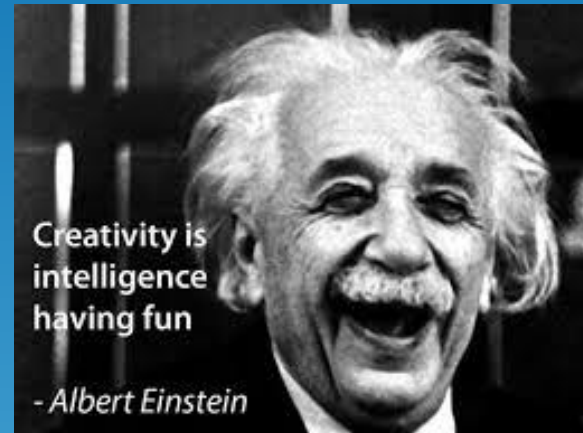
- Focus - influence of different contexts on creativity, rather than different individuals
- e.g. freedom (linked to absence of pressure), autonomy, good role models and resources encouragement, freedom from criticism (Runco, 2004)
- Time - creativity requires thought and effort (Cruber, 1981; 1988)
- Untidy work environment
- Nurture (Reuter et al, 2006). Genes less than 10%?

# Creativity and Intelligence

Sternberg and O'Hara (2000)

Theories conceptualising...

1. Creativity as part of intelligence
2. Intelligence as part of creativity
3. Creativity and intelligence as identical constructs
4. Creativity and intelligence as unrelated constructs
5. Creativity and intelligence as related constructs



# Creativity as a form of intelligence

- Not new – Binet
- Barron and Harrington (1981, p.442): creativity as  
“an ability manifested by performance in critical trials, such as tests, contests etc.”
- Appropriateness of the product/solution - intelligence must be implicated
- Guilford (1967) - a comprehensive, multidimensional model of intelligence which included over 120 abilities including **divergent production**
- But - no statistical measurement, no objective scoring of divergent production

- Cattell's model (1971a)
- Viewed creativity as a mixture of primary skills – timing, judgement, motor speed, musical rhythm for example
  - fluid intelligence
- Proposed that personality plays a part – linked creativity, intellectual ability and personality



- Gardner's theory of multiple intelligences

- Intrapersonal
  - Logical-mathematical
  - Spatial
  - Bodily-kinaesthetic
  - Interpersonal
  - Musical
  - Naturalistic
  - Linguistic
- 
- Creative people
    - unusually high levels of some domain-relevant abilities
    - unusually low levels of other domain-relevant abilities

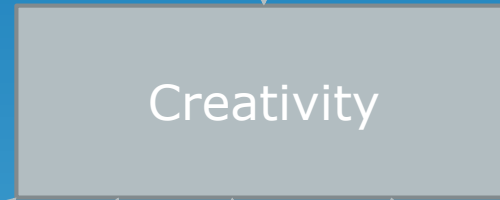
# Intelligence as a form of creativity

- If intelligence is the ability to adapt to our environment, then creativity is the precondition for intelligence
- Sternberg and Lubart's (1995, 1996) investment theory - creative people have a high ability to invest in ideas
- Sternberg and O'Hara (2000) - creative individuals see and take opportunities to not follow the crowd - originality
- Creativity is also argued to help us redefine problems

Intelligence as a form  
of creativity

Creativity as a superset  
of intelligence

Sternberg and Lubart  
(1995)



- Creativity as a superset of intelligence

Sternberg: three aspects of intelligence underlie individual differences in creativity:

- Synthetic intelligence – combines cognitions and produces new associations (e.g. insight)
- Analytical intelligence – relates to our judgement of the worth or appropriateness of an idea
- Practical intelligence – applying creative ideas to everyday and persuading others to accept them

**BREAK**



**10 MINUTES!**

# Creativity and intelligence as identical constructs

- Haensley and Reynolds (1989) – creativity and intelligence are a 'unitary phenomenon' – creativity is the ultimate manifestation of intellectual ability
- No qualitative differences between creativity and intelligence
  - same cognitive mechanisms used to solve both types of problems in tests
- Difficult problems require an original solution

# Creativity and intelligence as unrelated constructs

Sternberg (1985b):

- Intelligence involves adaption to the environment
- Creativity involves changing our environment
- So - creativity and intelligence mutually exclusive?
  - if a response is intelligent, it can't be creative and vice versa?

● Sternberg and O'Hara (2000):

- "the ability to adapt to the environment – to change oneself to suit the environment – typically involves little or no creativity and may even require one to suppress creativity."
- View not really supported by empirical evidence

# Creativity and intelligence as related constructs

- Creativity and intelligence share common characteristics, regardless of which is the superordinate category
- Barron (1963) - divergent thinking and cognitive ability to test people in a range of careers – from military servicemen to artists
- Correlations of around  $r = .40$  - significant overlap between the two constructs
- Other studies have found a variety of correlations between creativity and intelligence
  - Suggests that creativity and intelligence are **related** but that they are **distinct constructs**
- But - depends on the domain being studied



● 'Three-ring' theory of giftedness (Renzulli, 1978, 1986)

● Giftedness is in the overlap between

● Creativity

● IQ

● Task Commitment

- motivation, conscientiousness, determination and passion



# Creativity and personality traits

## **Creativity in abnormal behaviour**

- The insane genius concept - creative behaviour may be the consequence or cause of psychopathology
- Eysenck (1999):

Psychoticism trait - a predictor of creativity in both typical and atypical participants

e.g. Dali fulfilled a number of criteria for personality disorders and psychotic illnesses (Murphy, 1999)

- **Overinclusive thinking** - a way of explaining the overlap between creativity and psychosis
  - Tendency to use irrelevant information in problem solving
  - Makes thinking about a problem more complex
- BUT – more recent research suggests that creativity is linked to higher levels of cognitive inhibition

e.g. Benedek et al (2012) Stroop Task

- by inhibiting irrelevant ideas, we can creatively consider a range of useful thoughts/ideas

- Creativity and cheating (Gino and Ariely, 2012) – measures of creativity correlated with cheating but intelligence did not
- Creative people are better able to justify their behaviour – to get around the morals for cheating
- But – do not mention that intelligent people, for a number of reasons might tend not to cheat...

- A significant association between psychoticism and creativity has not been found in all studies
- Kline and Cooper measured creativity through
  - spontaneous flexibility
  - ideational fluency
  - word fluency and originality
- Found no correlations between these aspects of creativity and psychoticism  
(except for fluency in males)



- Possible curvilinear relationship between creativity and psychopathology?
- Moderate level of originality indicates normal creativity
- Very high levels of originality may link to mental disorders (such as schizophrenia) or psychoticism
- Psychoticism may contribute towards creativity until it leads to the rejection of existing norms

## Creativity in normal behaviour (the big five)

- The strongest correlate is Openness to Experience
  - e.g. aesthetic preferences, values, actions, ideas of novelty
- Chamorro-Premuzic and Furnham (2005) - 'Creativity' should be used instead of 'Openness to Experience'
- Dollinger and Clancy (1993) - Openness to Experience positively correlated with ability to improvise endings to stories
- Verbal creativity found to be positively correlated with extraversion and openness (King, Walker and Broyles, 1996)
- Openness also found to be beneficial for creative performance in work (George and Zhou, 2001)

- Feist (1998) meta-analysis - compared
  - Scientists v non-scientists
  - Creative v less creative scientist
  - Artists v Non-artists
- Openness, Extraversion and Conscientiousness could be used to distinguish accurately between the Scientist and non-scientists
- And that Extraversion and Openness distinguished the Creative and Non-creative scientists
- Artists differed in conscientiousness and openness

- Feist concluded - some personality traits are equally expressed in both scientists and artists
- Those who were creative were...
  - More open to new experiences
  - Less conscientious
  - More self-confident
  - More self accepting
  - More dominant
  - More driven
  - More ambitious
  - More hostile
  - More impulsive
- But the artists were found to be less emotionally stable, less socialized and less accepting of group norms than the scientist



- May be difficult to find a clear conceptualisation of creative personality that includes all types of people
- Recent review suggests that of the Big Five personality characteristics it is
  - Neuroticism
  - Extraversion
  - Openness to Experiencethat are positively correlated with creativity
- Agreeableness and Conscientiousness are negatively correlated with creativity

# Testing creativity

## Alternate Uses Test

- Name all the things you can do with.....
- Scored in terms of originality, fluency, flexibility, elaboration
- Appropriateness of the answer?

## Remote Associations Test

- 30-item psychometric test – items have a single correct answer, not open-ended questions
- Mednick (1967): remote/unusual associations would indicate a person's ability to generate novel solutions/ideas

e.g.:

- rat – blue – cottage    ?
- surprise – line – birthday    ?

## Torrence Test of Creativity and Thinking (Torrence, 1974)

- Measures divergent thinking of semantic units  
e.g.
  - Name all the things you can think that are blue and edible
  - Write as many sentences as you can think of with the words cat, gate and winter
- Aggregated creativity score (from different sections of test) correlated significantly with creative *achievement* measures
- Torrance argued to consider intelligence and creativity to be only moderately associated

## Reading:

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