Volume 22 Issue 16
Originally issued as G3

Global Journal of human-social science: G
Linguistics & Education
Volume 22 Issue 3 Version 1.0 Year 2022
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-460X & Print ISSN: 0975-587X

The Relationship of Creativity Domains with Personality Traits and Academic Environment in Higher Education

By Malek Nassar Abdallah Awawdeh & Lim Hooi Lian

Arabian Gulf University (AGU)

Abstract- Creativity assessment is the cornerstone of effective creativity development in higher education. It is one of the main topics in creativity research; as it is one of the most difficult skill to measure in any of the 21st century skills. We argue that, in additions to the big five, creativity in higher education is related to the environment and that more research is needed to understand this relations. Therefore, this study aimed to investigate this relations, specifically creativity domain with personality traits and the academic environment. Measures for these constructs were administered to 103 Malaysian undergraduate students. In order to examine the nature of the relations between creative personality and other constructs we used Structural Equation Modeling. The results indicate that the model is valid and reliable for assessing the creative person of higher education students. This study showed that both personality traits and academic environment are important to assess the creative personality.

Keywords: *creative person, higher education, creativity assessment, structural equation modeling.*

GJHSS-G Classification: *DDC Code: 378.5 LCC Code: LA1058*

THERELATIONSHIPOFCREATIVITYDOMAINSWITHPERSONALITYTRAITSANDACADEMICENVIRONMENTINHIGHEREDUCATION

Strictly as per the compliance and regulations of:

© 2022. Malek Nassar Abdallah Awawdeh & Lim Hooi Lian. This research/review article is distributed under the terms of the Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0). You must give appropriate credit to authors and reference this article if parts of the article are reproduced in any manner. Applicable licensing terms are at https://creativecommons.org/licenses/by-nc-nd/4.0/.

The Relationship of Creativity Domains with Personality Traits and Academic Environment in Higher Education

Malek Nassar Abdallah Awawdeh [α] & Lim Hooi Lian [σ]

Abstract- **Creativity assessment is the cornerstone of effective creativity development in higher education. It is one of the main topics in creativity research; as it is one of the most difficult skill to measure in any of the 21st century skills. We argue that, in additions to the big five, creativity in higher education is related to the environment and that more research is needed to understand this relations. Therefore, this study aimed to investigate this relations, specifically creativity domain with personality traits and the academic environment. Measures for these constructs were administered to 103 Malaysian undergraduate students. In order to examine the nature of the relations between creative personality and other constructs we used Structural Equation Modeling. The results indicate that the model is valid and reliable for assessing the creative person of higher education students. This study showed that both personality traits and academic environment are important to assess the creative personality.**

Keywords: creative person, higher education, creativity assessment, structural equation modeling.

I. Introduction

Creativity has increasingly become one of the most wanted skills of the 21st century for students in higher education in the information age. In the last decade creativity has become a skill that is called for by teachers, professors, and students in higher education. It's seen as a solution for many social, economic and educational problems. According to Piirto (2011) Creative individuals establish a powerful aspect of facing complex changes and challenges in different sources of competition. As a result, much research centered on the assessment of creativity (Said-Metwaly et al., 2017). Becoming the key to success in the working world, creativity stand at the center of the 21st century educational process (Robinson, 2011). Corporate and public sector leaders reported that creativity is the most important quality a leader must have (Vincent & Kouchaki, 2015).

In today's world, creative students are becoming a high demand for higher education (Littleton et al., 2010). The inclusion of creativity need new approaches of creativity assessment (Henriksen et al., 2016; Mishra & Henriksen, 2013). The increasing awareness of the importance of fostering creativity in higher education is rising every day (de Alencar & de Oliveira, 2016). Creativity has become a high demand by higher education when it start facing large economic, cultural and environmental challenges, which become a changing role for universities from classical research universities to entrepreneurial universities (Gaspar & Mabic, 2015).

There is a feeling that creative initiatives in higher education are often undervalued and even impeded (Watson, 2014). Perhaps the complicity of creativity assessment explain the lack of enthusiasm regarding creative practices in higher education. creativity assessment is complex and problematic (Loveless, 2006). Over the years, researchers have developed many instruments for measuring creativity, although there has been significant progress there are still many issues and challenges surrounding the measurement of creativity (The World Economic Forum, 2015). The arena of creativity assessment is rife with multiple challenges, which tend to present as dichotomous tensions (Henriksen et al., 2016). The measurement of creativity is one of the most challenging skill to measure in any of the 21st century skills (*The Future of Jobs Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution*, 2016).

The first significant question regarding the assessment of creativity is whether creativity can truly be measured (Lai et al., 2018). Beattie (2000) concludes that creativity can and should be assessed although the assessment of creativity have not been straightforward. Nevertheless, creativity researchers do agree that measuring creativity is challenging. Assessment has been a vexing problem for creativity researchers for a long time (Silvia et al., 2012). Unfortunately, creativity researchers did not take the advantages of advanced psychometric analyses like SEM. Expanding the use of modern analyses could provide a better understanding of conflicting results in creativity research. Creativity field is still depending on classical psychometric analyses (Said-Metwaly et al., 2017).

Typically, studies on assessing the creative personality refers to the four P's model by Rhodes (1961)": creative process, product, press, and person. The study of the creative personality has established itself as a major avenue of research on creativity (Selby et al., 2005). Guilford and Torrance work led to what is

Author α: Collage of Graduate Studies, Arabian Gulf University (AGU), Bahrain. e-mail: maliko83@yahoo.com
Author σ: School of Educational Studies, Universiti Sains Malaysia (USM), Malaysia. e-mail: hllim@usm.my

© 2022 Global Journals

often referred to as the psychometric approach to creativity (Kaufman & Sternberg, 2010). The Psychometric Approach is recommended to study the creative personality, it include Trait Theory and Field Theory; in psychology, trait theory is an approach to the study of human personality in the other hand Field Theory suggests that human behavior is a function of the interaction of individuals and the environment.

The assessment of creativity has a long, rich history, and interest in psychometric approaches to the study of creativity has increased in recent years (Kaufman & Sternberg, 2010). This provides a strong foundation for future research and evaluation efforts in creativity and bodes well for the potential contributions of psychometric methods to our understanding of creativity. Decades of research's on the creative person have produced a long lists of characteristics associated with individuals. Studies of personality characteristics of highly creative individuals have resulted in lists of hundreds of descriptors, which contain items that overlap and, at times, contradict one another (Selby et al., 2005).

Assessment of the creative person, which is the main aim of this study, involves the study of personality traits that describe creative individuals. These traits have been assessed in various ways, including behavior in experimental procedures such as self-report scale on questionnaires (Charyton et al., 2009). The findings of De Caroli and Sagone (2010) support the need to explore the connection between creativity and personality. The results of studies on the relationship between creativity and personality show inconsistent significant correlation between creativity and personality (Karwowski, Lebuda, Wisniewska, & Gralewski, 2013; Singh & Kaushik, 2015; Werner, Tang, & Kaufman, 2014; Parveen & Ramzan, 2013).

In additions to the big five, the study of the creative person include Field Theory (Lewin, 1936) and the importance of the affective domain (Selby et al., 2005). The importance of environment in assessing creativity has been highlighted by John Baer (2016) and Park et al. (2017). Any study of the creative person must consider the environment (i.e., academics institutions) in which the person functions. Relevant literature and studies reviewed suggest that in order to foster and develop creativity, researchers need to focus on what makes students creative by investigating the factors that affect the creative person, who is the center of any creative endeavor. Several articles and researches suggested that assessing the creative person include personality traits and the environment (Awawdeh & Lim, 2020a).

The development of the creative potential of individuals is considered one of the requirements of modern education. The level of creativity determines the level of the teaching-learning environment that is to influence the creativity of students (Kaya & Bilen, 2016). The personality traits that lead to creative thinking and creative behavior do not develop in a vacuum which means that we cannot nurture creativity without thinking about the effect of environment (Baer, 2016). Park et al. (2017) investigated factors that may influence students' creative personality. Among the affective factors for creativity are environmental factors such as the school, parents, and colleagues.

The environment, experience and knowledge is an important condition for creativity (Schepers & van den Berg, 2007). Promoting creativity in higher education is associated with the interactions of a student with its environment. The scientific attitude, attentiveness, and field correlate with creativity (Park et al. 2017). Mainly in science and humanities (de Alencar & de Oliveira, 2016; De Caroli & Sagone, 2010). Creativity is the confluence of scholarly activity, personality, and environment (Garcês et al., 2016).

The development of creativity is important for higher education, however most creativity researchers argue that little is being done to promote creativity (Baer, 2016, 2017; Kaufman et al., 2008; Kaufman & Baer, 2012; Kaufman & Beghetto, 2009). According de Alencar and de Oliveira (2016), higher education lacks in the promotion and development of creativity. Research has shown that the study of factors that surround the development of creativity in higher education are scarcely discussed (Garcês et al., 2016). Awawdeh and Lim (2020b), found that academic environments have a significant relationship with creativity domains and can theoretically enrich the current research of creativity assessment in higher education.

From the current literature on creativity in higher education, it can be concluded that academic environment is as essential as personality traits in assessing the creative person. However, it is still ambiguous how they are related. Given that there have been few previous studies on creativity in higher education and their results are mixed and inconclusive, the question remains of how we can assess the creative person and what is the nature between creativity domains, personality traits, and academic environment. In this study, which is part of a bigger project on creativity in higher education, it was hypothesized that the creative person in higher education is influenced by both personality and environment, and there is a strong significant correlation between personality traits and academic environment with creativity domains.

II. Methods

a) *Participants*

In total, 103 Malaysian undergraduate students (56 Female and 47 Male) from Universiti Sains Malaysia took part in this study. Students' age ranged from 18 to 23 years old. Participants' main fields of studies were applied science, applied arts, pure arts and pure science. Data were collected in June-august 2019, as

© 2022 Global Journals

part of a project on creativity assessment in Malaysian higher education. Data were collected by paper and via an online survey.

b) Instruments

i. *Creativity Domains*

The Kaufman Domains of Creativity Scale (K-DOCS) developed by (Kaufman, 2012) was used to measure the creativity domains in this study. This 50 item five-point Likert scale (Much Less Creative to Much More Creative) measure five domains of creativity: Self/Everyday, Scholarly, Performance, Mechanical/ Scientific, and Artistic.

ii. *Personality Traits*

The Big Five Inventory (BFI) developed by John, Donahue, and Kentle (1991) was used to measure the personality traits in this study. The 44-item BFI five-point Likert scale was developed to create a brief inventory that would allow efficient and flexible assessment of big five-factor personality theory: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience.

iii. *Academic Environment*

The College Student Experiences Questionnaire (CSEQ) developed by C. Robert Pace from the Indiana University Center for Postsecondary Research and Planning, school of Education. It is a 150-item questionnaire (Gonyea et al., 2003). We adopted the sections describing college environments, 10-items rating scales assess student perceptions of the psychological climate for learning that exists on the campus. The first seven ask students to rate how strongly the campus emphasizes or promotes various aspects of student development (e.g., academic, scholarly, and intellectual qualities; aesthetic, expressive, and creative qualities; critical, evaluative, and analytical qualities). Students respond on a seven-point Likert scale with a value of seven representing strong emphasis and a value of one representing weak emphasis. Three more items ask for the student's relationships with students, faculty, and administrative personnel at the institution. These are rated on a seven-point Likert scale with one end defined by such terms as competitive, rigid, and remote and the other end defined by terms like friendly, approachable, and helpful.

III. Analyses

Prior to the data analyses, the reliability of the instruments was determined in SPSS 23. For the content validity of the scale (S-CVI), the instruments were sent to a panel of two experts for comments and feedback. Next, data were analyzed by testing the model, using SEM in SmartPLS 3.

IV. Results

The reliability, particularly the internal consistency (Cronbach alpha) for the instruments was (.954) for K-DOCS, (.882) for BFI, and (.863) for CSEQ indicating a good internal consistency (Hair et al., 2014). Comments and feedback of experts were then used to calculate the content validity CVI, the content validity for scale (S-CVI) was acceptable (0.985). We analyzed the data to determine the construct validity. Cronbach's Alpha was high ($\alpha \geq 0.9$) for all construct. All construct show acceptable convergent validity (CR $\geq$ 0.7 and AVE $\geq$ 0.5) (Hair et al., 2014) Table 1. The discriminant validity was acceptable for all constructs expect for neuroticism and extraversion.

Table 1: Results of measurement model - Convergent Validity

Construct	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Agreeableness	0.952	0.959	0.723
Artistic	0.968	0.972	0.796
Conscientiousness	0.887	0.908	0.537
Neuroticism	0.840	0.883	0.509
Extraversion	0.929	0.942	0.673
Mechanical Scientific	0.969	0.973	0.801
Openness to Experience	0.948	0.956	0.685
Performance	0.974	0.977	0.809
Relations with Others	0.964	0.977	0.933
Scholarly	0.969	0.973	0.766
Self/Everyday	0.979	0.981	0.828
Students' Development	0.982	0.985	0.903

© 2022 Global Journals

The hypothesis model was tested by conducting path analyses to determine the P values, relationships that achieve significant P value are shown in Table 2. The correlations between the five creativity domains personality traits and academic environment were significant for some constructs. Some of these results are not consistent with previous studies, for example Kaufman (2012) findings include neuroticism being significantly correlated with mechanical/scientific. Nonetheless, Kaufman (2012) noted that it is to determine whether the factor structure of creativity domains is consistent across cultures. Such comparable preferences and beliefs may result in different patterns for different cultures, such as Malaysia.

Table 2: Path Coefficient of the Hypothesis – P Values

Relationships	P Values
Agreeableness -> Mechanical Scientific	0**
Agreeableness -> Performance	0**
Agreeableness -> Self/Everyday	0.002*
Conscientiousness -> Artistic	0**
Conscientiousness -> Mechanical Scientific	0**
Conscientiousness -> Performance	0.001**
Conscientiousness -> Self/Everyday	0.008*
Neuroticism: -> Self/Everyday	0.004*
Extraversion -> Mechanical Scientific	0.022*
Extraversion -> Performance	0.001**
Extraversion -> Scholarly	0**
Extraversion -> Self/Everyday	0**
Openness to Experience -> Artistic	0.007*
Openness to Experience -> Scholarly	0.003*
Openness to Experience -> Self/Everyday	0.001**
Relations with Others -> Mechanical Scientific	0.012*
Relations with Others -> Performance	0**
Relations with Others -> Self/Everyday	0**
Students' Development -> Mechanical Scientific	0.039*
Students' Development -> Scholarly	0.029*
Students' Development -> Self/Everyday	0.034*

**Significant at P ≤ 0.05 ** Significant at P ≤ 0.05*

As Table 3 show, the coefficient of determination R-square was calculated to further analyze the structural model. Self/everyday, performance, and mechanical/scientific show a high value of R^2, while both scholarly and artistic show moderate value of R^2. Chin (1998), suggested that the values of R^2 above 0.67 is considered high, while from 0.33 to 0.67 are moderate, whereas values between 0.19 to 0.33 are weak and any values less than 0.19 are unacceptable. The results indicate an acceptable proportion of the variance for an endogenous variable that's explained by an exogenous variable. The predictive relevance Q^2 was accepted for all exogenous variable (above zero). The Goodness of Fit (GoF) of the model was (0.719), it can be concluded that GoF of the model is large enough to consider sufficient PLS global model validity (Wetzels et al., 2009).

Table 3: R-square of the endogenous latent variables

Constructs	R2	Result
Self/Everyday	0.819	High
Scholarly	0.498	Moderate
Performance	0.784	High
Mechanical/Scientific	0.815	High
Artistic	0.550	Moderate

© 2022 Global Journals

V. Discussion

This study aimed to provide insight into the relationship of creativity domains with personality traits and academic environment. In line with the Trait Theory and Field Theory, we aimed to (a) develop new and valid creativity assessment model with regards to creativity in higher education, (b) determine whether the creative person of higher education students is influenced by both personality and environment. Factors were measured by self-scale report to analyze how they affect the creative person in higher education. The results revealed that the model is valid and reliable in assessing the creative personality. Moreover, different creativity domains are closely related to personality traits and the academic environment.

The first aim of our research was to develop a creativity assessment model with regards to creativity in higher education. Creativity, personality, and environment were measured and data were analyzed using SEM in SmartPLS 3. The validity and reliability were tested for both the measurement and structural model, results show that model has acceptable psychometric properties. Our model provided high valid and reliable approach to assess the creative person in higher education.

With regard to our second aim, whether the creative person of higher education students is influenced by both personality and environment, we found significant correlations between creativity domains and personality traits for some constructs. Research of this type has already been conducted but their results are, not surprisingly, inconsistent. Other studies have looked at the environment (Baer, 2016; Park et al., 2017), we found evidence supporting the relationship between creativity domains and the academic environment. This result suggest that both personality and environment are essential in assessing the creative person. The current study adds a possible framework for future studies of this type.

There are several limitations of this study. Some items factor loading from (BFI) were≤ 0.7 in the initial analysis (tends to be lazy, perseveres until the task is finished, has a forgiving nature, is considerate and kind to almost everyone, and prefers work that is routine). Snyder (1967) examined the effect of the institution, the college setting, on the development of creativity arguing that the students' creativity differ from one another in some educational subjects; study field might be an significant factor influencing the creative person (Park et al., 2017). There are evidences of gender differences in creativity measurements, particularly in self-scale report (John & Kaufman, 2008; Matud et al., 2007), adding gender as moderator factor can shed more light on the nature of the relationships tested by our model in further research. This study adds to the field of creativity assessment. We suggest that in order to develop and foster creativity in higher education we need to understand what makes a student creative by assessing the factors the influence his creative personality.

References Références Referencias

1. Awawdeh, M. N. A., & Lim, H. L. (2020a). A Conceptual Paper on Factors That Affect the Creative Person in Higher Education. *The International Journal of Innovative Design, Creativity and Social Sciences*, *4*(1), 1–12.
2. Awawdeh, M. N. A., & Lim, H. L. (2020b). The Relationship between Creativity Domains and Academic Environment. *International Journal of Innovation, Creativity and Change*, *13*(7), 928–940. www.ijicc.ne
3. Baer, J. (2016). Creativity Doesn't Develop in a Vacuum. *New Directions for Child and Adolescent Development*, *2016*(151), 9–20. https://doi.org/10.1002/ cad.20151
4. Baer, J. (2017). The Devil Is in the Details: Why the Answer to Most Questions About Creativity Will Always Be "It Depends." *Journal of Creative Behavior*, *51*(4), 297–300. https://doi.org/10.1002/jocb.188
5. Charyton, C., Ivcevic, Z., Plucker, J. A., & Kaufman, J. C. (2009). Creativity Assessment in Higher Education. In *Handbook of Research on Assessment Technologies, Methods, and Applications in Higher Education* (Issue March 2017). IGI Global. https://doi.org/10.4018/9781605666679.ch005
6. de Alencar, E. M. L. S., & de Oliveira, Z. M. F. (2016). Creativity in Higher Education According to Graduate Programs' Professors. *Universal Journal of Educational Research*, *4*(3), 555–560. https://doi.org/10.13189/ujer.2016.040312
7. De Caroli, M. E., & Sagone, E. (2010). CREATIVE THINKING AND BIG FIVE FACTORS OF PERSONALITY MEASURED IN ITALIAN SCHOOL CHILDREN. *Faculty of Educational Science University of Catania, Italy*, 1–12.
8. Garcês, S., Pocinho, M., Jesus, S. N., & Viseu, J. (2016). The impact of the creative environment on the creative person, process, and product. *Revista Avaliação Psicológica*, *15*(2), 169–176. https://doi.org/10.15689/ap.2016.1502.05
9. Gaspar, D., & Mabic, M. (2015). Creativity in Higher Education. *Universal Journal of Educational Research*, *3*(9), 598–605. https://doi.org/10.13189/ujer.2015.030903
10. Gonyea, R. M., Kish, K. A., Kuh, G. D., Muthiah, R. N., & Thoma, A. D. (2003). *College Student Experiences Questionnaire Norms for the Fourth Edition*.
11. Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2014). Multivariate Data Analysis. In *Multivariate*

© 2022 Global Journals

Data Analysis (7th ed., pp. 23–60). Springer International Publishing. https://doi.org/10.1007/978-3-319-01517-0_3
12. Henriksen, D., Mishra, P., & Fisser, P. (2016). Infusing Creativity and Technology in 21st Century Education: A Systemic View for Change. *Educational Technology & Society*, *19*(3), 27–37.
13. John, B., & Kaufman, J. C. (2008). Gender Differences in Creativity. *The Journal of Creative Behavior*, *42*(2), 75–105. https://doi.org/10.1002/j.2162-6057.2008.tb01289.x
14. Karwowski, M., Lebuda, I., Wisniewska, E., & Gralewski, J. (2013). Big Five Personality Traits as the Predictors of Creative Self-Efficacy and Creative Personal Identity: Does Gender Matter? *The Journal of Creative Behavior*, *47*(3), 215–232. https://doi.org/10.1002/jocb.32
15. Kaufman, J. C. (2012). Counting the muses: Development of the Kaufman Domains of Creativity Scale (K-DOCS). *Psychology of Aesthetics, Creativity, and the Arts*, *6*(4), 298–308. https://doi.org/10.1037/a0029751
16. Kaufman, J. C., & Baer, J. (2012). Beyond New and Appropriate: Who Decides What Is Creative? In *Creativity Research Journal* (Vol. 24, Issue 1, pp. 83–91). https://doi.org/10.1080/10400419.2012.649237
17. Kaufman, J. C., & Beghetto, R. A. (2009). Beyond big and little: The four c model of creativity. *Review of General Psychology*, *13*(1), 1–12. https://doi.org/10.1037/a0013688
18. Kaufman, J. C., Plucker, J. A., & Baer, J. (2008). Essentials of creativity assessment. In *Essentials of psychological assessment series*. http://www.loc.gov/catdir/enhancements/fy0827/2008008343-d.html%5Cnhttp://www.loc.gov/catdir/enhancements/fy0827/2008008343-t.html
19. Kaufman, J. C., & Sternberg, R. J. (2010). *the cambridge handbook of creativity*. cambridge university press.
20. Kaya, A., & Bilen, S. (2016). Assessment of creativity based learning environment for major instrument courses: A case study of Buca Faculty of Education, Department of Music Education. *Journal of Human Sciences*, *13*(2), 3102. https://doi.org/10.14687/jhs.v13i2.3873
21. Lai, E. R., Yarbro, J., DiCerbo, K., & Geest, E. de. (2018). *Skills for Today: What We Know about Teaching and Assessing Creativity*.
22. Littleton, K., Wood, C., & Staarma, J. K. (2010). *International Handbook of Psychology in Education* (K. Littleton, C. Wood, & J. K. Staarma (Eds.); First). Emerald Group Publishing, 2010.
23. Loveless, A. M. (2006). Literature Review in Creativity, New Technologies and Learning. In *Futurelab* (Vol. 4, Issue July). https://doi.org/0-9544695-4-2
24. Matud, M. P., Rodríguez, C., & Grande, J. (2007). Gender differences in creative thinking. *Personality and Individual Differences*, *43*(5), 1137–1147. https://doi.org/10.1016/j.paid.2007.03.006
25. Mishra, P., & Henriksen, D. (2013). A NEW approach to defining and measuring creativity: Rethinking technology & creativity in the 21st century. *Tech Trends*, *57*(5). http://search.proquest.com/openview/f6f3cfbcabf3fb6f439f7aebcdaaf258/1?pq-origsite=gscholar&cbl=40581
26. Park, J., Kim, M., & Jang, S. (2017). Analysis of Factors Influencing Creative Personality of Elementary School Students. *International Education Studies*, *10*(5), 167. https://doi.org/10.5539/ies.v10n5p167
27. Parveen, S., & Ramzan, S. I. (2013). TO STUDY THE RELATIONSHIP BETWEEN CREATIVITY & PERSONALITY AMONG HIGHSCHOOL STUDENTS. *I-Manager's Journal on Educational Psychology*, *6*(3), 50–55.
28. Piirto, J. (2011). Creativity for 21st Century Skills. In *Creativity for 21st Century Skills* (pp. 1–12). Sense Publishers. https://doi.org/10.1007/978-94-6091-463-8_1
29. Robinson, K. (2011). out of our minds. In *Out of our minds: Learning to be Creative* (first edit). Capstone Publishing Ltd (a Wiley company), 2011.
30. Said-Metwaly, S., Noortgate, W. Van den, & Kyndt, E. (2017). Methodological Issues in Measuring Creativity: A Systematic Literature Review. *Creativity. Theories – Research - Applications*, *4*(2), 276–301. https://doi.org/10.1515/ctra-2017-0014
31. Schepers, P., & van den Berg, P. T. (2007). Social Factors of Work-Environment Creativity. *Journal of Business and Psychology*, *21*(3), 407–428. https://doi.org/10.1007/s10869-006-9035-4
32. Selby, E. C., Shaw, E. J., & Houtz, J. C. (2005). The Creative Personality. *Gifted Child Quarterly*, *49*(4), 300–314.
33. Silvia, P. J., Wigert, B., Reiter-Palmon, R., & Kaufman, J. C. (2012). Assessing creativity with self-report scales: A review and empirical evaluation. *Psychology of Aesthetics, Creativity, and the Arts*, *6*(1), 19–34. https://doi.org/10.1037/a0024071
34. Singh, T. K., & Kaushik, S. (2015). A Study of Creativity In Relation To Big 5 Personality Traits. *The International Journal of Indian Psychology*, *3*(1).
35. Snyder, B. (1967). 'Creative' students in science and engineering 1. *Higher Education Quarterly*, *21*(2), 205–218. https://doi.org/10.1111/j.1468-2273.1967.tb00234.x
36. *The Future of Jobs Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution* (Issue january). (2016). The World Economic Forum. https://doi.org/10.1177/1946756712473437

© 2022 Global Journals

37. Vincent, L. C., & Kouchaki, M. (2015). *Why Creative People Are More Likely to Be Dishonest*. https://hbr.org/2015/11/why-creative-people-are-more-likely-to-be-dishonest
38. Watson, J. S. (2014). Assessing creative process and product in higher education. *Practitioner Research in Higher Education Journal*, *8*(1), 89–100.
39. Werner, C. H., Tang, M. I. N., & Kaufman, J. C. (2014). The Chinese Version of the Revised Creativity Domain Questionnaire (CDQ-R): First Evidence for its Factorial Validity and Systematic Association with the Big Five. *The Journal of Creative Behavior*, *48*(4), 254–275. https://doi.org/10.1002/jocb.51
40. Wetzels, Odekerken-Schröder, & van Oppen. (2009). Using PLS Path Modeling for Assessing Hierarchical Construct Models: Guidelines and Empirical Illustration. *MIS Quarterly*, *33*(1), 177. https://doi.org/10.2307/20650284
41. World Economic Forum. (2015). New Vision for Education Unlocking the Potential of Technology. In *New Vision for Education: Unlocking the Potencial of Technology*. www.weforum.org

© 2022 Global Journals