



Comparing creative profiles: Architects, social scientists and the general population[☆]



Christiane Kirsch^a, Todd Lubart^b, Claude Houssemand^{a,*}

^a University of Luxembourg, ECCS Research Unit, Campus Belval, Maison des Sciences Humaines, 11 Porte des Sciences, L-4366 Esch-sur-Alzette, Luxembourg

^b Université Paris Descartes, Laboratoire Adaptations, Travail, Individu, EA 4469, 71 Avenue Edouard Vaillant, 92100 Boulogne-Billancourt, France

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ABSTRACT

The aim of this article is to investigate the hybrid approach of creativity, according to which some features are more domain-general whereas others are more domain-specific. The total sample consisted of 359 participants. The hybrid approach was confirmed. Whereas fluid intelligence had a domain-general importance, the role of ego-strength was very domain-specific. Ego-strength was positively involved in adaptive creativity among student architects but negatively in creativity with the social science students: whereas student architects tended to show a “scientific” creative profile, social science students showed an “artistic” creative profile. Finally, as anticipated, people from the general population demonstrated the expected profile for everyday creativity.

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1. Introduction

The aim of the present research is to explore the degree of domain generality versus specificity of the creative profile in the domains of arts, science and everyday life. Artistic creativity is investigated using student architects, scientific creativity using social science students and everyday creativity using the general population.

1.1. Domain-general versus domain-specific approach to creativity

Two major approaches in creativity research can be contrasted although they are not mutually exclusive. A first approach considers creativity as a domain-general ability whereas a second one considers creativity as a domain-specific capacity. According to Plucker (1998) empirical evidence (Baer, 1993, 1994a, 1994b, 1994c) favors the domain-specific and even task-specific approach.

For Lubart, Mouchiroud, Tordjman, and Zenasni (2015), a differential approach to creative thinking reconciles to some extent the domain-general and the domain-specific conceptions; some major models (e.g., Amabile, 1983; Baer & Kaufman, 2005; Kaufman & Baer,

2004, 2005; Plucker & Beghetto, 2004) take into account general as well as specific components.

1.2. Creative profile in arts, science and everyday life

Batey and Furnham (2006) characterized the typical profiles for creativity in arts, science and everyday life. With reference to Richards (1999), everyday creativity involves creative passions (products, ideas, and behaviours) of ordinary people and their active pursuit in daily life, at work or during leisure time. Everyday creativity is often analyzed in the general population, where lower levels of creative expression have a higher incidence rate. Feist (1998) conducted an early meta-analysis on the creativity-related literature, focusing on the arts and science domains and finding a fairly consistent pattern of results with some variables characterizing both artistic and scientific creativity, but others only involved in one domain.

1.3. Creativity and intelligence

Batey and Furnham (2006) propose that *intelligence* — fluid and crystallized — systematically intervenes in different creative areas, whereas the role of personality distinguishes itself more in terms of the considered domain. With regard to intelligence, both executive processes — i.e., fluid intelligence, working memory capacity, cognitive inhibition — and associative processes — i.e., semantic distance — were shown to be linked to domain-general creative cognition, as measured

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* Corresponding author.

E-mail addresses: christijeanne@icloud.com (C. Kirsch), todd.lubart@parisdescartes.fr (T. Lubart), claudie.houssemand@uni.lu (C. Houssemand).

by divergent thinking (Beaty, Silvia, Nusbaum, Jauk, & Benedek, 2014; Benedek, Jauk, Sommer, Arendasy, & Neubauer, 2014). In a recent meta-analysis by Kim (2005), intelligence was found to be weakly but consistently related to creativity ($r = .17$). However, in some studies (e.g. Silvia, 2008a, 2008b; Nusbaum & Silvia, 2011) the relationship between creativity and intelligence was found to be stronger if higher-order latent intelligence variables were considered.

1.4. Creativity and personality

Openness is considered the most domain-general personality trait, being involved in the three domains of creative expression: artistic, scientific and everyday creativity (Batey & Furnham, 2006). This is in line with Feist (1998), who found *Openness* to be relevant to both scientific and artistic creativity. This hypothesis about domain-generality was further supported by Silvia, Kaufman, and Pretz (2009).

1.5. Research aims and hypotheses

According to Lubart et al. (2015), the differential approach raises the question of distinguishing between creative profiles within broader domains of specialization such as the arts. For example, in the artistic domain, is the profile the same for those who paint creatively and those who sculpt creatively? These subgroups could be compared to their domain-reference group. In the current research, we examine student architects and social science students, comparing them to expected profiles of artistic and scientific groups, previously described in the literature. According to some authors (Piiro, 1992; Simonton, 2009), architects and social scientists may show characteristics attributed to artists and scientists. It is therefore interesting to examine these groups.

The aim of the present research is to investigate empirically the differential approach of creativity and to explore the extent to which generic profiles of artistic and scientific creative personalities correspond to architecture and social-science-oriented student groups. In this theoretical model, fluid intelligence and *Openness* are assumed to be domain-general, whereas particular personality characteristics — Neuroticism/Emotional stability — are assumed to be very domain-specific. According to Hathaway and McKinley (2000), ego-strength is a general indicator of mental health. As such, in the present research, ego-strength serves as a proxy for Emotional stability/Neuroticism and is expected to have a domain-specific importance for creativity. Based on previous studies (Batey & Furnham, 2006; Feist, 1998), this leads to the following hypotheses:

- (1) There is a positive correlation between *fluid intelligence* and creative potential in artists, scientists and the general population.
- (2) There is a positive correlation between *Openness* and creative potential in artists, scientists and the general population.
- (3) Creative potential will be positively related to *ego-strength* in scientists and negatively related in artists.

2. Methods

2.1. Participants

The sample of student architects consisted of 137 participants (63 women, 74 men, $M_{Age} = 21.57$, $SD = 3.27$, age range: 18–44 years). The sample of social science students consisted of 121 participants (95 women, 24 men, 2 non-specified, $M_{Age} = 21.94$, $SD = 2.22$, age range: 19–32). 87.6% were student psychologists and 7.4% were students in education. The remaining 4.9% were students from various other social science disciplines. 4.13% were graduate students. The sample of the general population consisted of 101 participants (57 women, 41 men, 3 non-specified, $M_{Age} = 34.82$, $SD = 15.81$, age range: 15–78). The general sample had the following educational background: primary education (9th grade) (14.4%), professional training (19.6%), Baccalaureate

(43.3%), Bachelor (11.3%), Masters (10.3%) and Post-Graduate (1%). The total sample consisted of 359 participants (215 women, 139 men, 5 non-specified, $M_{Age} = 25.37$, $SD = 10.44$, age range: 15–78 years).

2.2. Materials

Creative potential was assessed by three different evaluation techniques using the Test of Creative Thinking–Drawing Production (TCT-DP). This multi-method approach was implemented in order to enhance the construct validity of the creativity measurement. In the TCT-DP, a drawing production is realized on demand within a specific time frame. According to Urban (2005) it is placed in a rather global and Gestalt-oriented approach to creativity; it is normed for a large range of age and ability groups and has been generally acknowledged as culture fair. Lubart, Pacteau, Jacquet, and Caroff (2010) consider that the TCT-DP is a convergent–integrative measure of creative potential.

Fourteen scoring categories are inherent to the traditional evaluation technique proposed by Urban and Jellen (1996): continuations; completion; new elements; connections with a line; connections with a theme; boundary braking, fragment-dependent; boundary braking, fragment-independent; perspective; humor and affectivity; four kinds of unconventionality; and speed. With reference to Lubart et al. (2010), two sub-scores can be calculated based on the traditional scoring method: The Originality factor and the Adaptation factor. The Adaptation factor includes the number of fragments used among the initial fragments proposed, their meaningful incorporation within the total composition and the use of the fragment outside the frame. The Originality factor includes the remaining scoring categories outlined above.

A second evaluation technique, Statistical Originality, refers to the statistical frequency of a given idea within the reference sample. According to Lubart et al. (2010) this score closely relates to the originality score of divergent thinking tests.

Finally, with reference to the Consensual Assessment Technique (CAT) (Amabile, 1982, 1983), the drawings were rated independently by three expert judges on a 7-point scale. The judges in the present case were creativity researchers from the University Paris Descartes, who were trained for this kind of evaluation. The random order of the drawings varied for every judge. The present inter-rater reliabilities (Cronbach Alpha) for the CAT were $\alpha = .91$ in student architects, $\alpha = .89$ in social science students and $\alpha = .93$ in the general population.

Fluid intelligence was assessed by the Logical Reasoning test (B53) from Bonnardel (1971), in which the participant is requested to discover the logic behind a series of figures and to complete them. Inductive reasoning intervenes in diverse tasks such as learning, problem solving, organization and creation. The test includes 32 items and the participant has a maximum of 10 min to complete it. The scale had an internal consistency of $\alpha = .81$ in student architects, $\alpha = .86$ in social science students and $\alpha = .92$ in the general population.

Openness to new experiences was assessed by the NEO-FFI from Costa and McCrae (1992). The Big Five model from Costa and McCrae (1985, 1989, 1992) proposes five personality factors: Neuroticism (N), Extraversion (E), *Openness* to new experiences (O), Agreeableness (A) and Conscientiousness (C). The *Openness* dimension consists of 48 items with responses on a 5-point Likert scale that ranges from “not agree at all” to “completely agree”. The internal consistency was $\alpha = .77$ in student architects, $\alpha = .84$ in social science students and $\alpha = .85$ in the general population.

For the assessment of ego-strength, the subscale ego-strength (Es) from the Minnesota Multiphasic Personality Inventory (MMPI-2) by Hathaway and McKinley (1996) was used. It includes 52 statements with “Yes” or “No” responses. According to Hathaway and McKinley (2000) the Es scale can be used to measure mental health, adaptability, resilience, psychological resources and effective life management. The internal consistency was $\alpha = .62$ in student architects, $\alpha = .66$ in social science students and $\alpha = .74$ in the general population.

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