

Article

Creative Talent and Personality: A Primary Education Study

Ana F. Hernández Ortiz ^{1,*}, Olivia López-Martínez ¹ and Francisco J. Corbalán Berná ²

¹ Department of Evolutionary and Educational Psychology, University of Murcia, Campus de Espinardo s/n, 30100 Murcia, Spain; olivia@um.es

² Department of Personality and Psychological Treatment, University of Murcia, Campus de Espinardo s/n, 30100 Murcia, Spain; corbalan@um.es

* Correspondence: anafuensanta.hernandez@um.es

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Abstract: We hope to answer the following questions with this study: What are the most characteristic personality traits of students with creative talent? Are there personality traits that allow a subject to promote his or her creativity? Lastly, is there a relationship between these personality traits and a neurobiological basis for creativity? The results of this study should serve to identify and develop creative talents and to continue stimulating their divergent thinking. The BFQ-NA questionnaire, which evaluates five personality traits, and the CREA and PIC-N creativity tests, which measure creative intelligence and imagination, respectively, were administered to a sample of 244 students aged ten to twelve years old. The data from the statistical analysis indicate that Conscientiousness is the most predictive trait for creativity for CREA ($B = 0.18, p < 0.001$), as well as for PIC in terms of narrative creativity ($B = 1.044, p < 0.001$) and graphic creativity ($B = 0.213, p = 0.003$ and total $B = 1.259, p < 0.001$). Other statistically significant traits, albeit to a lesser degree than Conscientiousness, were Openness and Emotional Instability.

Keywords: personality; creativity; emotional instability; openness; conscientiousness

1. Introduction

There is a consensus among experts that have studied talent, such as Pfeiffer (2015) [1] or Sternberg (2006) [2], that creativity is a precious human resource that requires cultivation. Creativity is one of the higher-order psychic functions that differentiates humans from other living creatures. To produce something new is to create, to add value. Talent is the whole set of human competencies that are put into practice to achieve one's own well-being or that of others. Over the course of an individual's life, he or she acquires experience for the development of aptitudes.

According to Feldhusen (1995) [3], talent is the specific ability or aptitude that facilitates learning or development in a specific occupation or in the mastery of occupations. It grows while an individual develops those specific skills. Talent defines a specific occupation and is coupled with practice. If combined with creative or divergent abilities, they will be innovators and creators of new paradigms.

Creativity has been conceptualized as a process, while talent is considered an attribute, both of which share the characteristic of being able to be promoted with the creation of conditions that permit their development and expression (Acosta, Bastida, and Suarez, 2016) [4].

Since the beginning of time, there have been many definitions of and beliefs about creativity: From being understood as a mystic gift only recognized in a select few, being considered a struggle between the internal self and the external self, to believing it was a mental illness, and finally its recognition as an aptitude and capability that can be measured and learned, thanks to authors such as Guilford (1950) [5] or Torrance (1974) [6]. Starting in the second half of the 20th century and into the

21st century, other authors, such as Hernandez Ortiz (2017) [7], speak of the importance of developing creativity in the person, product, environment, and process, as well as all the dimensions that refer to flexibility, fluency, and originality. In the 21st century, creativity should be developed in all areas, both social and political.

To explain creativity, we can say it is a multidimensional construct that can be defined, theorized about, and verified from different perspectives, giving rise to different models according to the focus of the object of study for the different dimensions: Person, product, process, and environment (Sterngber and Lubart (1999) [8]).

The person was chosen as one of the four dimensions that make up creativity for this study. This investigation focuses on identifying who possesses creative talent, recognizing their characteristics and personality traits to verify the existence of creativity not only in what they do, but in who does it, and whether these traits indicate a common neurobiological base for creativity. As explained by De la Torre (2003) [9], various types of creativity can be recognized in people—from those with genetic capabilities to those with environmental capabilities.

What is the purpose of identifying the traits of a creative person? According to Hernandez Ortiz (2017) [7], firstly, to demystify one of many myths that exist about creative people: The image of a rebellious person succumbed to pathology that has, for centuries, converted creative people into individuals with pathological traits that needed to be cast out of society. Secondly, this same belief in heredity has produced still another myth: That capability is inherited and not learned, which has presently been completely demystified in the educational field with credible data on individuals learning creativity and thus developing and stimulating their abilities and capabilities.

Starting from these demystifications, we understand creativity as an aptitude and an attitude to be improved. In this way, the importance of studying personality as the appropriate behavioral, emotional, and cognitive method for the perception and interaction with the environment and how it relates to creativity is revealed (De la Torre, 2003) [9]. This perspective breaks with the certainty assumed by researchers from the first half of the 20th century that personality is stable across different types of situations by asserting that an interactive relationship exists between the subject's personality, in constant definition and re-definition, and the concrete contextual situation in which both elements interact; moreover, it asserts creativity as a capability and a skill that can be learned and measured (Corbalán, 2008) [10].

It is important to understand what a creative person is like, and, to do so, Costa and McCrae's Big Five Personality Traits model (1992) [11] will be used, as it has had a big impact on the study of creativity. Classifying personality traits and searching for basic dimensions and taxonomies to organize the large quantity of existing attributes among different individuals has given this model great importance in studies. The root of this analysis of personality descriptors of common language was defining the five-dimensional structure. Later, studies on the structures of these traits based on questionnaires converged with lexical tradition and the Big Five model. This model assumes that traits exhibit a hierarchical structure, and suggests ratings on five facets (neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness). Identifying these traits supposes an important basis for developing creativity and understanding how to detect a creative personality.

More in line with this study, it is important to verify whether these traits are present at different levels of education, and, more specifically, in primary education. Authors such as Garaigordobil and Perez (2003) [12] have performed studies on personality traits in childhood and both graphic and verbal creativity. The results show relationships between body schema and personality traits such as enthusiasm, confidence, or positive self-image, although relationships also exist with emotional instability, insecurity, and feelings of guilt. Nevertheless, graphic creativity and aesthetic appreciation were not related.

From the studies reviewed, the personality traits most highly related with creativity were intrinsic motivation, playful spirit, and curiosity, as well as independence (Garaigordobil and Perez, 2003) [12].

In addition to these personality traits, which present specific behavior, there is an area of research that proposes an emphasis on creativity from an integrative perspective and evaluates it interactively with all parameters: Products, processes, environments, and neurobiology, given that brain activity would be a key area in the development, enhancement, and action of creativity (Csikszentmihalyi, 2006) [13]. In this sense, speaking of brain processes and activity together with personality, the neurobiological basis of creativity cannot be overlooked. Until relatively recently, it was believed that different brain functions were located in specific areas of the brain. Currently, thanks to studies such as those by Chavez (2004) [14], Blakemore and Frith (2007) [15], or Rendón (2009) [16], it has been shown that the brain is interconnected and several areas function simultaneously. Thanks to medical imaging techniques (Galvez, 2013) [17], it has been shown that the brain functions in a manner similar to a symphonic orchestra, since the various areas of the brain interact with each other, creating multiple simultaneous interconnections.

Neuroplasticity is the capability of the brain to adapt and significantly change its structure. These changes may arise as responses to experiences and as a function of thinking. This last aspect has been verified with experiments, such as with taxi drivers in London or violinists with blindfolded hands. This has also been a great discovery that has facilitated a break with the previous view that supposed a specific and fixed number of neurons, which were lost over the years, with fixed patterns, non-modifiable functions, and the specificity of each hemisphere. As such, and with all these new elements, creativity fits increasingly better with general brain function, and the importance of its relation with neurobiology is becoming more evident (Chávez; Graff-Guerrero; García-Reina; Vaugier, and Cruz-Fuentes, 2004) [14].

The hemispheric differentiation of the brain and its relationship with creativity has also been discussed. As for the specificity of the right hemisphere, studies such as Romero's (1996) [18] or Gazzaniga's (2002) [19] affirm that, within brain functions, there are areas specialized in specific tasks; however, there is no distinction between the hemispheres regarding the work performed when receiving sensory information. Both hemispheres are activated. As such, studies that defend the idea that each half of the brain functions separately have been invalidated through the use of dynamic imaging techniques.

This finding allows us to train the brain to obtain satisfactory results, both in the development of positive emotions as well as in creativity and each individual's capability to learn; this shows that creativity is a capability that is able to be learned and not just a hereditary condition. In the experiment Todd Sampson carried out for a television series for the Australian Broadcasting Corporation in 2013 [20], by training the brain, it was possible to achieve things that were never thought possible, such as increasing capabilities and improving skills through a series of exercises that generate changes at a structural level.

Indeed, in a study at Drexel University and at Northwestern University, evidence was found that creativity involves different brain functions for those processes that arrive at a methodological solution (Konnius and Beeman 2009) [21].

Likewise, various researchers are attempting to detect areas of brain function involved in creative processes. The results show us that creativity relies on a complex network of interconnections among the brain structures involved. Although it seems that the parieto-temporal regions play a more active part in this processes (Jung, 2010) [22], they are not the only ones.

All of the previously cited studies on personality traits and the relationship between neurobiology and creativity have served as the impulse to carry out the present study and analyze the relationship between creativity and the personality traits (Openness, Conscientiousness, Extraversion, Agreeableness, and Emotional Instability) that students from the second half of primary education display to verify the existence of traits explicitly linked to creativity and to fulfill the following objectives:

- Verify the relationship between personality traits and creativity using the Big Five personality traits model.
- Search for and identify the personality traits that most correlate with creativity between the ages of nine and twelve.
- Verify whether creative personality traits, such as Conscientiousness, Openness, and Emotional Instability, are more significant between the ages of nine and twelve.

From these objectives, the following hypothesis can be derived:

- Of the dimensions from Barbaranelli, Caprara, and Rabasca's (2006) [23] Big Five personality traits model, Conscientiousness, Openness, and Emotional Instability are the personality traits that show statistically significant correlation with creativity in students from the second half of primary education.

2. Materials and Methods

The design of the present study has a quantitative, descriptive, and correlational approach, since it intends to show the relationship between certain variables, where none of them are intentionally manipulated; only the phenomena present in a given place and time were observed. The study is transversal in regards to the sequence of data collection, since it occurred at one point in time.

The sample selection methodology corresponds to a non-probability procedure of an accidental or casual type. The selection of participants depended on the possibility of accessing them. The study of Albert (2007) [24] was used for the sample collection methodology in this study. The participants in this study were 244 students from two public educational centers belonging to the jurisdiction of the Department of Education, Universities, and Employment of the Autonomous Community of the Region of Murcia. The students were distributed between the 4th and 6th grades in primary education as follows: 81 students in 4th grade, 56 students in 5th grade, and 107 students in 6th grade, of which 49.2% ($n = 120$) were boys and 50.8% ($n = 124$) were girls. The students were aged nine to twelve years old. Cronbach's alpha was used to analyze the reliability of the sample chosen in relation to the instrument used. Studies carried out to this point have found coefficients of 0.66 for Agreeableness in children aged nine and ten, and 0.85 for Emotional Instability in children aged twelve to fourteen. Reliability coefficients, as is usual, were higher among older subjects. Concurrent and predictive validity are adequate. A Cronbach's alpha of 0.836 was obtained for the sample, which shows adequate reliability and validity for this study.

Barbaranelli, Caprara, and Rabasca's (2006) [23] BFQ-NA [23] questionnaire was used to evaluate the children's personalities. This represents an adaptation on the Big Five personality traits model for children and adolescents from the age of eight to fifteen years old. It is a brief questionnaire (65 items that are assessed on a scale of five alternatives) that can be completed by the child, his or her parents, or teachers, since the instrument allows for putting the items in the third person in reference to the child. The present study assesses the personalities of children aged nine to twelve by measuring the following traits: Openness, Conscientiousness, Extraversion, Agreeableness, and Emotional Instability.

- ✓ Conscientiousness: Assesses autonomy, order, accuracy, perseverance, and compliance with rules and commitments.
- ✓ Openness: Includes elements with intellectual, creative, and cultural interest aspects.
- ✓ Extraversion: Assesses sociability, activity, enthusiasm, assertiveness, and self-confidence.
- ✓ Agreeableness: Measures the tendency to help others and to be prosocial, the degree of cooperation, and sensibility to others and their needs.
- ✓ Emotional instability: Assesses the tendency to be upset and neurotic, manifested in mood swings, the tendency to be anxious, depressed, discontented, and irritable.

Reliability and validity: The works carried out so far have found good coefficients that have ranged between 0.66 in the friendliness factor in children between 9 and 10 years, and up to 0.85 in the emotional instability factor in children between 12 and 14 years old. The reliability coefficients, as is usual, have been higher among older subjects and in the versions of parents and teachers compared to younger subjects and in the self-reported versions. Concurrent and predictive validity are adequate.

To evaluate creativity, the “CREA. Creative intelligence” test was administered (Corbalán, Martínez, Donolo, Alonso, Tejerina, and Limiñana, 2003) [25]. CREA [25] is a cognitive measure of creativity whose procedure uses the subject’s capability to formulate questions from a given graphical input. The use of questions to measure creativity is a new procedure, different from those used on other tests, although the relationship between both capabilities is evident, as shown by numerous studies on the topic. According to the authors, CREA [25] met the basic standards for reliability (0.875) and validity required for a psychological test. Sheet C was used. The applicable age range is from eight to twelve and was administered collectively. Sample validity and reliability yielded a Cronbach’s alpha of 0.75. Validity and reliability: The test tests the discriminating capacity of the three tests of belief and leaves no room for doubt for people with high and low creativity and who serve purposes pursued by the investigation.

Another measurement of creativity used was the Creativity Imagination Test (PIC-N, Artola, Ancillo, Barraca, Mosteiro, and Barraca, 2010) [26]. This instrument was conceived to assess creativity by means of the way the subject uses his or her imagination. The *Creativity Imagination Test* (PIC) [26] enables assessment of both narrative and verbal creativity as well as figurative or graphic creativity by means of measuring some of the most relevant variables for the study of divergent or creative thinking. It was developed based on the classical studies of Guilford (1950) [5] and Torrance (1970) [27] and some studies of the Spanish population. It enables a factorial approximation of the measurement of creativity, providing ratings for different variables: Fluency, flexibility, originality, elaboration, shading and color, titles, and special details. These aspects are thought to constitute a higher-order factor and, through them, a separate measurement of graphic creativity and narrative creativity are obtained. In turn, these two measurements provide an overall creativity score. The reliability of the PIC-N [26] measurement, referred to as internal consistency, is adequate, justifying its use. Regarding reliability, referred to as temporal stability, data have not yet been collected. This study yielded a Cronbach’s alpha of 0.82 for the chosen sample. Reliability and validity: The reliability of the PIC-N measurement, understood as internal consistency, is good, justifying its use. Reliability is understood as temporary stability; at the moment, no data have been collected.

A meeting with the leadership team of the educational centers was set to explain the study. All present were informed of the anonymity of the experiment and the privacy protection that this type of study demands, and each gave their voluntary consent to participate in it. The students completed the tests during normal school hours in classroom sessions that lasted 60 min. First, the BFQ-Na [23] questionnaire was administered in the corresponding time allowed for the test. Second, the CREA [25] test was administered in the time allotted for its completion. Finally, the PIC-N [26] test was administered in the time assigned for its completion.

Basic descriptive methods were used for the statistical analysis of the sample such that, for qualitative variables, the number of cases for each category and its corresponding percentage were obtained, and, for quantitative variables, the minimum value, maximum value, mean, and standard deviation were obtained. The associations among the qualitative variables were analyzed using a Pearson’s Chi-squared test. The comparison between groups for the quantitative variables was performed using the Student’s t-test after confirming the assumptions for normality with the Kolmogorov–Smirnov test and homogeneity of variance with the Levene test. Multiple linear regression was used to determine whether the demographic and personality variables were statistically significant for the CREA [26] and PIC-N tests [26]. The methodology for the statistical analysis was as follows: (1) Estimate scores for model parameters, (2) assign individual meanings to the variables and the constant, (3) perform regression contrast (ANOVA) to evaluate the model’s overall validity

and verify, jointly, that the explicative variables contribute information to explaining the response variable. Assess the model's goodness of fit via the coefficient of determination, and (4) verify the hypothesis of the model through residual analysis. The SPSS® 23.0 program for Windows®, IBM®, Murcia, Spain [28] was used for statistical analysis. Differences were considered statistically significant for values of $p < 0.05$.

3. Results

In response to the study's objectives and its corresponding hypothesis, the following results were obtained:

In the BFQ [23] dimensions, the mean score for Conscientiousness was 82.35 (SD = 10.53), a level higher than the average for the Spanish population, which was 70.64 (SD = 13.07) in the normative study. The mean score obtained for Openness was 32.09 (SD = 6.31), a level higher than the average for the Spanish population, which was 27.13 (SD = 6.17). The mean for the Extraversion dimension was 38.27 (SD = 6.32), which is comparable with the Spanish population, which was 40.47 (SD = 5.91), although the score for the 4th grade students from our sample had an average to high score. The mean for the Agreeableness dimension was 37.58 (SD = 5.8), which is higher than the mean for the Spanish population, which was 36.93 (SD = 6.20). Finally, the mean for the dimension Emotional Instability was 25.11 (SD = 5.36), which is comparable to the rest of the Spanish population, which was 27.14 (ST = 7.57).

The average CREA score was 16 (SD = 7), which places it above the Spanish typification sample, which is 11.47 (SD = 4.66). In the PIC-N test, the mean total creativity scores were 85 (SD = 34), compared to 83.58 (SD = 42.42) in the Spanish average population; in Narrative, the score was 70 (SD = 29), compared to 72.84 (SD = 41.03); and, in Graph, the score was 16 (SD = 10.72), against 10.72 (SD = 4.52).

With regards to reliability, to BFQ-NA [23] Cronbach's alpha yielded values above 0.80, which indicates good reliability for the scales used (see Table 1). The coefficient of determination was 0.23 such that 23% of the variability in creativity is explained by the variables used in the model.

Table 1. Multiple Regression Model—the influence of CREA and PIC on demographic and personality variables.

	Minimum	Maximum	Mean	SD	Cronbach's Alfa
BFQ	-	-	-	-	0.836
Conscientiousness	11	98	82.35	10.53	0.822
Openness	17	80	32.09	6.31	0.812
Extraversion	18	55	38.27	6.32	0.806
Agreeableness	17	49	37.58	5.8	0.801
Emotional Instability	8	58	25.11	5.36	0.821
CREA	3	46	16	7	0.75
Creativity	-	-	-	-	-
Narrative	2	170	70	29	-
Graphic	2	60	16	10	-
Total	3	184	85	34	0.82

For the CREA [25] multiple regression analysis, as displayed in Table 2, the model analyzed was statistically significant ($F(8.225) = 9.39, p < 0.001$), with a coefficient of determination of 0.23, such that 23% of the variability in creativity is explained by the variables used in the model.

Table 2. CREA and BFQ-NA multiple regression analysis.

Variable	B (ET)	Beta	CI _{95%} B	t	p-Value	Partial r
Gender (Male)	−0.144 (0.82)	−0.01	−10.71; 5.24	−0.176	0.861	−0.012
Grade:	-	-	-	-	-	-
4th vs. 6th	−4.781 (0.96)	−0.324	−1.76; 1.47	−4.969	<0.001 ***	−0.32
5th vs. 6th	−0.686 (1.06)	−0.041	−6.68; −2.89	−0.649	0.517	−0.044
Conscientiousness	0.18 (0.05)	0.27	−2.77; 1.40	3.941	<0.001 ***	0.258
Openness	0.244 (0.08)	0.217	0.09; 0.27	3.234	0.001 **	0.214
Extraversion	−0.029 (0.09)	−0.025	0.10; 0.39	−0.308	0.758	−0.021
Kindness	−0.073 (0.11)	−0.058	−0.21; 0.16	−0.690	0.491	−0.047
Emotional Instability	0.127 (0.06)	0.121	0.01; 0.24	2.153	0.032 *	0.115
<i>Constant</i>	−2.731 (4.05)	-	-	−0.675	0.500	-
Summary of the Model						
R² (%)	23.0					
Model	F (8.225) = 9.39, <i>p</i> < 0.001 ***					
<i>Assumptions</i>	-	-	-	-	-	-
Normality	<i>p</i> = 0.125					
Independence	2.012					
Homoscedasticity	<i>p</i> = 0.573					

*** *p* < 0.001; ** *p* < 0.01; * *p* < 0.1.

Grade showed a statistically significant positive effect on all of the independent variables such that being a student in 4th grade reduces CREA [25] scores by 4.78 points with regards to students in 6th grade ($B = -4.78, p < 0.001$). Regarding the personality trait variables, Conscientiousness showed a statistically significant positive effect on CREA [25] scores ($B = 0.18, p < 0.001$), such that for higher Conscientiousness scores, higher CREA [25] scores were obtained. Openness showed a statistically significant positive effect ($B = 0.244, p = 0.001$), such that for higher values of Openness, higher scores on CREA [25] were obtained. Emotional Instability also showed a statistically significant positive effect ($B = 0.127, p = 0.032$), such that for higher values of Emotional Instability, higher scores on CREA [25] were obtained.

Regarding the predictive weight of the statistically significant variables (absolute value of partial *r*), grade is the best predictor of the CREA [25] score (partial *r* = 0.32), followed by Conscientiousness (partial *r* = 0.258), Openness (partial *r* = 0.214), and Emotional Instability (partial *r* = 0.115). The remaining variables were not statistically significant for the CREA test [25].

The narrative creativity multiple regression analysis displayed in Table 3 shows that the model analyzed was statistically significant ($F (8.229) = 28.82, p < 0.001$), with a coefficient of determination of 0.493, such that 49.3% of the variability in narrative creativity is explained by the variables used in the model.

Grade showed a statistically significant positive effect on narrative creativity, such that being a student in 4th grade reduces narrative creativity scores by 20.85 points with regards to students in 6th grade ($B = -20.848, p < 0.001$). Conscientiousness, Openness, and Emotional Instability yielded statistically significant positive effects: Conscientiousness ($B = 1.044, p < 0.001$), Openness ($B = 0.748, p = 0.003$), and Emotional Instability ($B = 0.281, p = 0.029$). In this way, for higher scores in these personality traits, higher narrative creativity was observed. Conscientiousness is the best predictor of score for narrative creativity (partial *r* = 0.423), followed by grade (partial *r* = 0.406), Openness (partial *r* = 0.198), and, lastly, Emotional Instability (partial *r* = 0.139). The remaining variables were not statistically significant.

The model analyzed for graphic creativity was statistically significant ($F (8.225) = 6.19, p < 0.001$), with a coefficient of determination of 0.156, such that 15.6% of the variability in narrative creativity is explained by the variables used in the model.

Table 3. PIC-N (narrative) and BFQ-NA multiple regression analysis.

Variable	B (ET)	Beta	CI _{95%} B	t	p-Value	Partial r
Gender (Male)	−3.313 (2.68)	−0.059	−78.46; −27.71	−1.238	0.217	−0.083
Grade:	-	-	-	-	-	-
4th vs. 6th	−20.848 (3.15)	−0.349	−8.59; 1.96	−6.614	<0.001 ***	−0.406
5th vs. 6th	2.734 (3.46)	0.041	−27.06; −14.64	0.790	0.430	0.053
Conscientiousness	1.044 (0.15)	0.388	−4.09; 9.55	6.940	<0.001 ***	0.423
Openness	0.748 (0.25)	0.166	0.75; 1.34	3.009	0.003 **	0.198
Extraversion	−0.026 (0.31)	−0.006	0.26; 1.24	−0.086	0.932	−0.006
Kindness	0.434 (0.34)	0.089	−0.63; 0.58	1.266	0.207	0.085
Emotional Instability	0.281 (0.13)	0.129	0.03; 0.53	2.195	0.029 *	0.139
<i>Constant</i>	−53.081 (12.88)	-	-	−4.123	<0.001 ***	-
Summary of the Model						
R² (%)			49.3			
Model			F (8.229) = 28.82, p < 0.001 ***			
Assumptions	-	-	-	-	-	-
Normality			p = 0.521			
Independence			1.993			
Homoscedasticity			p = 0.829			

*** p < 0.001; ** p < 0.01; * p < 0.1.

Grade showed a statistically significant positive effect on graphic creativity, such that being a student in 4th grade reduces graphic creativity scores by 4.44 points with regards to students in 6th grade ($B = -4.439$, $p = 0.004$), and being a student in 5th grade reduces graphic creativity scores by 4.4 points with regards to students in 6th grade ($B = -4.467$, $p = 0.008$). Conscientiousness, Openness, and Emotional Instability were the personality traits with statistically significant positive effects: Conscientiousness ($B = 0.213$, $p < 0.003$), Openness ($B = 0.313$, $p = 0.009$), and Emotional Instability ($B = 0.163$, $p = 0.025$). Thus, for higher Conscientiousness, Openness, and/or Emotional Instability scores, higher graphic creativity was observed. Conscientiousness is the best predictor of score for graphic creativity (partial $r = 0.198$), while Emotional Instability had the least predictive value (partial $r = 0.151$). The remaining variables were not statistically significant, as shown in Table 4.

Table 4. PIC-N (graphic) and BFQ-NA multiple regression analysis.

Variable	B (ET)	Beta	CI _{95%} B	t	p-Value	Partial r
Gender (Male)	−0.239 (1.29)	−0.011	−23.48; 1.10	−0.186	0.853	−0.013
Grade:	-	-	-	-	-	-
4th vs. 6th	−4.439 (1.51)	−0.201	−2.77; 2.30	−2.937	0.004 **	−0.196
5th vs. 6th	−4.467 (1.66)	−0.18	−7.42; −1.46	−2.694	0.008 **	−0.18
Conscientiousness	0.213 (0.07)	0.216	−7.74; −1.20	2.981	0.003 **	0.198
Openness	0.313 (0.12)	0.189	0.07; 0.36	2.645	0.009 **	0.177
Extraversion	0.24 (0.15)	0.145	0.08; 0.55	1.629	0.105	0.11
Kindness	−0.226 (0.17)	−0.124	−0.05; 0.53	−1.367	0.173	−0.092
Emotional Instability	0.163 (0.07)	0.139	0.02; 0.30	2.261	0.025 *	0.151
<i>Constant</i>	−11.19 (6.24)	-	-	−1.794	0.074	-
Summary of the Model						
R² (%)			15.6			
Model			F (8.225) = 6.19, p < 0.001 ***			
Assumptions	-	-	-	-	-	-
Normality			p = 0.794			
Independence			1.937			
Homoscedasticity			p = 0.623			

*** p < 0.001; ** p < 0.01; * p < 0.1.

For the total creativity multiple regression analysis, as displayed in Table 5, the model analyzed was statistically significant ($F(8.229) = 34.93, p < 0.001$), with a coefficient of determination of 0.542, such that 54.2% of the variability in creativity is explained by the variables used in the model.

Table 5. Total creativity PIC-N and BFQ-NA multiple regression analysis.

Variable	B (ET)	Beta	CI _{95%} B	t	p-Value	Partial r
Gender (Male)	−3.667 (2.90)	−0.057	−94.32; −39.44	−1.267	0.207	−0.085
Grade:	-	-	-	-	-	-
4th vs. 6th	−24.809 (3.41)	−0.365	−9.37; 2.04	−7.278	<0.001 ***	−0.44
5th vs. 6th	−1.533 (3.74)	−0.02	−31.53; −18.09	−0.410	0.683	−0.028
Conscientiousness	1.259 (0.16)	0.411	−8.91; 5.84	7.740	<0.001 ***	0.462
Openness	1.006 (0.27)	0.197	0.94; 1.58	3.746	<0.001 ***	0.244
Extraversion	0.196 (0.33)	0.038	0.48; 1.54	0.590	0.556	0.04
Kindness	0.308 (0.37)	0.055	−0.46; 0.85	0.833	0.406	0.056
Emotional Instability	0.974 (0.12)	0.181	0.74; 1.21	8.050	<0.001 ***	0.193
<i>Constant</i>	−66.883 (13.92)	-	-	−4.803	<0.001 ***	-
Summary of the Model						
R² (%)	54.2					
Model	$F(8.229) = 34.93, p < 0.001$ ***					
Assumptions	-	-	-	-	-	-
Normality	$p = 0.325$					
Independence	1.963					
Homoscedasticity	$p = 0.729$					

*** $p < 0.001$.

Grade showed a statistically significant positive effect on total creativity, such that being a student in 4th grade reduces total creativity scores by 24.81 points with regards to students in 6th grade. Conscientiousness, Openness, and Emotional Instability yielded statistically significant positive effects: Conscientiousness ($B = 1.259, p < 0.001$), Openness ($B = 1.006, p = 0.001$), and Emotional Instability ($B = 0.974, p = 0.001$). Thus, for higher Conscientiousness, Openness, and/or Emotional Instability scores, higher total creativity was observed. Conscientiousness is the best predictor of score for total creativity (partial $r = 0.462$), followed by grade (partial $r = 0.44$), Openness (partial $r = 0.244$), and, lastly, Emotional Instability (partial $r = 0.193$). The remaining variables were not statistically significant.

4. Discussion

The results from the present study show promising inferences, above all, to identify the personality traits most linked to primary students' creativity, which, in this case, were Conscientiousness, Openness, and Emotional Instability. The data from the statistical analysis indicate that Conscientiousness is the most predictive trait for creativity in our sample for both CREA ($B = 0.18, p < 0.001$) [25], as well as for PIC narrative creativity ($B = 1.044, p < 0.001$) [26] and graphic creativity ($B = 0.213, p = 0.003$ and total $B = 1.259, p < 0.001$).

The results contrast with studies by Garaigordobil, Alvarez, and Carralero (2004) [29] that indicate personality traits that best identify creativity in primary school children, including Openness, Extraversion, and Emotional Instability. However, other authors such as Sanchez (2011) [30] opine that Emotional Instability cannot be a distinguishing trait for creativity given that it is not consistent with other traits like positive mood. Martinez Hernandez (2015) [31] emphasizes the latter, stating that moodiness and nervousness predominate in children with high creativity scores with respect to one specific ability: Dance.

This can be explained by Gray's theory (1970) [32], who suggested that creative individuals are more sensitive to threats, and by Perkins (1989) [33] when explaining brain circuits that govern the self-generation of thoughts and provoke anxiety in creative people because their brains are constantly circulating ideas, which causes them certain emotional instability, preferably in the trait of anxiety.

Based on Csikszentmihalyi's theory (2006) [13], evidence has been found to suggest complexity as a distinguishing trait of creative personalities, even displaying opposing attributes at different moments in their lives. In this regard, Emotional Instability could be justified as a trait associated with creativity given that one of the dimensions concerned is Openness and sensibility, which expose them to suffering and pain when there is an impediment to pleasure, when they can create.

Robert Ornstein's concept of "*multimind*" (1986) [34] refers to this tendency for the brain to integrate separate and, frequently, opposing neural sequences, thanks to which inconsistent or contradictory thoughts and actions are produced in the same person. Perhaps creative individuals are more prone to accept and promote this characteristic of the mind. Eysenck's concept of *over-inclusiveness* (1995) [35], which frequently appears both in psychosis and creativity, is also applicable. It is characterized by an extreme degree of generalization of stimuli, that is, broad associations among concepts and a lack of defined boundaries for the meanings of each of them. The author points out the important difference that creative thinking has a filtering mechanism, which allows a critical evaluation of the products of over-inclusive thinking and retains the relevant and useful associations.

What might the personality of a student with creative talent be like? Conscientiousness is the trait that clearly stands out in the present study. According to the BFQ-NA [23] test and in reference to the meaning of Conscientiousness, those individuals with this trait are defined as hardworking, interested, and persevering, among other things. This is closely related to the characteristics that Sternberg and Lubart (1999) [8] and Lopez Martinez and Navarro (2010) [36] suggest about creative personalities: They must be willing, persevering, entrepreneurial, passionate individuals that like learning.

Openness is another personality trait that correlates with creativity in the sample chosen. Openness, likewise, has been found to be a statistically significant predictor for learning ability in formative years. As to be expected, people who are more open to experience are more curious and demonstrate cultural interests, show a more positive attitude towards learning, and show a greater capacity and motivation to learn, which explains their attainment during their formative years and, hence, more creative attitudes. This theory is explicitly covered in Sternberg's theory (2006) [2].

Over the course of this study, limits were found both in its development and in its execution. One of the most notable was the difficulty in gaining access to the sample population, as well as the lack of recent studies and other tests for measuring creativity and personality in the sample population's age range.

This study has generated a series of future lines of research. Among them is the need to verify whether 'polarized' personalities are related to low latent inhibition, as indicated in the latest studies on the biology of creativity. Additionally, further studies are needed to verify whether different personality traits are related to different ages. Finally, studies are necessary to verify the degree to which personality traits define creative individuals and how this affects students' academic performance.

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