Psychology of Creativity

Chapter · July 2013

DOI: 10.1007/978-1-4614-3858-8_386

1 author:

Liane Gabora
University of British Columbia - Vancouver
235 PUBLICATIONS **5,576** CITATIONS

SEE PROFILE

Full reference:
Gabora, L. (2013). Psychology of Creativity. In Elias G. Carayannis (Ed.) *Encyclopedia of Creativity, Invention, Innovation, and Entrepreneurship* (pp. 1515-1520). New Delhi, India: Springer.

Title

Psychology of Creativity

Liane Gabora

Affiliation

University of British Columbia, Canada

Synonyms

Creativity research; empirical aesthetics; empirical studies of the arts; empirical studies of creativity

Main Text

Key Concepts and Definition of Terms

Defining Creativity

Creativity is arguably our most uniquely human trait. It enables us to escape the present, reconstruct the past, and fantasize about the future, to envision something that does not exist and change the world with it. The elusiveness of the construct of creativity makes it that much more important to obtain a satisfactory definition of it. Defining creativity presents difficulties; for example, not all creative works are useful, and not all are aesthetically pleasing, though both usefulness and aesthetic value capture, in some sense, what creativity is about. Nevertheless, psychologists have almost universally converged on the definition originally proposed by Guilford over sixty years ago Guilford (1950) defined creativity in terms of two criteria: *originality* or novelty, and *appropriateness* or adaptiveness, i.e. relevance to the task at hand. *Surprise* is sometimes added as a third criterion (Boden, 2004). Some add *quality* as a separate criterion (Kaufman & Sternberg, 2007), while others use the term appropriateness in a way that encompasses quality. Creativity has also been defined as a complex or syndrome, and some would insist that any definition of creativity include such cognitive and personality characteristics as problem sensitivity, flexibility, the ability to analyze, synthesize, evaluate, and reorganize information, engage in divergent thinking, or deal with complexity. However, it is the 'originality and appropriateness' definition that is encountered most often, and that appears to have become standard (e.g. Amabile, 1996; Feldman, Csikszentmihalyi & Gardner, 1994; Runco, 2004; Sternberg, 1988). While this definition provides a much-needed departure point for discussion about and measurement of creativity, there is probably no one-size-fits-all definition of creativity. For scientific or technological enterprises, appropriateness might be more important, whereas in the arts, originality might be weighted more heavily. Thus, creativity must be assessed relative to the constraints and affordances of the task.

The Four Ps of Creativity

It is often said that creativity involves four Ps: person, process, product, and place. The creative *person* tends to exhibit certain personality traits. Creativity is correlated with independence of

judgment, self-confidence, attraction to complexity, aesthetic orientation, risk-taking, openness to experience, tolerance of ambiguity, impulsivity, lack of conscientiousness, and high energy. There is some evidence that creative individuals are more prone to anxiety and affective disorders. Creative individuals differ with respect to whether they are internally versus externally oriented, person-oriented or task-oriented, and explorers (who tend to come up with ideas) or developers (who excel at turning vague or incomplete ideas into finished products).

A pioneering effort toward demystifying the creative *process* was Wallas' (1926) classification of the creative process into a series of stages. The first of Wallas' stages is *preparation,* which involves obtaining the background knowledge relevant to the problem, its history (if known), and any instructions or past attempts or preconceptions regarding how to solve it. It also involves conscious, focused work on the problem. The second stage is *incubation*—unconscious processing of the problem that continues while one is engaged in other tasks. The preparation and incubation stages may be interleaved, or incubation may be omitted entirely. Wallas proposed that after sufficient preparation and incubation, the creative process is often marked by a sudden moment of *illumination*, or insight, during which the creator glimpses a solution to the problem, which may have to be worked and reworked in order to make sense. The idea at this point may be ill-defined, "half-baked", or in a state of *potentiality*; the ability to work with an idea in this state is related to the personality trait of tolerance of ambiguity. Wallas' final phase is referred to as *verification*. This involves not just fine-tuning the work and making certain that it is correct, as the word implies, but putting it in a form that can be understood and appreciated by others.

The creative *product* can take the form of a physical object (*e.g.,* a painting), or behavioral act (*e.g.,* a dance), or an idea, theory, or plan of action.

The last of the four Ps of creativity, *place*, concerns the environmental conditions conducive to creativity. Certain individual situations, such as education and training, role models and mentors, and perhaps surprisingly, childhood trauma, are correlated with historical creativity. Economic growth appears to have a stimulating effect on creativity, whereas war appears to have a depressing effect.

Historical versus Personal Creativity

Although the term 'creative' is often reserved for those who are known for their creative output, some make the case that daily life involves thinking things and doing things that, at least in some small way, have never been thought or done before, and thus that *everyone* is somewhat creative (Beghetto & Kaufman, 2007; Runco, 2004). Psychologists now distinguish between different kinds and degrees of creativity, such as between historical and personal creativity (Boden, 2004). When the creative process results in a product that is new to all of humanity and makes an impact on the course of civilization, it is referred to as *historical creativity* (H-Creativity). Historical creativity is also sometimes referred to as *eminent creativity,* because the creator tends to become famous. When the creative process results in a product that is new to the creator, but someone else has come up with it before, or it is not creative enough to exert an impact on human civilization, it is referred to as *personal creativity* (P-Creativity). Although personal creativity does not change the world, it can be a source of pleasure and amusement. Clearly there are shades of gray between these extremes.

A concept that is closely related to personal creativity is *everyday creativity.* Everyday creativity manifests in everyday life; it comes through in how one prepares a meal, decorates a room, or interprets and shares experiences. Everyday creativity generally begins with an innovative, often unconventional approach to life that involves capitalizing on hidden

opportunities, undertaking common tasks in uncommon ways, and finding unique solutions to challenges as they arise.

Historical and personal and creativity are also sometimes referred to as *Big C creativity* and *Little C creativity*, respectively. Some additionally make the case for *Mini C creativity*, which involves making novel and personally meaningful interpretations of objects and events, and which can form the basis for more substantial creative acts (Beghetto & Kaufman, 2007).

Creativity versus Discovery and Invention

Creativity is sometimes distinguished from two related concepts, discovery and invention. *Discovery* involves finding something *already present* and sharing it, *e.g*., Columbus' discovery of America. It is relatively impersonal in the sense that if one person hadn't discovered it, someone else would have. *Invention* entails unearthing something that was *not present before, e.g*., Alexander Bell's invention of the telephone. Like discover, it is relatively impersonal. Creativity also involves unearthing and sharing something that was not present before. Some psychologists additionally require that for something to qualify as creative it must be profoundly personal in the sense that one feels the presence of a unique individual in the work, *e.g*., Leonardo Da Vinci's art.

Theoretical Background and Open-Ended Issues

Early Conceptions

In early times the creative individual was viewed as an empty vessel that was filled with inspiration by a divine being. Psychologists initially paid little attention to creativity because it was thought to be too complex and frivolous for scientific investigation. Freud believed that creativity results from the tension between reality and unconscious wishes for power, sex, love, and so forth. While this view is not as prominent now as it was in his time, his notion of the *preconscious* – a state between conscious and unconscious reality where thoughts are loose and vague but interpretable – is still viewed by many as the source of creativity. The year 1950 marks a turning point for psychological interest in creativity, when it was the subject of Guilford's address to the American Psychological Association.

Current Psychological Approaches to Creativity

Creativity is now of interest to many disciplines and approached from many directions. Even within the discipline of psychology it is addressed in a variety of ways. Cognitive psychologists study how people engage in cognitive processes considered creative, such as analogy, concept combination, and problem solving, and write computer programs that simulate these processes (*e.g.,* Finke, Ward, & Smith, 1992). Those who take a psychometric approach develop tests of creativity, the most widely known being the Torrance Test of Creative Thinking (Torrance, 1962). Examples of such tests are the *Unusual Uses Test* in which participants are asked to think of as many uses for a common object (e.g., a brick) as possible, or the Product Improvement Test, in which participants are asked to list as many ways as they can to change a product to make it more useful or desirable, (*e.g*., to change a toy monkey so children will have more fun playing with it). Developmental psychologists study creativity in children and throughout the lifespan. Social psychologists examine how family dynamics, group dynamics, and cultural influences affect creativity. Clinical psychologists look at how art therapy, music therapy, and dance therapy can help patients open up and express themselves in ways that verbal communication may not. Neuroscientists investigate the biological basis of creativity. Organizational psychologists study

creativity as it pertains to entrepreneurship and successful business strategies. Finally, comparative, evolutionary, and cultural psychologists address the question of how humans came to possess their superlative creative abilities, how these abilities compare with those of other species, how creativity compares across different cultures, and in what sense creative ideas can be said to evolve over time.

The Relative Contributions of Expertise, Chance, and Intuition

While most psychologists believe that creativity involves a combination of expertise, chance, and intuition, they differ with respect to the degree of emphasis they place on these factors.

Expertise theorists point to evidence that it takes approximately a decade to master a creative domain (Hayes, 1989). Experts are better than beginners at detecting and remembering domain-relevant patterns, and are more adept at generating effective problem representations and, when necessary, revising initial hypotheses. Expertise theorists posit that creativity involves everyday thought processes such as remembering, planning, reasoning, and restructuring. They claim that no special or unconscious thought processes are required for creativity, just familiarity with and skill in a particular domain (Weisberg, 2006).

Critics of this view note that entrenchment in established perspectives and approaches may make experts more prone than beginners to set, functional fixedness, and confirmation bias. Those who emphasize the role of *chance* include advocates of the Darwinian theory of creativity, according to which the creative process, like natural selection, entails blind generation of possibilities followed by selective retention of the most promising of them (Simonton, 1999).

Other psychologists view creativity as not so much a matter of generating and selecting amongst predefined alternatives but of intuiting an idea and then, by considering the idea from different perspectives or trying it out different ways, taking it from an ill-defined state of potentiality to a well-defined state of actualization (Gabora, 2010). Those who emphasize the actualization of potentiality and the role of *intuition* emphasize the association-based structure of memory, and note that creative individuals tend to have *flat associative hierarchies,* meaning they have better access to *remote associates*, items that are related to the subject of interest in indirect or unusual ways.

The Relative Importance of Process versus Product

To many it seems natural to value the creative process for the products it gives rise to; indeed creative products have significantly transformed this planet. Others view the creative process itself as more important than the product. They stress the *therapeutic value of creativity*. In this view the primary value of the creative process is that it enables the creator to express, transform, solidify, or unify the creator's understanding of and/or relationship to the world, while the external product provides a means of tracking or monitoring this internal transformation. This view is more prominent in eastern than western cultures. It also figures prominently in creative therapies such as art therapy, music therapy, and drama therapy.

Is Creativity Domain Specific or Domain General?

Psychologists who emphasize the role of expertise tend to view creativity as highly *domain-specific;* expertise in one domain is not expected to enhance creativity in another domain. They note that expertise or eminence with respect to one creative endeavor to be only rarely associated with expertise or eminence with respect to another creative endeavor (Baer, 2010). For example, creative scientists rarely become famous artists or dancers.

Psychologists who emphasize intuition and associative processes, on the other hand, tend to

view creativity as somewhat *domain-general,* because associative thinking can result in metaphors that connect different domains. Studies involving self-report scales, creativity checklists, and other sorts of psychometric or personality data tend to support the view that creativity is domain-general (Plucker, 1998). The relevance of these studies to the general versus specific debate has been questioned because they do not actually measure creative outputs, but rather traits associated with the generation of creative output. However, those who stress process over product claim that these data tell us about the internal, less visible but equally important counterpart to the *external* manifestations of the creative process. An emphasis on product rather than process may have resulted in exaggeration of the extent to which creativity is domain-specific. That is, if one asks not, 'are individuals talented in multiple creative domains?' but, 'can individuals use multiple creative domains to meaningfully develop, explore, and express themselves?' the answer is more likely to be affirmative. Most psychologists believe that the truth lies somewhere between the extremes. That is, creativity in one domain may help but not guarantee creativity in another; it is neither strongly domain-specific nor domain-general.

Is there are Dark Side to Creativity?

Although creativity is clearly stimulating and indispensable to cultural and technological advancement, many believe it has a dark side (Cropley, Cropley, Kaufman, & Runco, 2010). There is considerable evidence that eminent creativity is correlated with proneness to affective disorders, suicide, and substance abuse. Moreover, it is not necessary for everyone to be creative. We can all benefit from the creativity of a few by imitating, admiring, or making use of their creative outputs. Excessive creativity may result in reinventing the wheel, and absorption in ones' own creative ideas may interfere with assimilation or diffusion of proven effective ideas. Computer modeling suggests that society self-organizes to achieve a balance between relatively creative and uncreative individuals (Leijnen & Gabora, 2009). The social discrimination that creative individuals often endure until they have proven themselves may aid in achieving this equilibrium.

Implications for Theory, Policy, and Practice

The psychology of creativity has implications for theory, policy, and practice in a number of arenas. A first area of application is clinical. Creative activities such as art making, music making, dance, and drama are increasingly seen to have therapeutic effects that can be effective in both clinical and non-clinical settings. The transformation that occurs on canvas or on the written page is thought to be mirrored by a potentially therapeutic sense of personal transformation and self-discovery that occurs within. Immersion in the creative task has been referred to as a state of *flow* that may share characteristics with deeply spiritual or religious experiences.

A second, related area of application is childrearing and education. For example, creative play in childhood facilitates access to affect-laden (emotional) thoughts, which may enhance cognitive flexibility and divergent thinking abilities. Amabile's (1996) work on *intrinsic motivation* showed that rewards for creative work may actually inhibit creativity because focusing on an external reward leads people to neglect the internally rewarding nature of creative acts.

A third area of application is in business settings. For example, psychological work on *brainstorming sessions*, in which people get together as a group and put forward ideas in an open and accepting environment, has shown that it may be more effective when group work is followed immediately by individual work, or when individuals communicate by writing so as to

avoid the problem of everyone talking at once.

Conclusion and Future Directions

It is our creativity that perhaps most distinguishes humans from other species and that has completely transformed the planet we live on. The psychological study of creativity is an exciting area that brings together many different branches of psychology: cognitive, developmental, organizational, social, personality, clinical, neuroscience, and even computational and mathematical models. Past and current areas of controversy concern the relative contributions of expertise, chance, and intuition, whether the emphasis should be on process versus product, whether creativity is domain-specific versus domain-general, and the extent to which there is a dark side to creativity. Promising areas for further psychological study of creativity include computational modeling, and work on the neurobiological basis of creativity, as well as environmental influences on creativity.

Cross-References

- Creativity research

References

1. Amabile, T. (1996). *Creativity in context*. Boulder, CO: Westview Press.
2. Baer, J. (2010). Is creativity domain specific? In Kaufman, J., & Sternberg, R., Eds. *Cambridge Handbook of Creativity*. (pp. 321-341). Cambridge UK: Cambridge University Press.
3. Beghetto, R. A. & Kaufman, J. C. (2007). Toward a broader conception of creativity: A case for "mini-c" creativity. *Psychology of Aesthetics, Creativity, and the Arts, 1*(2), 73-79.
4. Boden, M.A. (1990). *The philosophy of artificial intelligence*. New York: Oxford University Press.
5. Cropley, D. Cropley, J. Kaufman, & M. Runco, Eds. (2010). *The Dark Side of Creativity*. Cambridge UK: Cambridge University Press.
6. Feldman, D. H., Csikszentmihalyi, M., & Gardner, H. (1994). *Changing the world: A framework for the study of creativity*. Westport, CT: Praeger Publishers.
7. Finke, R. A., Ward, T. B**.**, & Smith, S. M. (1992). *Creative cognition: Theory, research, and applications*. Cambridge, MA: MIT Press.
8. Gabora, L. (2010). Revenge of the 'neurds': Characterizing creative thought in terms of the structure and dynamics of human memory. *Creativity Research Journal, 22*(1), 1-13.
9. Gabora, L. & Leijnen, S. (2009). How creative should creators be to optimize the evolution of ideas? A computational model. *Electronic Proceedings in Theoretical Computer Science, 9,* 108-119.
10. Guilford, J. P. (1950). Creativity. *American Psychologist*, *5*, 444–454.

11. Hayes. J. R. (1989). Cognitive processes in creativity. In J. A. Glover. R. R. Ronning. & C. R. Reynolds (Eds.). *Handbook of creativity* (pp. 135-145). New York: Plenum Press.

12. Kaufman, J. C., & Sternberg, R. J. (2007). Resource review: Creativity. *Change*, 39, 55–58.

13. Plucker, J. A. (1998). Beware of simple conclusions: The case for the content generality of creativity. *Creativity Research Journal*, 11, 179–182.

14. Runco, M. A. (2004). Creativity. *Annual Review of Psychology, 55*, 657–687.

15. Simonton, D. K. (1999a). Creativity as blind variation and selective retention: Is the creative process Darwinian? *Psychological Inquiry, 10*, 309-328.

16. Sternberg, R. J. (1988). A three-faceted model of creativity. In R. J. Sternberg (Ed.), *The nature of creativity* (pp. 125–147). Cambridge, England: Cambridge University Press.

17. Torrance, E. P. (1996). *The Torrance tests of creative thinking*. Princeton, NJ: Personnel Press.

18. Wallas, G. (1926). *The art of thought.* London: Cape.

19. Weisberg, R. W. (2006). *Creativity*. New York: John Wiley and Son.