

The measure of originality in CREA test responses

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Título: La medida de la originalidad en las respuestas del test CREA.

Resumen: El objetivo es estudiar un nuevo procedimiento de puntuación para el Test CREA, complementario al tradicional y que considera la originalidad de las producciones. Se define el nuevo procedimiento y los análisis correspondientes para tres grupos (niños, adolescentes y adultos) y para las tres láminas del CREA. Participaron de la investigación 505 sujetos (188 niños, 108 adolescentes y 209 jóvenes y adultos) residentes en Córdoba (Argentina). El nuevo procedimiento incluye tres categorías tipológicas de preguntas: *muy frecuentes*, *frecuentes* y *únicas*. Cada tipología se puntúa de diferente manera. Se realizó un análisis descriptivo de tipologías y un análisis correlacional de los puntajes según los dos procedimientos. También se efectuó un estudio de casos de personas que formulan preguntas únicas. Los resultados mostraron la adecuada consistencia de las mediciones y correlaciones muy elevadas entre los dos procedimientos para los tres grupos y las tres láminas. Se observaron asociaciones significativas entre los niveles de creatividad definidos por ambos procedimientos. Las preguntas únicas representan entre el 1 y el 4% del total, la Lámina A es la que más promueve la formulación de preguntas únicas. Se propone la utilización del sistema alternativo en grupos que obtienen puntajes bajos con el sistema tradicional y cuando se requiere un análisis diferencial de originalidad de las producciones. Se discuten teóricamente las relaciones observadas entre cantidad y originalidad y se proponen futuras líneas de investigación.

Palabras clave: Creatividad; originalidad; test CREA; evaluación diferencial.

Abstract: The aim was to study a new scoring procedure for the CREA Test, complementary to the traditional, that considers the originality of the productions. The new procedure and corresponding analyzes were defined for three groups (children, adolescents and adults) and for the three stimuli of the CREA. The sample included 505 participants (188 children, 108 adolescents and 209 adults) living in Cordoba, Argentina. The new procedure included three categories of questions: *very frequent*, *frequent* and *unique*, each categories had different scoring. A descriptive analysis of typologies and a correlational analysis of the scores were performed according to the two procedures. Also, the paper presented a case study of people asking unique questions. The results showed very high consistency of measurements and correlations between two procedures for the three groups and the three stimuli. There were significant associations between the levels of creativity defined by both procedures. The unique questions represented between 1 and 4% of the total, stimulus A is the one that most promotes the formulation of unique questions. The authors proposed to use of the alternative system in groups that obtain low scores with the traditional system and when a differential analysis of the originality is required. Authors discussed theoretically relations between quantity and originality and proposed future lines of research.

Keywords: Creativity; originality; test CREA; differential assessment.

Introduction

The social, economic and cultural relevance of creativity has contributed to the consolidation of a complex and dynamic research field, characterized by the presence of different theories, assumptions and methodologies (Kozbelt, Beghetto & Runco, 2010; Long, 2014). According to Long (2014), in the field of creativity predominate quantitative methodologies, specifically psychometric and experimental. In quantitative methodologies, the most used instruments are the divergent thinking tests and the techniques of evaluation of creative products.

Evaluating creativity, and its multiple manifestations, is still a challenge for researchers. Several studies indicated contradictory results and technical problems of tests (Batey, 2012, Kim, 2011, Corbalán & Limiñana, 2010, Piffer, 2012, Sternberg, 2012).

Likewise, debates about the unitary or multidimensional nature of creativity generate controversies in the field of creative process (Baer, 2012). The evaluation of creative abilities or achievements also shows different alternatives for researchers, while capacities refer to people's potentialities

(Corbalán et al., 2003; Ivcevic, 2009); achievements imply specific performances in certain areas of knowledge (Silvia, Wigert, Reiter & Kaufman, 2012). Current investigations about everyday creativity use capacities test (Mourgues, Tan, Heina, Elliott & Grigorenko, 2016; Yagolkovskiya & Kharkhurinba, 2016) and creative achievements scales (Zhu et al., 2016). Recent studies also refer to the complexity of the processes of evaluation of creativity (Nakano, Primi, Ribeiro & Almeida, 2016) and the necessity to consider specific areas or fields, such as the sciences and technology (Bermejo, Ruiz-Melero, Esparza, Ferrando & Pons, 2016).

The complexity of creativity and the need for measurement instruments and procedures, create an appropriate context for the research proposed in this article. The present research considered advances in the field of creativity, specifically developments in the area of the evaluation of creative abilities, assuming psychometric perspectives and theories of problem formulation or problem finding (Kozbelt et al., 2010). The study assumed that creativity is a capacity to questioning and generating of problems (Corbalán, 2008) and a potentiality of all people that develops in different everyday contexts (Kaufman & Beghetto, 2009; Richards, 2007).

Originality, according to the model proposed by Guilford, is one of the main components of creativity and refers to the ability to generate novel, unique and unusual ideas or products. In addition to originality, flexibility (generating varied responses and modifying ideas) and fluency (producing

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many ideas) play an important role in creativity (Corbalán et al., 2003). According to Runco and Jaeger (2012), creativity is composed of two main interrelated elements: originality and effectiveness. While the first component refers to novel aspects, effectiveness is related to utility and pragmatism. According to Runco (1999), it is possible to differentiate between objective and subjective procedures in the measurement of originality, whereas the objective procedures perform statistical evaluation of the frequency of ideas, and subjective measurements assume expert judgments.

An objective score for originality can be calculated after determining the statistical infrequency of each idea. Very infrequent ideas (for example, those given by 5% of a particular sample) can be defined as originals ... (Runco, 2011. p. 578).

Following also objective procedures for measuring originality, Hernández, Schmidt and Okudan (2013) proposed an evaluation system that differentiates common ideas from original ideas, considering the frequency of novel ideas.

The present research focused on the study of originality, one of the indispensable components of creativity, considering the frequency of questions in the Creative Intelligence Test CREA (Corbalán et al., 2003). The aim of CREA is to appreciate creative intelligence based on the cognitive evaluation of individual creativity. The ability of people to generate questions in the theoretical context of search and problem solving is the indicator used by the instrument. The theoretical bases of CREA were the classical factors of creativity (divergent production, flexibility, fluency and originality) and approaches to problem formulation, lateral thinking and the study of cognitive styles (Corbalán & Limiñana, 2010). According to CREA's authors, the creative psychological style supposes a general disposition for the openness and versatility of cognitive schemes. To evaluate this cognitive style, CREA asks people to formulate as many questions as possible about a visual stimulus. Each question involves a new cognitive scheme emerging from the interaction between the stimulus and the ability of the people to open that information to existent knowledges. The CREA proposes a unitary measure of creativity, aimed at evaluating the openness and versatility of cognitive schemes that emerge during the task of formulating questions. However, there is evidence about the correlations between this general capacity and the dimensions traditionally evaluated through other instruments such as the Guilford Battery (Corbalán et al., 2003).

Research in many countries and contexts (Corbalán et al., 2014) indicated that the CREA Test uses a parsimonious and efficient procedure for the evaluation of creative intelligence. The CREA complied with the technical quality standards required for this type of test (Martínez, 2003) and was used as a measurement instrument in numerous investigations (Corbalán, et al., 2004, Donolo & Elisondo, 2007, Clapham & King, 2010; Elisondo & Donolo, 2010, Gutiérrez-Braojos, Salmeron-Vilchez, Martín-Romera & Salmerón, 2013, Limiñana Bordoy, Juste & Corbalán, 2010, López Martínez &

Brufau, 2010). According to the manual of the test, the questions are scoring following a predominantly quantitative system, considering the number of questions asked by the people in each visual stimulus. Questions are valued based on the number of cognitive schemas recovered. As defined in the manual, additional scores can be assigned to questions that include two or more basic questions in their formulation. However, the consideration of additional scores according to the number of cognitive schemas activated, does not imply any analysis of content or originality of the questions. The study presented in this article focused on the latter aspect not evaluated in the traditional scoring procedure of the CREA.

The aim of the present investigation was to analyze a new scoring procedure in the CREA Test, to measure originality through the analysis of frequencies of questions. The number of times each question was formulated by the reference group is the indicator used to measure originality. The practical purpose of the research was to offer tools for assessing the originality of the questions, providing typical categories and formulations. Considering criticisms made to the CREA Test (Martínez-Otero, 2005), and the possibility of obtaining complementary measures of some components traditionally associated with creativity, such as originality, it was proposed to construct an alternative procedure of scoring with precise criteria and empirically validated. As an advantage over the traditional system, the new procedure offered information relevant to the differential diagnosis in cases where there is a lot of originality and little fluency in the formulation of questions. Another advantage of the new procedure was the consideration of different age groups and the presentation of typological categories for each group.

Method

Design

The study was cross-sectional comparative, the general aim was to analyze relationships between the two scoring procedures (traditional and alternative) in three groups (children, adolescents and adults) and for the three stimuli of CREA. The study applied the typological categories of questions (see Annex) and the scoring system (one point per *very frequent question*, two points per *frequent question* and three points for *unique questions*) constructed in a previous research (Elisondo, 2015). The new procedure aimed to identify less frequent, more original questions, based on an empirically validated procedure.

Sampling was incidental non-probabilistic, although it was sought to include men and women of different ages and different levels of schooling. A quota sampling was established, a minimum number of subjects was defined for each criterion considered (sex, age and schooling).

Participants

The sample included 505 participants: 188 children (51% girls and 49% boys), 116 adolescents (64% female and 36% male) and 209 adults (55% female and 45% male). All the participants resided in the province of Córdoba (Argentina), specifically in Río Cuarto. The age of the children in the sample varied between 6 and 11 years ($M = 8.46$; $SD = 1.70$), between 12 and 17 ($M = 14.48$; $SD = 2.11$) in adolescents and between 18 and 60 ($M = 38.1$ $SD = 14.1$) in adults. Regarding schooling, at the time of administration of the instruments, all children attended the primary level and all adolescents the secondary level¹. The group of young people and adults included people with different levels of schooling, primary level (20%), secondary level (55%) and higher level (25%).

Instruments

The research used two instruments: the CREA test (Corbalán et al., 2003) and a brief socio-demographic questionnaire. The CREA contains three stimuli (Picture A, Picture B and Picture C); participants must formulate the greatest number of possible questions about each stimulus in four minutes. The ability of people to ask questions is the indicator used by CREA to measure creativity. Each question implies a new cognitive scheme born of the interaction between stimuli and the ability of people to open that new information to existent knowledges. This facility for the openness and versatility of cognitive schemas define the creative psychological style. The instruction of the test is: *I will present an illustration. Your task is to write down all the questions you can ask about what the picture represents. Try to ask as many questions as possible. The time limit for preparing the questions for each picture is 4 minutes.* The CREA is an instrument of individual or collective application designed for the evaluation of creative intelligence in children, adolescents and adults. It has scales with Spanish and Argentine population for the three reference groups. The manual presents norms of correction and additional scoring for questions that incorporate different schemes and contents. After correction and scoring, the raw score is transformed into a percentile score, taking into account the scales for each group and context. The percentile score obtained is interpreted as high, media or low creativity, according to standards available in the manual.

Procedures

The researchers informed to participants and tutors of children and about objectives of study and the manner in which the data were to be processed (anonymity and confidentiality of the information). Participants and tutors of chil-

dren and adolescents signed the informed consent. The questions formulated by the participants were scoring according to the traditional system, considering the guidelines of the CREA manual, and according to the system constructed in the previous research (Elisondo, 2015) that lists three types of questions: very frequent (1 point), frequent (2 points) and unique (3 points). The scoring considered the types of questions included in the Annex for each group (children, adolescents and adults) and each picture (A, B and C).

Analysis of data

Statistical analysis was performed using the SPSS 20 specialized program.

Frequency distributions, central tendency measures, dispersion and correlations between variables were performed. In addition, associations between high, medium and low creativity levels were analyzed according to the two scoring systems. Considering the potentialities of the analysis of unique questions in the measurement of originality defined in a previous study (Elisondo, 2015), we analyzed cases of participants who asked this type of questions.

Results

We presented results considering the three groups studied (children, adolescents and adults) and each of the stimuli administered. The analyzes were performed by groups taking into account the differences according to age in the CREA observed in previous studies (Donolo & Elisondo, 2007, Elisondo, 2015) and the indications in the manual.

Children

Descriptive analyzes of the typologies of questions posed by children were presented in Table 1. One hundred and twenty-one children asked questions on Picture A. Of the total number of questions asked ($n = 1057$) by children in Picture A, 825 (78 %) were very frequent, 213 (20%) frequent and 19 (2%) unique. The total scores according to the traditional system varied between 2 and 23 ($M = 8.74$; $SD = 4.38$), and between 3 and 26 according to the alternative procedure ($M = 10.80$; $SD = 5.50$). The correlations between total scores according to traditional and alternative systems were high and significant ($r_s = .944$, $p < .000$). Consistency between scores was adequate ($a = .959$). The scores obtained by the traditional procedure and the alternative were classified into three groups: high, medium and low. The percentiles defined in the CREA manual were used to classify scores according to high (99-75), average (74-26) or low (25-1) creativity. Contingency tables were constructed with the three levels of creativity for each scoring procedure and relations between levels were studied. Significant associations were found between the levels of creativity defined by each scoring system [$X^2(4, N = 121) = 159.45$, $p < .000$]

¹ The educational system in the Córdoba (Argentina) is structured in the following way: Initial education (0 to 5 years), Primary Education (6 to 11 years), Secondary Education (12 to 17 years) and Superior Education. Provincial Law N° 8113. Ministry of Education of Córdoba. Argentina.

Table 1. Descriptive statistics of the traditional and alternative scoring for the three pictures of CREA in the three groups.

Child	Picture A (<i>n</i> = 121)		Picture B (<i>n</i> = 104)		Picture C (<i>n</i> = 148)	
Scoring	Traditional	Alternative	Traditional	Alternative	Traditional	Alternative
M	8.74	10.80	8.68	9.92	7.63	10.22
ST	4.38	5.50	4.70	5.91	4.85	6.53
Min	2	3	1	1	1	1
Max	23	36	23	30	28	36

Adolescents	Picture A (<i>n</i> = 116)		Picture B (<i>n</i> = 108)		Picture C (<i>n</i> = 112)	
Scoring	Traditional	Alternative	Traditional	Alternative	Traditional	Alternative
M	10.27	13.77	9.75	11.18	9.80	13.45
ST	4.36	6.43	4.56	5.70	4.86	7.55
Min	2	2	1	1	1	1
Max	23	37	23	29	21	38

Adults	Picture A (<i>n</i> = 209)		Picture B (<i>n</i> = 209)		Picture C (<i>n</i> = 205)	
Scoring	Traditional	Alternative	Traditional	Alternative	Traditional	Alternative
M	8.74	10.80	8.68	9.92	7.63	10.22
ST	4.38	5.50	4.70	5.91	4.85	6.53
Min	2	3	1	1	1	1
Max	23	36	23	30	28	36

One hundred and four children asked questions on Picture B. Of the total of questions asked (*n* = 902), 790 (88%) were very frequent, 94 (10%) frequent and 18 (2%) unique. The total scores according to the traditional system varied between 1 and 23 (*M* = 8.68; *SD* = 4.70), and between 1 and 30 according to the alternative procedure (*M* = 9.92; *SD* = 5.91). The correlations between total scores according to traditional and alternative systems were high and significant (*r* = .960, *p* < .000). Consistency between scores was adequate (*a* = .967). Significant associations were also found between the levels of creativity defined by each scoring system [χ^2 (4, *N* = 104) = 174.87, *p* < .000].

One hundred and eighty-eight children asked questions on Picture C. Of the total number of questions asked (*n* = 1534), 962 (63%) were very frequent, 555 (36%) frequent and 17 (1%) unique. On Picture C, total scores for children according to the traditional system ranged from 1 to 28 (*M* = 7.63; *SD* = 4.85), and from 1 to 36 according to the alternative procedure (*M* = 10.22; *SD* = 6.53). The correlations between total scores according to traditional and alternative systems were high and significant (*r* = .938; *p* < .000). Consistency between scores was adequate (*a* = .94). Likewise, significant associations were observed between the levels of creativity defined by each scoring system [χ^2 (4, *N* = 188) = 221.68, *p* < .000].

In summary, in the group of children, high and significant correlations were observed between the two scoring systems in the three pictures (See Table 2). In addition, significant associations between levels of creativity defined with both systems were observed. Most children get the same level of creativity if their questions are scored with the traditional or alternative system. Regarding the typologies of questions per picture, a similar number of unique questions are observed in the three pictures. In Picture B, a higher percentage of

very frequent questions were observed with respect to the other pictures.

Table 2. Spearman correlation between Traditional and Alternative scoring in the three pictures of CREA by children, adolescents and adults.

Child	Adolescents		Adults		
A (<i>n</i> = 121)	.94*	A (<i>n</i> = 116)	.94*	A (<i>n</i> = 209)	.92*
B (<i>n</i> = 104)	.96*	B (<i>n</i> = 108)	.97*	B (<i>n</i> = 209)	.91*
C (<i>n</i> = 188)	.93*	C (<i>n</i> = 112)	.93*	C (<i>n</i> = 205)	.93*

* Correlation is significant at *p* < .000 (bilateral) level.

Children have formulated a higher percentage of frequently asked questions on Picture B. The analyses also included a case study of participant that asked unique questions.

In the group that asked unique questions there were girls and boys, and they had different ages. It was observed that the levels of creativity assigned with both systems were the same in the group of children who had asked unique questions. In the three pictures, were not observed different levels of creativity according to the two systems. In addition, children who ask unique questions did not do it in the three pictures, only in some of them.

Adolescents

Table 1 presented data regarding the types of questions asked by adolescents. One hundred and sixteen adolescents asked questions on Picture A. Of the total number of questions asked (*n* = 1193), 828 (69%) were very frequent, 325 (27%) frequent and 40 (4%) unique. In Picture A, total scores for adolescents according to the traditional system varied between 2 and 23 (*M* = 10.27; *SD* = 4.36), and between 2 and 37 according to the alternative procedure (*M* = 13.77; *SD* = 6.43). The correlations between total scores according to traditional and alternative systems were high and significant (*r* = .944; *p* < .000). Consistency between scores

was adequate ($a = .93$). Likewise, significant associations were observed [$X^2(4, N = 116) = 113.37, p < .000$], among the levels of creativity defined by each scoring system.

One hundred and eight adolescents asked questions on Picture B. Of the total number of questions asked ($n = 1052$), 910 (87%) were very frequent, 128 (12%) frequent and 14 (1%) unique. On Picture B, total scores for adolescents according to the traditional system varied between 1 and 23 ($M = 9.75; SD = 4.56$), and between 1 and 29 according to the alternative procedure ($M = 11.18; SD = 5.70$). The correlations between total scores according to traditional and alternative systems were high and significant ($r_s = .972; p < .000$). Consistency between scores was adequate ($a = .96$). Likewise, significant associations were observed, [$X^2(4, N = 108) = 135.68, p < .000$], between the levels of creativity defined by each scoring system.

One hundred and twelve adolescents asked questions on Picture C. Of the total questions ($n = 1077$), 699 were very frequent (64%), 386 frequent (35%) and 12 unique (1%). Varied between 1 and 21 ($M = 9.80; SD = 4.86$), in the alternative system between 1 and 38 ($M = 13.45; SD = 7.55$). The correlations between total scores according to traditional and alternative systems were high and significant ($r_s = .939; p < .000$).

Consistency between scores was adequate ($a = .92$). Significant associations were observed [$X^2(4, N = 112) = 101.54, p < .000$] between the levels of creativity defined by each scoring system.

In summary, in the group of adolescents, high and significant correlations were observed between the two scoring systems in the three pictures (See Table 2). In addition, significant associations between levels of creativity defined with both systems were observed. Most teens get the same level of creativity if their questions are scored with the traditional or alternative system. Regarding the types of questions per picture, a higher percentage of unique questions are found on Picture A. As in the group of children, in Picture B, a higher percentage of very frequent questions and a higher percentage of frequently asked questions are observed in Picture C.

The case study of adolescents who asked unique questions indicated the same level of creativity assigned with both systems of scoring (traditional and alternative). There were 8 cases that asked unique questions before more than one picture. Likewise, the case study indicated diversity in sex and age of the subgroup of adolescents who asked unique questions.

Young and adults

Table 1 presented data regarding the types of questions asked by young and adults.

All young and adults in the sample ($n = 209$) asked questions on Picture A. Of the total number of questions asked ($n = 1931$) by 1022 (53%) were very frequent, 874 (45%) were frequent and 35 (2%) were single. On Picture A, total

scores for adolescents according to the traditional system varied between 1 and 30 ($M = 9.27; SD = 4.09$), and between 1 and 42 according to the alternative procedure ($M = 13.75; SD = 6.59$). The correlations between total scores according to traditional and alternative systems were high and significant ($r_s = .920; p < .000$). Consistency between scores was adequate ($a = .908$). Significant associations were observed [$X^2(4, N = 209) = 221.84; p < .000$] between the levels of creativity defined by each scoring system.

Young and adults asked 1921 questions, 1297 were very frequent (67%), 600 were frequent (31%) and 24 were unique (2%). The total scores according to the traditional system varied between 1 and 24 ($M = 9.20; SD = 4.10$), and between 1 and 37 according to the alternative system ($M = 12.28; SD = 6.07$). The correlations between total scores according to traditional and alternative systems were high and significant ($r_s = .916; p < .000$). Consistency between scores was adequate ($a = .916$). Significant associations were observed [$X^2(4, N = 209) = 221.847; p < .000$] between the levels of creativity defined by each scoring system.

The youths and adults, who asked questions on Picture C were 205, performed 1707 questions. A total of 1191 questions (70%) were classified as very frequent, 495 frequent (29%) and 21 unique (1%). The total scores according to the traditional system varied between 1 and 22 ($M = 8.33; SD = 4.28$), and between 1 and 39 according to the alternative system ($M = 12.94; SD = 6.49$). The correlations between total scores according to traditional and alternative systems were high and significant ($r_s = .945; p < .000$). Consistency between scores was adequate ($a = .930$). Significant associations were observed [$X^2(4, N = 205) = 219.074; p < .000$] between the levels of creativity defined by each scoring system.

As in the previous groups, high and significant correlations were observed between the two scoring systems in the three pictures (see Table 2). In addition, significant associations between levels of creativity defined with both systems were observed. Young and adults get the same level of creativity if their questions are scored with the traditional or alternative system. Regarding the types of questions per picture, just as in the group of adolescents, there are more unique questions on Picture A. In Picture B and C, the percentage of very frequent and frequent questions is similar.

The case study of young people and adults who asked unique questions indicated that the levels of creativity assigned with both systems were the same. There were 10 cases that asked unique questions before more than one picture. Two people asked unique questions for the three pictures. Likewise, the case study showed diversity in terms of sex and age of the subgroup of young and adults who asked unique questions.

Discussion and Conclusions

In all groups and pictures, we observed adequate indexes of consistency and high correlations between the traditional scoring system and the alternative procedure that values the

originality of the questions. The studies of associations showed significant relationships between levels of creativity, defined according to alternative and traditional procedure, in all the groups and in all the pictures. The analysis indicated that in most cases the participants obtain the same level of creativity with the two scoring procedures. The levels of creativity, measured indirectly according to the versatility of the use of schemas, have been identified according to the interpretation criteria defined by the test authors (Corbalán et al., 2003).

The unique questions represented between 1 and 4% of the total questions asked by the participants. It was observed that Picture A is the one that most promotes the formulation of unique questions, while Picture B stimulates very frequent questions. On Picture C, in the three groups, there were a greater number of frequent questions. In a previous study (Elisondo & Donolo, 2011), we concluded that the procedure of formulating questions in the CREA Test is stable independent of the presented stimuli. It should be clarified that in that study the traditional scoring procedure was used, in the case of the alternative procedure differences in the typologies of questions according to the sheets were observed. Analyzing the incidence of stimuli in the originality of the questions formulated is proposed as a future line of research.

According to the data collected and analyzes carried out, it can be concluded that the originality measurement procedure proposed in this study yields similar results to the traditional CREA scoring. From a theoretical point of view, it was expected considering that originality is a component of creativity.

We observed high correlations between quantity and originality, this result corresponds to previous studies that indicate relations between originality and fluency (Dumas & Dunbar, 2014; Silvia, 2008). Contrary to Guilford's considerations that point to independence of the factors of creativity, current research indicated relationships between originality and the other components of creativity. The high correlations observed between originality and quantity would indicate that in the process of formulating questions different factors or components of creativity are interrelated. Asking questions seems to be a good indirect indicator of creativity as it integrates different cognitive processes linked to creation.

The efficiency of CREA's traditional scoring procedure is indisputable, as a more parsimonious tool, the alternative procedure proposed in this work would not bring any novelty or any advantage for the measurement of this construct. However, the studies carried out regarding the different typologies of questions provide relevant data for a differential diagnosis of originality, focusing on the particularities and potentialities of each person for the development of original thoughts. The efficiency of this procedure, from this point of view, surpasses the procedures that required subjective and non-rigorous assessments of originality. In this sense, Baer (2009) has argued regarding the few evidences of validity and objectivity of the tests of Torrance. On the other hand, Runco, Abdulla, Paek, Al-Jasim and Alsuwaidi (2016), in a

recent study comparing creativity measurement in terms of originality, have demonstrated different levels of reliability of divergent thinking tests and have concluded that the use of only one test does not yield generalizable results. Compared with other tests of divergent thinking, figures and unconventional uses proved the least reliable. The procedure constructed in the present investigation, by presenting an exhaustive detail of question typologies for each picture and group, tries to minimize the possibilities of points skewed by the judgment of the evaluator. Also, it is a procedure that values the originality of the productions considering the frequency of formulation of each type of question in a reference group. The consideration of diverse groups is also strength of the study, taking into account observed differences between children, adolescents, young and adults in the measurements of creativity (Donolo & Elisondo, 2007; Elisondo, 2015).

Indeed, as some authors of CREA (Corbalán & Limiñana, 2010) point out, creativity is different from invention, innovation, originality or imagination, and if we argue that the former cannot be understood as a mere sum of the others, we should not do the opposite, without advancing in the measure of those, confusing parsimony with simplification.

We proposed in future studies to analyze in more detail unique questions that recover contents, schemes and contexts diverse. The alternative procedure was especially indicated, as a complementary measure to the traditional one, for groups that ask few questions, but these are very original. These cases are generally classified as low creativity by the traditional system, which is not able to detect the originality of the productions of these subjects. It is proposed to include analysis of typologies in the correction of the CREA Test, especially in cases of people who ask few questions. The main contribution of this study is the definition of categories of questions according to originality and the presentation of typical formulations that can be used by other professionals. The analysis of unique questions deserves special attention during the evaluation process of creativity and offers interesting data for the study of originality. As we have pointed out, originality refers to novel, unusual and unique aspects (Runco & Jaeger, 2012). The study also contributes to the field of evaluation of creativity and especially to developments related to the study of ideas frequency as an indicator of originality, as presented in the studies of Runco (1999) and Hernández, Schmidt and Okudan (2013). These researches were interested in study originality as basic component of the creativity, not intended to analyze the value or utility of ideas. The study presented had focused only on the assessment of originality in the formulation of questions in terms of frequency of appearance, it had not been the purpose of research to analyze the questions from subjective criteria, nor consider utility or pragmatic value of the productions. As we said above, while originality is a component of creativity, it is expected that there will be no great differences between traditional and alternative punctuation. When one of the other components fails (fluency or flexibility) or when

the subject cannot give many answers, the new system allows visualizing another creative talent: the originality put into play in the resolution of the task. Then, the measure of originality proposed, may also be complementary to the traditional correction of CREA

Limitations and future prospects

The limitations of the study were the type of sampling used, not probabilistic, and the construction of an alternative scoring system that does not value the specific content of each question. In this sense, the analysis of the originality of the questions was limited. It is also a limitation to include only participants from Argentina, the typologies of questions presented in the study should be adapted to other geographical contexts. As shown in the annex, many of the questions included in the typologies refer to language specific uses to the country where the research was conducted.

Considering the effect of explicit instruction on creativity measures (Hong, O'Neil

& Peng, 2016; Sanz de Acedo Lizarraga & Sanz de Acedo Baquedano, 2008), it was a limitation to the study not to have applied directly in the instruction that original questions were valued. In future studies it is proposed to include explicit instructions regarding the formulation of original questions and to include studies of contents and structures of the questions. In the same way, to study in detail of contexts of

questions and the mental schemes that recover, can be relevant to extend the qualitative analyzes of the productions.

Deepening the analysis of relationships between originality and fluency is relevant for future studies. Likewise, using the CREA test in a traditional way and with the alternative scoring system to value creative abilities and then establish relationships with creative performances in different contexts is a topic of relevance for the field of everyday creativity. Studies about relationships between creative abilities, according to CREA's traditional and alternative system, and other variables such as intelligence, personality traits, solving logical problems and thinking styles, are also relevant to the current field of study of creativity. In new research, it is necessary to expand the considerations regarding the new procedure taking into account the socio-demographic particularities of the groups. Likewise, it is relevant to analyze new procedures to evaluate creativity in groups of different educational levels, writing abilities, or that present motor, visual or expressive difficulties.

Designing originality studies using the constructed procedure and other measures of creativity using different formats and stimuli such as computerized images (Leutner, Yearsley, Codreanu, Borenstein & Ahmetoglu, 2017), real life problems (An, Song & Carr, 2016) and subjective assessments of creativity (Park, Youngshin & Chun 2016) are also interesting themes for future research.

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Annexed³

Typological categories of questions for boys and girls in Picture A of CREA. Review of categories presented in Eli-sondo (2015).

<p>Typological category III: frequently asked questions</p> <p>Is it (was, will, are) + adjective (object quality)? (E.g., was it expensive?) Do you have (number or other objects)? (E.g. Does it have a lever?) What is it for? For what do you use it? Can you use it for...? Does it serve to...? In what year was it invented / manufactured? When it was invented? How old are you? Who created it? Who invented it? Where it is? Where was it invented? How they did it? How does it work? How is it used? How are the numbers marked? As it is called? What is (certain part of the object)? Why do you have or do not have a certain object? (E.g. Why do you have buttons?) How is it? What color is it? What is it made of? What material is it?</p> <p>Category II: frequently asked questions</p> <p>What is it? Listening? Can you talk? It works? Are you? Used? It sounds? Is it another object (not a phone)? (E.g., is it a slot machine)? What is the use of part of the drawing (lever, handle, tube, etc.)? Whose is it? Who uses it? Who is the owner? It's a telephone? Breaks? Where are the numbers?</p> <p>Category I: Single questions</p> <p>I am looking for the number of the <i>pizzería</i>? When will my godmother call me? How much money did you earn? How much is worth as a relic? Where do you put the thread and clothes? Are the knobs lifted? Do you call other countries? Do you have ink? Did Fernando? Did Gustavo do it? Were some of them famous? Did they pass from generation to generation? Why is it a rope and not a button? Can you use it as a balloon? Was it ever burned? I give you my number? Did Thomas Edison invent it?</p>
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Typological categories of questions for boys and girls on Picture B of CREA. Review of categories presented in Eli-sondo (2015).

<p>Typological category III: frequently asked questions</p> <p>Why / for what + something visible in the picture? (E.g. Why cut ears?) Is there something visible on the blade? What are some characters doing? That makes? Are they + verb (playing, eating?) Is it s + person or object? Is it a party or a shrink or a family? Character + visible action? (Is the lady walking?) What is it? What is + some visible object of the picture?</p> <p>Category II: frequently asked questions</p> <p>Who are they? Who is the most...? Where did it happen? Where are they? Where are you? Do they have + (noun)? (E.g. Do they have house, hair, scissors?) What is the woman wearing? What is the name / call + (character of the illustration)? How many are there? Where are the ears?</p> <p>Category I: Single questions</p> <p>Is the light on? What is your intention? It's gross? What is the backrest? What is pizza? Are they the Adams? Are they doing <i>sorrentinos</i> with their ears? Do they cut their ears to put on other people? Does the lady have olives? Do you have to take the dog to the vet? Are you going to stay aphonic by shouting? Do you agree with what they do?</p>
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³ The presentation of typical questions for each category respected the initial formulation of the authors and the language uses of the country in which they live (e.g. using the term *vos* instead of you). Authors only made spelling corrections.

Typological categories of questions for boys and girls on Picture C of CREA. Review of categories presented in Elisondo (2015).

Typological category III: frequently asked questions

It is + visible objects in the image or situation? (Is it a cat? Is it a restaurant?) Is there + a visible object? Character + action? (E.g. Does the waiter serve?)

Why + visible object or visible situation? (E.g., why are there cats?) Why + inferred object, situation or emotion? (Ex. Why is the man sad?)

What are they doing? Where is it, where are they?

Are they, are, were or are they + adjective? (Are they educated?)

What is inside / below / above ... (Bottle, table etc.)? What has ... (the plate, the bottle)?

Category II: frequently asked questions

What is it? What is jumping? What + some visible action? What is the name of a visible object or character? How old is your character? How many X's there? (E.g. How many cats are there?)

Are they + verb? (E.g., are they eating, what does the paper say, what are they eating, what does the lord want to eat?)

Category I: Single questions

Is not the boy concerned about what is wrong with the man? What is the intention of the ant? What breed were the cats? Does the centipede always wear a hat? Was it a bar? Is he unfaithful? It's Monday? He is single? Is it *Temaiken*, a zoo in Buenos Aires? Scam for food? How thick are the glasses of man? What would you do if this happened to you? Who is going to throw the shells? Are they going to eat peel?

Typological categories of questions for adolescents in Picture A of CREA. Review of categories presented in Elisondo (2015).

Typological category III: frequently asked questions

Why does it have ... or does not have + noun? Is it (was, will, are) + adjective (object quality)?

In what year was it invented / manufactured? When it was invented? How old are you? Who invented it? Where it is?

What is the use of part of the drawing (lever, handle, tube, etc.)? How does it work? How do you use numbers? As it is called?

Do you have (number, other things)?

What is it for? For what do you use it? Can you use it for...? Does it serve to...?

Category II: frequently asked questions

What is it? What is it made of? What material is it? What color is it? How is it?

It's a telephone? Is it another object (not a phone)? What is (certain part of the object)?

Are you? It's used? Used? It works? It sounds? Listening? Who uses it? Whose is it? Who does it belong to?

Category I: Single questions

If that phone was not used, would it be paid as it is now for the month? Do people like having the phone like this? What time do I call you?

In there are pulleys? In what mechanism is there? Someone with powers is raising it? Is anyone waiting for a call? What was his benefit?

When did the expected impact start working? Inside are there bugs? Since when do you use it legally? Is the phone ringing annoying? Is it from *Entel*? Was it accepted by society? Was it much sought after by the people? Was it a failure? Was it a great step to do it? Has it been a

lot of buying power? Did it influence our society? Were they used by privileged families or humble families? Are decorations indispensable?

Send a text message? Is it Manufacturing or mass production? Will it pass from generation to generation? What advantages and disadvantages does it bring?

Does it require a lot of care? Was it created during some revolution? You like it? Was it successful? Do you have one?

Typological categories of questions for adolescents in Picture B of CREA. Review of categories presented in Elisondo (2015).**Typological category III: frequently asked questions**

Why / for what + something visible in the picture? What are some characters doing? That makes? Are they + nouns (friends, killers, bad guys, etc.)? Is it + person or object? Is a Party, a shrink, or a family? Is it a painting? Where did it happen? Where are they? Where are you? Are they + verb? (E.g. are they playing?) Character + visible action? (Is the child crying?) What is it? What is + some visible object of the blade? What is the woman on the tray?

Category II: frequently asked questions

Who are they? Who is the most...? Is there something visible in the picture? (E.g., are there dogs?) What is a character called / called or mentioned? How many are there? What do they eat? Do they have an object? (E.g. Do they have a house?) What are they playing? Where are the ears?

Category I: Single questions

Do you dance tango? Nazi concentration camp? How can the lady who is seated be able to grab the glasses in the bones of the ears? ¿Out of control? Are the boys uniform of the school? Is it a war? Do the military invade? Is it anarchy? Do I shock your head? Did not they have a chance to be different? Who are the snacks for? Did they lose work? Do they forbid learning? Do they prohibit reasoning? What kind of communication is there? Does it compare with the situation in a country? Is it a tradition of them? If we could do it, would we? Is everything "gray"? A kind of maniacal doctor directs them? Are they ten? Do they live a utopia? Who are the chosen, black, Jewish or aboriginal? Are they *gauchos* or fashion? Expression *cronolecta* or *sociolect*?

Categorías tipológicas de preguntas para adolescentes en la PictureC del CREA. Revisión de categorías presentadas en Elisondo (2015).**Typological category III: frequently asked questions**

Is it or are they + object or situation visible in the image? Is there a + visible object? Character + action? Why + visible object or visible situation? Why + inferred object, situation or emotion? (E.g. Why is the lord angry?) What are they doing? Where is? Where it is? Where are they? Are they, are, were or are they + adjective? (E.g. Are they bored?) What's inside / under (object)?

Category II: frequently asked questions

What is it? What is that? What are they? What is jumping? What + some visible action? What is the name / flame + visible object or character? How old are you...? How many X's there? What color is X? Are they + verb? What does the paper say? Who? Who are they? Do you have a + visible object?

Category I: Single questions

Is it a creative or real drawing? The waiter made it appropriate? Did the waiter pipe revenge motives? Does the gentleman under the arm have a napkin? Is a will what is inside the bottle? Can you explain it to me? Are chicks or birds born? Why does he rest his elbows on the table if it is not due? Why is the tabletop black and white? How do you hold the tray if you have half arm? Will those chicks be the food to spare? Are you expecting news? The sadness of the diner is because the chicks should be eaten, which for him represents the good and the healthy? Eggs because they have chicks if they were not hatchlings? Will the fat man pay the bill? Who sings? Who is the chef? Are there any noises in communication? Will you go back to the dining room again?

Typological categories of questions for youth and adults in Picture A of CREA. Review of categories presented in Elisondo (2015).

Typological category III: frequently asked questions

Is it (was, will, are) + quality of the object? How is it? What is it made of? What material is it? What color is it? How much? What energy do you use?

In what year was it invented / manufactured? When it was invented? How old are you? How do I invent it? Who invented it? How does it work? How is it used? How are the numbers marked? As it is called?

What is it for? For what do you use it? Can you use it for...? Does it serve to...? What is it? Do you have (number, other things)?

Category II: frequently asked questions

Who uses it? Whose is it? Who used it? What is the use of part of the drawing (lever, handle, tube, etc.)? Are you? It's used? Used? Listening? It sounds? What is (certain part of the object)? Because it has or does not have a certain object? Is it another object (not a phone)? Where are the numbers?

Category I: Single questions

Which country did not get used? Who was the first called? Is the phone switched off only when the tube is supported? Will it reach the signal far? What is the name of the company that manages them in Argentina?

¿Contaminate? How many pesos are vouchers for a collector? Was the inventor T. Edison? Is the speaker convenient? Was it thread? Is it to turn back time? Is it a public booth phone operated by a person? Is it a register machine of the future? Is it a machine to transport to the future? National or foreign industry? Will my wife like it if I give it to her? Would you call Miami? I'm calling my girlfriend? Does communication between people improve? Is my phone in the living room? What benefits does it provide? What was it that made it replaced? What physical laws do you use? What important person of the time I use it? Save someone's life? Do they make noodles with that? Did you lose your peace of mind with the phone? Is it used in transport-ships? If you sit up what feeling would you feel? Did it serve in times of war? Are they pallets of a xylophone? Did the phone ring at 10 o'clock? Did you forget your cell phone? It is a *manicera*? Is it a grinder?

Typological categories of questions for youth and adults on Picture B of CREA. Review of categories presented in Elisondo (2015).

Typological category III: frequently asked questions

Why / for what + something visible in the picture? Is it a party or a shrink or a family? Are they + nouns? (Are they friends?)
Is it + person? Is it a painting? Character + visible action? What are some characters doing? Are they + verb? What is it? What is + some visible object of the blade? What is the name of the character? /
What is wrong with...? Who are they? Who is the most...?

Category II: frequently asked questions

Is there something visible in the picture? Do they have an object?
What is the woman wearing? Where did it happen? Where are they? Where are you? How many, how many are there? Where do the ears lead? What does it mean? Represents? What are you playing?

Category I: Single questions

Who could think of something so unpleasant? Do you sometimes take them to that center with a straightjacket, or do you go voluntarily?
Are they punishments or torture? Is Columbus when he came to America? How does the cook not see all this? What is her future? Which am I? How many watts is the focus? Is it an angry dentist? Where would they hang this painting? Do we really care or appear to care about others? Is it realistic or surrealistic? Is it a surreal image? Is it a Roman skirt? Are they in Buenos Aires? Are they in Japan? Is it a third world hospital? Do they make them to the vinaigrette? Little food for so many hungry?
Can we hear thoughts different from ours? Can they be circus workers? What can be done to change the situation? Do we know how to think for ourselves? Do we know how to receive criticism?

Typological categories of questions for youth and adults in Picture C of CREA. Review of categories presented in Elisondo (2015).

Typological category III: frequently asked questions

Are they or are they + visible objects in the image or situation? (Is it a cat? Is it a restaurant?) Is there a visible object? Character + action? (E.g. Does the waiter serve?) Why + visible object or visible situation? (E.g., why are there cats?) Why + inferred object, situation or emotion? (E.g., why is the man sad?) What are they doing? Where is it, where are they? Are they, are, were or are they + adjective? (E.g., are they educated?) What's in / down / above ... (Bottle, table etc.)? What has ... (the plate, the bottle)?

Category II: frequently asked questions

What is it? What is jumping? What + some visible action? What is the name of a visible object or character? How old is your character? How many X's there? (E.g., how many cats are there?) Are they + verb? (Eg, what are they eating, what does the paper say, what are they eating, what does the lord want to eat, does he have an object?)

Category I: Single questions

To what things do we make the most sense? Does the love of someone make it softer or caring? Build a shelter to protect them? Inside the bottle will you find the explanation for what you have on the plate? Is alcoholism a consequence of the aggressiveness or aggressiveness of alcoholism? Is it moral ethics and morals to have animals in restaurants? Is it a vegetarian eater? Is he with that face because he is a vegetarian? Will he diet? Is youth lost or at a crossroads? Do people take their life more calmly? Are the chicks alive or is it a dinner view? Do the chicks out of the shell represent the most visceral part? Cannot they be imaginary birds? Do not you always use guns to harm someone? Why is the prospect so bad? Why do we take aggression in a second and take ten minutes to accept the mistake? Could it be an experiment? What hygienic measures should a dining room respect?