The Spanish Journal of Psychology
2012, Vol. 15, No. 3, 1081-1088
http://dx.doi.org/10.5209/rev_SJOP.2012.v15.n3.39398

ISSN 1138-7416

A Correlational and Predictive Study of Creativity and Personality of College Students

María Teresa Sanz de Acedo Baquedano and María Luisa Sanz de Acedo Lizarraga

Universidad Pública de Navarra (Spain)

The goals of this study were to examine the relationship between creativity and personality, to identify what personality variables better predict creativity, and to determine whether significant differences exist among them in relation to gender. The research was conducted with a sample of 87 students at the Universidad Pública de Navarra, Spain. We administered the Creative Intelligence Test (CREA), which provides a cognitive measure for creativity and the Situational Personality Questionnaire (SPQ), which is composed of 15 personality features. Positive and significant correlations between creativity and independence, cognitive control, and tolerance personality scales were found. Negative and significant correlations between creativity and anxious, dominant, and aggressive personalities were also found. Moreover, four personality variables that positively predicted creativity (efficacy, independence, cognitive control, and integrity-honesty) and another four that negatively predicted creativity (emotional stability, anxiety, dominance, and leadership) were identified. The results did not show significant differences in creativity and personality in relation to gender, except in self-concept and in social adjustment. In conclusion, the results from this study can potentially be used to expand the types of features that support creative personalities.
Keywords: creativity, personality, college students.

El objetivo del presente estudio fue examinar las relaciones entre creatividad y personalidad, identificar qué variables de personalidad predicen mejor la creatividad y además, ver si existen diferencias significativas entre ellas en función del género. La investigación se llevó a cabo con una muestra de 87 estudiantes de la Universidad Pública de Navarra (España). Se administraron el Test de Inteligencia Creativa (CREA) que proporciona una medida cognitiva de la creatividad y el Cuestionario de Personalidad Situacional (CPS) que consta de 15 rasgos de personalidad. Se encontraron correlaciones significativas y positivas entre la creatividad y las escalas de personalidad independencia, control cognitivo y tolerancia, y significativas y negativas entre la creatividad y las de personalidad ansiedad, dominancia y agresividad. Además, se obtuvieron cuatro variables de personalidad que predecían de forma positiva la creatividad –eficacia, independencia, control cognitivo e integridad-honestidad– y otras cuatro que lo hacían de manera negativa –estabilidad emocional, ansiedad, dominancia y liderazgo–. Los resultados no mostraron diferencias significativas en creatividad y personalidad en función del género, excepto en autoconcepto y en ajuste social. En definitiva, esta investigación pretende ampliar el tipo de rasgos que pueden sustentar las personalidades creativas.
Palabras clave: creatividad, personalidad, estudiantes universitarios.

Correspondence concerning this article should be addressed to Mª Teresa Sanz de Acedo Baquedano. Departamento de Psicología y Pedagogía, Universidad Pública de Navarra. Campus de Arrosadía, 31006 Pamplona (Spain). Phone: +34-948169485. Fax: +34-948169169. E-mail: maite.sanzdeacedo@unavarra.es

Creativity is associated with multi-dimensional characteristics and thus can be examined from various points of view (Goswami, 1986; Isaksen, 1987; Sternberg & O'Hara, 2000; Hennessey & Amabile, 2010; Sanz de Acedo Lizarraga & Sanz de Acedo Baquedano, 2007). The majority of authors assume that creativity is a construct determined by: a) creative products that stand out because of their novelty, utility, quality, and importance; b) cognitive processes and conceptual structures that lead to creative ideas; c) the environment, which fosters or inhibits and evaluates the creation; d) personality traits that facilitate or predict creativity (Amabile, 1996; Fishkin, 1999). Consequently, a combination of social, cultural, and education factors as well as variables derived from the person is needed for creativity to occur.

Creativity can be considered an accumulation of capacities that are manifested under favorable conditions (Guilford, 1950), a special competency related to normal human cognition (Ward, Smith, & Finke, 1999), and a group of qualities associated with personality (Morris, 2000; Sternberg & Lubart, 1997). Creativity and personality are considered to have certain features in common, given that they both view the individual as a whole.

Personality variables and their relationship with creativity have been researched in different studies. An analysis of which personal features play a role in the creative process has been attempted (Eysenck, 1997; Feldhusen, 1995; Houtz et al., 1994) due to the importance attributed to both constructs in the explanation of individual differences (Helson, Roberts, & Agronick, 1995; Smith & Tegano, 1992). In studies conducted with the big five personality test (Caprara, Barbaranelli, & Borgogni, 1995), the most frequent finding between personality and creativity is that open-mindedness is strongly correlated with creativity (Batey, Chamorro-Premuzic, & Furnham, 2009, 2010; Dollinger, Urban, & James, 2004; Feist, 1999; Prabhu, Sutton, & Sauser, 2008; Shimonaka & Nakazato, 2007; Wang, 2003). By contrast, the remaining four features (neuroticism, extraversion, agreeableness, and conscientiousness) predict creativity in a less consistent manner even if one of them has a positive (for example, extraversion) or negative (for example, conscientiousness) correlation with creativity (Batey & Furnham, 2006).

Other studies have focused on studying a creative personality profile that includes a greater number of features than those measured solely through the big five personality test. For example, Feist (1998) conducted a meta-analysis in which the existence of a stable disposition was confirmed to be related to creative achievement. According to the author, the creative person is open-minded, perseverant, self-confident, ambitious, original, self-regulating, impulsive, and open to new experiences.

Along these lines, some researchers have proposed that the creative personality may be influenced by up to 19 features (Tardiff & Sternberg, 1988). Of these, compromise, motivation, ambiguity, tolerance, assertiveness, self-confidence, ideational behavior, curiosity, peer attitudes, and courage have been identified as some of the factors that improve a person's creative capacities and greatly influence the creative personality (Amabile, 1996; Amabile & Brandeis, 1982; Barron & Harrington, 1981; Batey, Chamorro-Premuzic, & Furnham, 2010; Feist & Barron, 2003; George & Zhou, 2001; Kashdan & Fincham, 2002; Stafford, Ng, Moore & Bard, 2010; Sternberg & Lubart, 1993; Urban, 1991, 1995). The existence of different creative personality styles in college students has also been observed (Limiñana, Corbalán, & Sánchez-López, 2010).

This investigation aimed to evaluate whether other personality characteristics, in addition to open-mindedness as tested by the big five factors, are correlated with and can predict creativity in college students.

This work also studied differences in creativity and personality variables with respect to gender. Numerous studies in the literature have related creativity and personality variables, including gender with creativity (Baer, 1997; Bornstein & Masling, 2002; Chan, 2005; Conti, Collins, & Picariello, 2001) and gender with personality (Chavez-Eakle, Lara, & Cruz-Fuentes, 2006; Gough, 1992; Stoltzfus, Leigh, Vredenburg, & Thyrum, 2011), but a consistent conclusion is lacking. In some studies, women surpassed men in creative capacity (Reuter et. al., 2005), whereas men surpassed women in other studies (Cox, 2002; Dollinger, Dollinger, & Centeno, 2005). Similarly, conflicting results have been reported in studies analyzing the type of personality in creative men and women, because similar (Szobiova, 2006) as well as different personalities (Labouvie-Vief, 1994) have been found.

The following working hypothesis was formulated: 1) among others, the personality variables that primarily have a positive and significant correlation with creativity will be self-concept, independence, cognitive control, and tolerance; the creative person trusts his/her capabilities, likes to work independently, monitors his/her actions, and is strong against difficulties; 2) some personality features will predict creative behavior, because the creator can influence his/her actions; and 3) college students will not show statistically significant differences related to gender with respect to creativity and in the majority of the personality variables.

Method

Participants

The sample consisted of 87 students aged 19 to 36 years (M = 20.79, SD = 2.52), including 48 men and 39 women. The selection process was not random but rather depended on the accessibility of the researchers to different students at the School of Human and Social Sciences of the Public University of Navarra. The sample for this study was

https://doi.org/10.5209/rev_SJOP.2012.v15.n3.39398 Published online by Cambridge University Press

composed of students seeking degrees in Education and Social Work and included a wide age range, mainly because of the presence of students older than 25 years old who had access to these career tracks as regular students.

Instruments and Materials

1. Creative Intelligence, CREA (*Corbalán et al., 2003*). This test aims to be a cognitive measure of creativity by asking the participant to generate questions regarding graphic material in a limited amount of time. The participant is asked to formulate the most possible questions related to the stimulus presented. The test, designed to be applied to an individual or group, includes two worksheets for adolescents and adults (A and B, respectively) and one for children (C). For this study, we selected sheet A. The test evaluates the creativity construct with stability and confidence, provides a global score, and has a high correlation with other creativity tests, such as Guilford's Creativity Test (r = .79). In addition, the reliability of worksheet A is very high (α = .87), which means that it precisely measures the latent characteristic supposedly evaluated by the test. The CREA test was selected for several reasons: a) it was created with a Spanish speaking sample; b) it measures the creativity with only one score, and c) it measures the elaboration of questions, one of the key facets in which creativity is manifested. With this test, an evaluation of the creative ability of an individual can be obtained through a variable that, not being strictly of productive execution, forces the cognitive system to activate the mechanisms involved in a creative task and also yields an indirect reference.

2. Situational Personality Questionnaire, SPQ (Fernández, Seisdedos, & Mielgo, 1998). This questionnaire has 15 personality variables (emotional stability, anxiety, self-concept, efficacy, self-esteem and self-confidence, independence, dominance, cognitive control, sociability, aggressiveness, social adjustment, tolerance, social intelligence, integrity-honesty, and leadership) and three response validity measurements (sincerity, social desirability, and response control). To evaluate all of the possible variables, each with a separate score, the questionnaire has 233 phrases whose writing alludes to different behavior styles and tendencies. With the exception of validity, the scales that measure personality evaluate each of these variables with a range of 19 and 26 points. The questionnaire, for adolescents as well as adults, can be administered individually or in groups and has approximately a 35 to 50 minute duration. The test's reliability coefficients, with the exception of the validity scale-named response control, do not have values lower than (α = .88). In more than half of the scales, the coefficients are equal to or greater than (α = .90). The SPQ variables have also been correlated with the variables of other tools such as the Eysenck Personality Inventory (EPI) (Eysenck & Eysenck, 1987). Significant correlations have been obtained that may be reflective of the validity of the SPQ, such as between extraversion in EPI and sociability in SPQ (r = .60). The SPQ test was selected mainly because it allows for the evaluation of a wider number of consistent features and behavioral tendencies of individuals in different life situations and also because of the simplicity of its language.

Procedures

The procedure followed in this study basically consisted of gathering data and then analyzing the data related to the variables of interest. We administered the CREA to measure creativity and the SPQ to evaluate personality. From the SPQ, we eliminated three validity measurements of the answers (sincerity, social desirability, and response control), and we used the 15 scales that are meant to evaluate personality. Before the application of the test, which was conducted during the last week of the 2008-2009 academic period, we informed the participants about the objective of the study. We requested their voluntary collaboration in the study, ensuring them that personal information would be absolutely confidential during its analysis as well as in its possible publication. Moreover, we informed them that they could have access to the results once the data were analyzed.

Results

The results of this study are divided into three sections: a) correlations between creativity and personality; b) prediction of creativity through personality variables; and c) differences between gender for creativity and personality. In these sections, we attempt to answer the three main questions of this study. The statistical analyses used were the following: Pearson correlation (r) to verify the relationship between creativity and personality; multiple linear regression analysis to identify possible predictive variables of creativity; and Student's t-test to detect differences between gender for the CREA and SPQ. The analyses were conducted using the program PASW Statistics 18 for Windows.

Correlations between creativity and personality

Significant correlations between creativity and personality features that make up the SPQ are shown in Table 1. On the one hand, creativity is significantly and positively correlated with cognitive control (r = .85), independence (r = .80), and tolerance (r = .75) and to a lesser extent with self-esteem and self-confidence, efficacy, and self-concept. On the other hand, creativity is negatively and significantly correlated with anxiety (r = –.74), dominance (r = –.73), and aggressiveness (r = –.71). Moreover, a significant and negative correlation, although more moderate, between social adjustment and leadership was found. These results confirmed the first hypothesis of this study.

https://doi.org/10.5209/rev_SJOP.2012.v15.n3.39398 Published online by Cambridge University Press

Table 1
Significant correlations between creativity (CREA) and some personality variables for the total sample

CREA	Positive	Cgc	Ind	Tol	Se	Eff	Sc
		85**	.80**	.75**	.68**	.67**	.60**
	Negative	Anx	Dom	Agr	Sadj	Lead	—
		–.74**	–.73**	–.71**	–.63**	–.41**	—

CREA= Creative Imagination Test; Cgc = Cognitive control; Ind = Independence; Tol = Tolerance; Se = Self-esteem and self-confidence; Eff = Efficacy; Sc = Self-concept; Anx = Anxiety; Dom = Dominance; Agr = Aggressiveness; Sadj = Social adjustment; Lead =Leadership; Sta = Emotional stability; Soc = Sociability; Sint = Social intelligence; Inh = Integrity-honesty.
** $p > .01$.

Predictive variables of creativity

We conducted a linear regression analysis with all of the SPQ variables to determine the better predictors of creativity. Analysis of the results shown in Table 2 revealed that 8 of the 15 personality variables studied predict creativity in a statistically significant manner [R^2 = .90; ΔR^2 = .90; $F(8, 78) = 97.73$; $p \leq .001$] although in different ways. Efficacy, independence, cognitive control, and integrity-honesty are positive predictors, while emotional stability, anxiety, dominance, and leadership variables are negative predictors. Of the four personality variables that positively predict creativity, two variables (independence and cognitive control) also are positively and significantly correlated with creativity. Moreover, of the personality variables that are negative predictors, two variables (anxiety and dominance) also have a significant and negative correlation with creativity. Therefore, the second hypothesis of this study was partially confirmed, as some personality variables have predicted creative behavior.

Table 2
Multiple linear regression analysis with Situational Personality Questionnaire (SPQ) variables that best predict creativity for the total sample

SPQ	St.β	*t*
Emotional stability	–.09	–3.06**
Anxiety	–.14	–2.97**
Efficacy	.25	4.73***
Independence	.22	4.96***
Dominance	–.17	–4.29***
Cognitive control	.31	5.44***
Integrity-honesty	.07	2.08*
Leadership	–.09	-2.10*
$F(8, 78) = 97.73$**	Adj.R^2 = .90	

* $p > .05$ ** $p > .01$ *** $p > .001$.

Gender differences in creativity and personality

Student's t-tests revealed neither statistically significant differences between men and women with respect to creativity $t(85) = –.127$, $p < .899$ nor differences in the majority of the personality variables, with the exception of self-concept, $t(85) = 2.141$ $p < .035$ which was statistically significant in favor of men, and social adjustment, $t(85) = –2.658$, $p < .009$, which was statistically significant in favor of women. Thus, the third hypothesis of this study was almost completely confirmed, except that men have better self-perception than women and that women better accept social norms and fulfill their obligations.

Discussion

The main aim of this study was to evaluate which personality features are correlated with and predict creativity and to identify any significant differences in those variables that are related to gender. With respect to the correlations between creativity and personality variables, six are statistically significant ($r > .70$), although some have a positive correlation and others have a negative correlation. These results suggest that creative individuals exercise good cognitive control in the form of persistence and resistance to distraction, a quality that is considered necessary for creative functioning in different situations (Feist, 1999). These individuals are independent, autonomous, and self-sufficient; show freedom of action at the time of making their own decisions and initiatives; and their own interests take precedence over the groups. Indeed, these results support and expand the information obtained in other studies (Dollinger, Urban, & James, 2004; Prabhu, Sutton, & Sauser, 2008; Shimonaka & Nakazato, 2007). Moreover, creative individuals tolerate ambiguity, which implies that they have the capacity to consider ideas from different perspectives and have liberal thoughts with favorable tendencies towards values, styles, ways of life, and different cultures (Martindale & Dailey, 1996). Other positive and significant correlations that were also found between

https://doi.org/10.5209/rev_SJOP.2012.v15.n3.39398 Published online by Cambridge University Press

Table 3
Means, standard deviations, and Student's t-test results from the Creative Intelligence Test (CREA) and the Situational Personality Questionnaire (SPQ) according to gender

Variables	Men (n = 48)		Women (n = 39)		$t(85)$	p
	M	*SD*	*M*	*SD*		
CREA	14.29	4.17	14.41	4.49	–.13	.90
Sta	12.19	5.55	11.97	5.42	.18	.86
Anx	13.64	5.41	15.72	4.88	–1.85	.07
Sc	15.27	5.06	12.69	6.18	2.14***	.03
Eff	18.50	3.22	18.38	4.05	.15	.88
Se	16.54	3.83	15.05	4.32	1.70	.09
Ind	11.75	4.93	12.08	5.36	–.30	.77
Dom	12.21	5.12	11.38	5.01	.75	.45
Cgc	15.29	4.03	13.87	4.36	1.58	.12
Soc	13.67	5.80	14.28	6.47	–.47	.64
Agr	13.35	4.86	12.77	5.83	.51	.61
Sadj	12.46	4.01	14.77	4.05	–2.66***	.01
Tol	14.10	3.30	14.13	3.55	–.03	.97
Sint	11.04	4.36	10.23	4.18	.88	.38
Inh	19.58	4.06	17.95	4.69	1.74	.08
Lead	13.85	3.85	14.72	3.67	–1.06	.29

CREA= Creative Imagination Test; Sta = Emotional stability; Anx = Anxiety; Sc = Self-concept; Eff = Efficacy; Se = Self-esteem and self-confidence; Ind = Independence; Dom = Dominance; Cgc = Cognitive control; Soc = Sociability; Agr = Aggressiveness; Sadj = Social adjustment; Tol = Tolerance; Sint = Social intelligence; Inh = Integrity-honesty; Lead = Leadership.
* $p > .05$ ** $p > .01$ *** $p > .001$.

personality and creativity, although more moderate, indicate that creative individuals trust their possibilities; have initiative and good self-esteem; and are competent, efficient, and enterprising (Barron & Harrington, 1981).

Likewise, we also found negative correlations, which show that anxious students, who are nervous, restless, and irritable and exhibit tension, do not have creative responses. These results contradict those from other studies that highly creative individuals have higher anxiety (Carlsson, 2002). A possible explanation for our results could be that the study subjects performed a task that was not typically academic: formulating creative questions about a surprising illustration. Although the task may have increased their intrinsic motivation and perseverance to improve their performance of such an activity (O'Connor & Paunonen, 2007; Prabhu et al., 2008), it may have interfered in their creative process. The novelty associated with performing a task that involves a cognitive creative process could have negatively influenced Pearson's coefficients between anxiety and creativity. Additionally, students who are the most dominant, competitive, energetic, hostile, aggressive, and with little social adjustment and orientation towards leadership have been shown to have lower creativity indexes.

Another objective of this study was to see whether any of the SPQ variables can predict specific characteristics of creative individuals. Among others, we found that tolerance, independence, efficacy, cognitive control, and self-concept can influence a creative person's actions. However, it would be interesting to further analyze the influence on and contribution of each of these variables with regard to creativity to provide a deeper understanding of the creativity construct and of the personal characteristics that influence creativity. Zabelina and Robinson (2010) conducted a study on cognitive control and creativity.

The results obtained in this study show that there are no significant differences with respect to gender in the evaluated subjects, in the variables of creativity measured with the CREA test, or in the majority of the personality variables evaluated with the SPQ, with the exception of self-concept, which was higher in men, and social adjustment, which was higher in women. These results indicate that men have a higher opinion of themselves and their self-image and that they do not depend on other's estimations of them, which points to a greater feeling of worth. Meanwhile, women are more preoccupied than men with social norms and tend to follow the rules and obligations that society demands of them without further questioning. These differences could be attributed to differences in the upbringing between men and women. Thus, we can assume that men are taught to manifest a high sense of self-worth in their possibilities, while women are more commonly directed to develop behaviors that are expected of them by society (Mirón, Otero, & Luengo, 1989). Similarly to what has been observed in other studies, we conclude that gender does not have much influence on

https://doi.org/10.5209/rev_SJOP.2012.v15.n3.39398 Published online by Cambridge University Press

creative or personal responses (Jiliang & Baoguo, 2007; Kaufman, Baer, & Gentile, 2004).

Despite the conclusive results of this study and the fact that the majority of the data confirmed conclusions from previous studies, this work also has some limitations. First, the sample size was not very large, which led us to be more prudent in the generalizability of our conclusions. Second, both the tools used for measuring creativity and personality have been assessed only with Spanish speaking populations. Lastly, other relevant variables that play a role in the nature of creativity, such as motivation, have not been evaluated. For this, it would be necessary to continue researching the relationship between creativity and personality in the college environment and in other stages of education with tools that evaluate not only creative products but also the underlying processes in the individual's mind.

References

Amabile, T. M. (1996). *Creativity in context: Update to the social psychology of creativity.* Boulder, CO: Westview Press.

Amabile, T. M., & Brandeis, U. (1982). Social psychology of creativity: A consensual assessment technique. *Journal of Personality and Social Psychology, 43*, 997–1013. http://dx.doi.org/10.1037/0022-3514.43.5.997

Baer, J. (1997). Gender differences in the effects of anticipated evaluation on creativity. *Creativity Research Journal, 10,* 25–31. http://dx.doi.org/10.1207/s15326934crj1001_3

Barron, F. X., & Harrington, D. M. (1981). Creativity, intelligence and personality. *Annual Review of Psychology, 32*, 439–476. http://dx.doi.org/10.1146/annurev.ps.32.020181.002255

Batey, M., Chamorro-Premuzic, T., & Furnham, A. (2009). Intelligence and personality as predictors of divergent thinking: The role of general, fluid and crystallised intelligence. *Thinking Skills and Creativity, 4*, 60–69. http://dx.doi.org/10.1016/j.tsc.2009.01.002

Batey, M., Chamorro-Premuzic, T., & Furnham, A. (2010). Individual differences in ideational behavior: Can the Big Five and psychometric intelligence predict creativity scores? *Creativity Research Journal, 22*, 90–97. http://dx.doi.org/10.1080/10400410903579627

Batey, M., & Furnham, A. (2006). Creativity, intelligence, and personality: A critical review of the scattered literature. *Genetic, Social and General Psychology Monographs, 132*, 455–929. http://dx.doi.org/10.3200/MONO.132.4.355-430

Bornstein, R. F., & Masling, J. M. (2002). *The Psychodynamics of gender and gender role*. Washington, DC: American Psychological Association.

Caprara, G. V., Barbaranelli, C., & Borgogni, L. (1995). *Cuestionario "Big Five", manual* [Questionary "Big Five", manual]. Madrid, Spain: TEA Ediciones.

Carlsson, I. (2002). Anxiety and flexibility of defense related to high or low creativity. *Creativity Research Journal, 14,* 341–349. http://dx.doi.org/10.1207/S15326934CRJ1434_5

Conti, R., Collins, M., & Picariello, M. L. (2001). The impact of competition on intrinsic motivation and creativity: Considering gender, gender segregation and gender role orientation. *Personality and Individual Differences, 31*, 1273–1289. http://dx.doi.org/10.1016/S0191-8869(00)00217-8

Chan, D. W. (2005). Self-perceived creativity, family hardiness, and emotional intelligence of Chinese gifted students in Hong Kong. *The Journal of Secondary Gifted Education, 16,* 47–56. http://dx.doi.org/10.4219/jsge-2005-471

Chavez-Eakle, R. A., Lara, M. C., & Cruz-Fuentes, C. (2006). Personality: A possible bridge between creativity and psychopathology? *Creativity Research Journal, 18*, 27–38. http://dx.doi.org/10.1207/s15326934crj1801_4

Corbalán, F. J., Martínez, F., Donolo, D. S., Alonso, C., Tejerina, M., & Limiñana, R. M. (2003). *Inteligencia Creativa, CREA, Manual* [Creative Intelligence, CREA, Manual]. Madrid, Spain: TEA Ediciones.

Cox, B. F. (2002). *The relationship between creativity and self-directed learning among adult community college students.* (Unpublished doctoral dissertation). University of Tennessee, Knoxville, TN.

Dollinger, S. J., Dollinger, S. M. C., & Centeno, L. (2005). Identity and creativity. *Identity: An International Journal of Theory and Research, 5*, 315–339. http://dx.doi.org/10.1207/s1532706xid0504_2

Dollinger, S. J., Urban, K. K., & James, T. A. (2004). Creativity and openness: Further validation of two creative product measures. *Creativity Research Journal, 16*, 35–47. http://dx.doi.org/10.1207/s15326934crj1601_4

Eysenck, H. J. (1997). Creativity and personality. In M. A. Runco (Ed.), *The creativity research handbook*, (Vol. 1, pp. 41-46). Cresskill, NJ: Hampton Press.

Eysenck, H. J., & Eysenck, S. B. G. (1987). *Cuestionario de Personalidad EPI* [Personality Questionnaire EPI]. Madrid, Spain: TEA Ediciones.

Feist, G. (1998). A meta-analisis of personality. In M. A. Runco (Ed.), *The creativity research handbook,* (Vol. 1, pp. 41-46). Cresskill, NJ: Hampton Press.

Feist, G. (1999). The influence of personality on artistic and scientific creativity. In R.J. Sternberg (Ed.), *Handbook of creativity* (pp. 273-296). New York, NY: Cambridge University Press.

Feist, G., & Barron, F. (2003). Predicting creativity from early to late adulthood: Intellect, potencial, and personality. *Journal of Research in Personality, 37*, 62–88. http://dx.doi.org/10.1016/S0092-6566(02)00536-6

Feldhusen, J. F. (1995). Creativity: A knowledge base, metacognitive skills, and personality factors. *Journal of Creative Behavior*, *29*, 255–268. http://dx.doi.org/10.1002/j.2162-6057.1995.tb01399.x

Fernández, J. L., Seisdedos, N., & Mielgo, M. (1998). *Cuestionario de Personalidad Situacional, CPS, Manual* [Situational Personality Questionnaire, CPS, Manual]. Madrid, Spain: TEA Ediciones.

Fishkin, A. S. (1999). Issues in studying creativity in youth. In A. S. Fishkin, B. Cramond, & P. Olszewski-Kubilius (Eds.),

Investigating creativity in youth: Research and methods (pp. 3-26). Cresskill, NY: Hampton Press, INC.

George, J., & Zhou, J. (2001). When openness to experience and conscientiousness are related to creative behavior: An interactional approach. *Journal of Applied Psychology, 86*, 513–524. http://dx.doi.org/10.1037//0021-9010.86.3.513

Gough, H. G. (1992). Assessment of creative potential in psychology and the development of a creative temperament scale for the CPI. In J. C. Rosen & P. McReynolds (Eds.), *Advances in psychology assessment*. New York: NY: Plenum.

Goswami, U. (1986). Children's use of analogy in learning to read: A developmental study. *Journal of Experimental Child Psychology*, *42*, 73–83. http://dx.doi.org/10.1016/0022-0965(86)90016-0

Guilford, J. P. (1950). Creativity. *American Psychologist, 5*, 444–454. http://dx.doi.org/10.1037/h0063487

Helson, R., Roberts, B., & Agronick, G. (1995). Enduringness and change in creative personality and the prediction of occupational creativity. *Journal of Personality and Social Psychology, 69*, 1173–1183. http://dx.doi.org/10.1037/0022-3514.69.6.1173

Hennessey, B. A., & Amabile, T. M. (2010). Creativity. In S. T. Fiske (Ed.), *Annual Review of Psychology, 61*, 569–598. Palo Alto, CA: Annual Reviews. http://dx.doi.org/10.1146/annurev.psych.093008.100416

Houtz, J., LeBlanc, E., Butera, T., Arons, M. F., Katz, S., Orsini-Romano, C., & McGurie, A. (1994). Personality type, creativity, and classroom teaching style. *Journal of Classroom Interaction, 29*(2), 19–24.

Isaksen, S. G. (1987). *Frontiers of creativity research: Beyond the basics*. Buffalo: NY: Vearly.

Jiliang, S., & Baoguo, S. (2007). Effects of gender and types of material on creativity. *Psychological Science (China), 30*, 285–288.

Kashdan T. B., & Fincham, F. D. (2002). Facilitating creativity by regulating curiosity. *American Psychologist, 57*, 373–374. http://dx.doi.org/10.1037//0003-066X.57.5.373

Kaufman, J. C., Baer, J., & Gentile, C. A. (2004). Differences in gender and ethnicity as measured by ratings of three writing task. *Journal of Creative Behavior 38*, 56–69. http://dx.doi.org/10.1002/j.2162-6057.2004.tb01231.x

Labouvie-Vief, G. (1994). Women's creativity and images of gender. In B. F. Turner & L. E. Troll (Eds.), *Women growing older: Psychological perspectives* (pp. 140-168). Thousand Oaks, CA: Sage.

Limiñana R. M., Corbalán, J., & Sánchez-López, M. P. (2010). Creatividad y estilos de personalidad: Aproximación a un perfil creativo en estudiantes universitarios [Creativity and Personality Styles: An approach to creative profiles in university students]. *Anales de Psicología, 26*, 273–278.

Martindale, C., & Dailey, A. (1996). Creativity, primary process cognition and personality. *Personality and Individual Differences*, *20*, 409–414. http://dx.doi.org/10.1016/0191-8869(95)00202-2

Mirón, L., Otero, J. M., & Luengo, A. (1989). Empatía y conducta antisocial [Empathy and antisocial behavior]. *Análisis y Modificación de Conducta, 15*, 239-254.

Morris, T. (2000). Psychological characteristics and talent identification in soccer. *Journal of Sports Sciences, 18*, 715–726. http://dx.doi.org/10.1080/02640410050120096

O'Connor, M. C., & Paunonen, S. V. (2007). Big Five personality predictors of post-secondary academic performance. *Personality and Individual Differences, 43*, 971–990. http://dx.doi.org/10.1016/j.paid.2007.03.017

Prabhu, V., Sutton, C., & Sauser, W. (2008). Creativity and certain personality traits: Understanding the mediating effect of intrinsic motivation. *Creativity Research Journal, 20,* 53–66. http://dx.doi.org/10.1080/10400410701841955

Reuter, M., Panskepp, J., Schnabel, N., Kellerhoff, N., Kempel, P., & Henning, J. (2005). Personality and biological markers of creativity. *European Journal of Personality, 19*, 83–95. http://dx.doi.org/10.1002/per.534

Sanz de Acedo Lizarraga, M. L., & Sanz de Acedo Baquedano, M. T. (2007). *Creatividad individual y grupal en la educación* [Individual and group creativity in education]. Madrid, Spain: Ediciones Internacionales Universitarias, Eiunsa, S.A.

Shimonaka, Y., & Nakazato, K. (2007). Creativity and factors affecting creative ability in adulthood and old age. *Japanese Journal of Educational Psychology, 55,* 231–243.

Smith, D. E., & Tegano, D. (1992). Relationship between scores on two measures of personality: Self-image and creativity. *Psychological Reports, 71*, 43–49. http://dx.doi.org/10.2466/pr0.1992.71.1.43

Stafford, L. D., Ng, W., Moore, R. A., & Bard, K. A. (2010). Bolder, happier, smarter: The role of extraversion in positive mood and cognition. *Personality and Individual Differences, 48*, 827–832. http://dx.doi.org/10.1016/j.paid.2010.02.005

Sternberg, R. J., & Lubart, T. I. (1993). Creative giftedness: A multivariate investment approach. *Gifted Child Quarterly, 37*, 7–15. http://dx.doi.org/10.1177/001698629303700102

Sternberg, R. J., & Lubart, T. I. (1997). *La creatividad en una cultura conformista*. *Un desafío a las masas* [Defying the crowd. Cultivating creativity in a culture of conformity. New York: The Free Press]. Barcelona, Spain: Ediciones Paidós.

Sternberg, R. J., & O'Hara, L. A. (2000). Inteligence and Creativity. In R. J. Sternberg (Ed.), *Handbook of intelligence* (pp. 609-628). New York, NY: Cambridge University Press.

Stoltzfus, G., Leigh, B., Vredenburg, D., & Thyrum, E. (2011). Gender, gender role, and creativity. *Social Behavior and Personality, 39*, 425–432. http://dx.doi.org/10.2224/sbp.2011.39.3.425

Szobiova, E. (2006). The five personality dimensions in relation to creative thinking of adolescents. *Studia Psychologica, 48*, 241–249.

Tardiff, T. Z., & Sternberg, R. J. (1988). What do we know about creativity? In R. J. Sternberg (Ed.), *The nature of creativity: Contemporary psychological perspectives* (pp. 429-440). New York, NY: Cambridge University Press.

Urban, K. K. (1991). Recent trends in creativity research and theory in Western Europe. *European Journal for High Ability, 1*, 99–113. http://dx.doi.org/10.1080/0937445900010114

Urban, K. K. (1995). Different models in describing, exploring, explaining and nurturing creativity in society. *European Journal for High Ability, 6*, 143–159. http://dx.doi.org/10.1080/0937445940060243

Wang, X. (2003). *A study about students' creative tendency and their perception of teachers' classroom behavior*. (Unpublished master's thesis). Beijing Normal University, China.

Ward, T. B., Smith, S. M., & Finke, R. A. (1999). Creative cognition. In R. J. Sternberg (Ed.), *Handbook of creativity* (pp. 189-212). New York, NY: Cambridge University Press.

Zabelina, D. L., & Robinson, M. D. (2010). Creativity as flexible cognitive control. Psychology of aesthetics, creativity and the arts, *4*, 136–143. http://dx.doi.org/10.1037/a0017379

Received July 2, 2010
Revision received October 7, 2011
Accepted November 2, 2011