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MEASUREMENT PROPERTIES OF ATTITUDES TOWARDS CREATIVE PERSONS QUESTIONNAIRE: A RELIABLE TOOL FOR UNDERSTANDING ATTITUDES TOWARDS CREATIVE PERSONS

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Abstract. The 21st century is characterized by challenges and opportunities and become the century of creativity. This is because the individuals develop creative tools to confront the changes that they are living. In this sense the study of attitudes towards creative persons is relevant, especially in the education context, because it permits to develop intervention programs that foster better attitudes on teachers and students. For that reason, the main objective of this research is to develop a questionnaire that allows to measure the attitudes of university students towards creative persons, and, to gather evidence about its reliability and validity. This research was made through an instrumental analytical study, with a sample of students pertaining to several faculties of the Complutense University of Madrid, Spain. At first, exploratory factor analysis, with a random half of the sample, was made. Secondly, the previous structure was confirmed by confirmatory factor analysis. The results confirm the three-dimensional structure (behavioral, affective, and cognitive dimensions). The final model exhibits an optimal fit and adequate reliability. The proposed instrument is a valid and reliable measure of the attitudes of the university students towards the creative persons.

Keywords: attitudes, creative persons, creativity, factor analysis, reliability, validity.

Introduction

The objective of the present research is to analyze the psychometrical properties (validity and reliability) of a new instrument to the measure of the attitudes towards the creative persons (ACPs) in a sample of university students. As will be seen later, creativity and attitudes towards creativity are widely studied constructs, however, ACPs have hardly been studied. In the last decade only one scientific article has been found on this topic (Skylor Zhang et al., 2020), however, it is focused on the social perceptions of a creative person (stereotypes and prejudices) and not in attitudes, in addition, the instrument used by the authors does not exhibit adequate psychometric properties.

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That is why the main questions that guides this research are: a) does a newly created instrument present good properties for measuring ACPs?; b) does the proposed instrument present evidence of construct validity, in other words, do the elements correspond to the model made up of the attitudes and characteristics of creative persons on which it is based?; c) is the test a reliable measure of attitudes according to the proposed model? To answer these research questions and to explain the model under which the test items have been constructed, the following are briefly exposed: firstly the definition of creativity, secondly the characteristics of creative persons, thirdly, the definition of attitude on which the test is based and finally, a brief mention of the measurement of the target construct.

Creativity. Creativity is a multidimensional and complex concept. There are different theoretical positions and several approaches from which this construct can be interpreted, in addition, is a complex construct and there is no consensus around its definition (Elisondo & Donolo, 2013; Sanz de Acedo Lizarraga et al., 2014). According to Campos Cancino and Palacios Picos (2018), the study of creativity has generated a myriad of conceptualizations, even contradictory to each other. To clarify, organize and process such amount of information, these authors propose to classify all existing definitions of creativity in at least two recognized groups: a classical conception and a modern vision.

The classical conception refers to creativity as a gift belonging only to a select few. Creativity in this sense appears in an innate way and it is associated only and exclusively with fields such as art (Labarrere Sarduy, 2005). By the other hand, the modern conception of creativity links it to the human being. This approach is based in the idea that each and every individual has creative potential, that is, creativity stop being a gift to become a common and shared characteristic of all the people (Muñoz de Luna, 2015; Campos Cancino & Palacios Picos, 2018; Elisondo, 2015; López Martínez & Navarro Lozano, 2010; Morales Valiente, 2017; Pérez Pérez, 1989; Romo, 2019; Vecina Jiménez, 2006). From this approach, Hernández White (2011), Luescher et al. (2019) and Powell Jones (1972), affirm that creativity is not linked to any specific field.

One of the main characteristics shared by all the definitions framed under this approach refers to the social nature of creativity. According to Cuadros Rodríguez et al. (2012), Valero-Matas et al. (2016) and Velázquez Burgos et al. (2010) the creativity is a mechanism of interconnection between the person and the context. In the same sense, Ivcevic and Mayer (2006–2007), defend the existence of two types of creativity: an artistic and scientific creativity and an everyday creativity in which individuals generate ideas or products with the aim of improving their reality or quality of life without the need for social recognition (Beghetto & Kaufman, 2007; Kaufman & Beghetto, 2009; Yentzen, 2003). Under this scenario, authors such as Hasirci and Demirkan (2003) and Martínez-Otero Pérez (2005) suggest that creativity is composed by the following dimensions: (a) creative person, (b) creative process, (c) product and (d) environment that are related to each other (Klimenko, 2008; Violant & de la Torre, 2006).

Creative person. As suggested by Luescher et al. (2019) and Hsen-Hsing Ma (2009), creativity is considered one of the most characteristic abilities of the human being. The creative person is the topic that has generated the greatest number of studies in the field of creativity (Zampetakis, 2010). Most of the previous research has as main objective to establish

and outline common characteristics of creative persons (López Martínez & Navarro Lozano, 2010; Silvia, 2015). From a modern perspective (assuming that all people are potentially creative), the task of characterizing the creative person acquires a high difficulty, however, there are a series of common characteristics that define the creative potential. The level of those characteristics varies from one person to another depending on the influences of the context and creative interests (García Guardia & Perales, 2008). The level of cognitive development of individuals also influences his creative potential (Silvia, 2015; Furnham et al., 2005–2006; Labarrere Sarduy, 2005; López Martínez & Brufau, 2010).

Numerous classifications have been proposed in the attempt to explain the characteristics that generate the creative potential (Cuadros Rodríguez et al., 2012; Garcês et al., 2016; López Martínez & Navarro Lozano, 2010; López & Mendoza González, 2016), creative individuals could be characterized in several ways, with two primary approaches: a) the first is through an implicit or stereotypical perspective, this approach was not used in the present research; b) the second includes empirically derived qualities that are associated with creative individuals. This is the approach used for the present work. The list of attributes used here were derived of a taxonomy of framework proposed by Ma (2009) and combined with Furnham et al. (2005–2006) work on individual differences and creativity. Based in Ma (2009), Muñoz de Luna (2015) and Díaz Gamba and Morales Bopp (2011) we consider the following characteristics more flexible or malleable (*i.e.*, changeable/trainable) qualities of the creative person:

(1) Flexibility. This characteristic refers to the capacity of addressing the problems considering the totality of the perspectives. The creative person tries to adapt quickly to the environment, modifying his thinking according to the new circumstances. Therefore, the creative thinking is not based in a single point of view, but it expands the range of possibilities for resolving the problem, quickly moving to one extreme or the other. One of the possible ways to measure mental flexibility is to evaluate the frequency with which the individual generates new solutions to the same problem;

(2) Originality. This characteristic gives to the creative person the ability to see, understand and explain reality from a unique and special point of view. It allows the union of novel and infrequent ideas that are correct for enable the resolution of a specific problem. The measurement of this characteristic includes the quality of the response given by the person, as well as the degree of unusually that it can generate;

(3) Fluency. This characteristic of the creative person refers to the possibility of think into a network of multiple ideas, concepts, and definitions of quality, in a short period of time, with the aim of solving a problematic situation;

(4) Viability. It is the ability of the creative person to think in solutions that can be realizable in practice;

(5) Analysis or abstraction ability. It is the mental capacity that allows the people to come up with a creative product. Through it, the individual fragments the problem into small elements, being able to understand and analyze the relationships that are established between them;

(6) Ability to synthesize or redefine. This characteristic gives to the creative person the ability to form new ideas or products from various elements that form different entities. That is why creative persons present a high level of curiosity in multiple fields and infinity of problems and circumstances. Through the union of elements belonging to different problems the person can generate new ideas or products;

(7) Sensitivity for problems. This feature refers to the commitment that the person acquires to the problems that occur in their environment. This characteristic means to know the different elements that are part of the problem, as well as, their shortcomings and disadvantages, and trying to give answers to them;

(8) Elaboration. This characteristic refers to the ability to build an idea, definition, or product until reach a level proposed from the beginning of the process.

Attitudes. The present research uses as framework the classification in components of attitudes proposed by Allport (1935) and validated by Breckler (1984). These authors refer to the cognitive, affective, and behavioral dimensions as factors that compose the concept of attitudes. The cognitive component of attitudes includes the expressions of thoughts, beliefs, ideas, or opinions that an individual develops based on an object of attitude. The affective dimension is related with an emotion of pleasure or dislike that a subject present to any attitudinal object. And finally, the behavioral factor of attitudes is related to the behavior, or intention of behavior that the individual manifests towards an attitudinal object. To develop the present instrument a combination of the three dimensions of attitude and the eight characteristics of the creative person above presented was used.

Measurement of creativity in educational context. Most of the previous research focuses on aspects related to the conception and measurement of creativity, but not in the measurement of ACPs (Elisondo et al., 2012). This has been one of the main motivations when developing this research because we consider necessary to develop a test to measure the ACPs with the aim of establish criteria for action that modify or enhance that attitude, and to favors the creation of optimal environments for the development of the creative process.

Aljughaiman and Mowrer-Reynolds (2005), investigated about the conceptions that school teachers have about the concept of creativity and about creative students. For their study, the authors elaborated an instrument composed of affirmations related to creativity, combining closed questions (Likert-type) with of open questions. The results of the study showed that the beliefs of the teachers regarding the concept of creativity were positive, however, they do not consider themselves responsible for the promotion of creativity. More recently, Kettler et al. (2018) found that some teachers believe that all the students have a potential to be creative, but other group of teachers subscribe to a classic approach viewing creativity as an innate quality that only some students may develop.

Research in the field of creativity suggests the importance of developing instruments and pedagogies that favors creative processes in educational context (Vernia Carrasco & Gustems Carnicer, 2016). However, the theoretical importance of this concept at the research level, is not reflected in the reality and educational practice or in the measurement of the construct (Campos Cancino & Palacios Picos, 2018; Labarrere Sarduy, 2005). In this sense, the measurement of attitudes toward the creative person is necessary and appropriate, for example in university students, since it is the population that is being trained professionally, as a starting point for the creation of possible lines of future action. Moreover, attitudes are related with behaviors and the knowledge of the attitudes allows to predict the people behaviors (Baron & Byrne, 2005). Therefore, it is necessary to know the attitudes of university students towards creative persons, because negative attitudes are susceptible to change (Pacheco Ruiz, 2002; Rodríguez Pérez, 2012).

1. Materials and method

1.1. Design

The present study has an instrumental design, since it seeks to build, apply and analyses the psychometric properties of a measuring instrument using multivariate statistics (Montero & León, 2002).

1.2. Participants

The sample was non probabilistic and is composed by 1484 university students of different academic programs of the faculties of Arts, Biology, Information Sciences, Physics, Chemistry, Mathematics, Geology, Law, Nursing, Physiotherapy, Podiatry, Statistical Studies, Pharmacy, Philosophy, Geography and History and Medicine from the Complutense University of Madrid (CUM). Each faculty are represented by between 3.9% and 9.4% of participants. All students have participated voluntarily in this research and signed an informed consent. The sample consists of 56.4% women and 43.4% men. The age of the participants oscillates between 16 and 47 years old with a mean of 20.87 (SD = 2.51).

1.3. Instrument

The present research develops the questionnaire of ACPs that measure the ACPs in university students. The framework for the development of the test is the three-dimensional model of attitude (Allport, 1935; Breckler, 1984). Items also were constructed having into account the characteristics of the creative person (Muñoz de Luna, 2015; Díaz Gamba & Morales Bopp, 2011; Ma, 2009). The instrument, originally designed, is made up of 45 items measured through 5-level Likert-type items, where students must respond according to a scale ranges from completely disagree to fully agree with the statement. 15 of the items are prepared to be scored inversely.

1.4. Procedure

First, through an analysis of the literature regarding creativity and attitudes, and taking into account the three components of the attitudes (behavioral, cognitive and affective) and the eight the characteristics of the creative person (viability, sensitivity, fluency, originality, flexibility, ability to synthesize, elaboration and abstraction), the members of the research team developed a questionnaire with a total of 60 items, 20 for each dimension of the attitude, with the condition of making at least two items per dimension considering each of the characteristics of the creative person.

This questionnaire was evaluated by a group of 4 experts (two psychometrists and two creativity experts). Psychometrists evaluated clarity and precision and the experts evaluated the item-objective association. Items that were poorly written or that were not correctly associated with their objective were ruled out, reducing the test to 45 items (15 of each dimension). This version of the ACPs was applied in paper-pencil format in the university faculties previously mentioned. Once the data was obtained, and through the statistical factor analysis technique, the final solution was reached, where the questionnaire was reduced to a total of 28 items (presented in Table 3).

1.5. Data analysis

Data analysis for the present study has been carried out in three phases:

Phase 1 – exploratory factor analysis (EFA). In the first phase, the exploratory analyses were carried out, initially with the 45 items that compose the ACPs. The input for the analysis was the matrix of polychoric correlations. Authors such as Gadermann et al. (2012) suggest that, when dealing with ordinal data, the use of polychoric matrices is the most recommendable choice. This matrix has been examined using the Bartlett's test, the Steiger's test and Jennrich's test and the Kaiser-Meyer-Olkin index (KMOI) to detect the adequacy of the analysis. To extract the factors, the minimal residual method has been used (Harman & Jones, 1966), since it does not require estimation of initial communalities and is very efficient in computational terms (Ferrando & Anguiano-Carrasco, 2010). To decide the number of factors to be retained, the parallel analysis method (Horn, 1965) and the minimum average partial of Velicer (1976) have been used as suggested by Ruiz et al. (2010). The sample of subjects used for the exploratory analyses was a random sample of half of the participants (N = 742), all of them valid for the analysis;

Phase 2 – confirmatory factor analysis (CFA). The diagonally weighted least squares (DWLS) method was used to analyze the asymptotic covariance matrix. This method has been selected due to the ordinal nature of the variables of the study. Following Brown (2015), the use of the maximum likelihood estimation method when the instrument is of the Likert-type, can cause the attenuation of the relations between the different indicators, being able to reach inaccurate results. In this case, the author recommends the use of other models such as the weighted least squares (WLS), DWLS, the robust weighted least squares estimation (RWLSE) or the unweighted least squares (UWLS). DiStefano and Morgan (2014), argue that both the RWLSE model and the DWLS are based on the same formula as the WLS model, however, instead of investing the total weight matrix, they invest the diagonal elements of it, avoiding certain difficulties associated with the WLS model.

The sample of participants used was 742 subjects (the other half of the total sample). The fit of the model has been evaluated with a mixed criterion proposed by Brown and Moore (2015) that includes the χ^2 Satorra-Bentler's scaling, the root-mean-square deviation (RMSD), and its 90% confidence interval, the residuals mean quadratics (RMQ) and non-regulated adjustment indexes (NRAIs) and comparative indexes (CIs). The recommended values for a suitable adjustment are: RMSD <.05, CI> .95, NRAI> .95 and RMQ <.08 (Brown & Moore, 2015);

Phase 3 – reliability. The reliability has been studied by the internal consistency of each scale (Cronbach's alpha) and for the total score. Additionally, the confidence interval for each of the alpha coefficients has been calculated.

Software: EFA was carried out using *SPSS* 21 (IBM Corp. Released, 2012) by the *SPSS* R-Menu-add-on that allows to do ordinal factorial analysis through R from *SPSS* (Basto & Pereira, 2012), the version package (Rosseel, 2012) version 0.6-1 for R and the estimation of confidence intervals for reliability with the ltm package version 1.0-0 (Rizopoulos, 2006).

2. Results

2.1. Exploratory factor analysis

First, an EFA is carried out to answer the first and second research questions. It should be noted that the data that has been obtained is compatible with the EFA. In this sense, the KMOI sample adequacy measure, whose value is 0.924, and the Bartlett's test (χ^2 = 16861.785, gl = 990, $p < 0.0001$), suggest that the items present a enough intercorrelation to carry out the EFA. The Steiger's test (χ^2 = 59445.456, gl = 990, $p < 0.0001$) and the Jennrich's test (χ^2 = 3501.320, gl = 990, $p < 0.0001$) confirm the adequacy of data to perform the analysis. To determine the number of factors retained, the parallel analysis (Horn, 1965) and optimal coordinates indicate a solution of 45 items that saturates in 3 factors, which explain 41.021% of the total variance. Table 1 shows the factor loadings of the 45 items that compose the ACPs. As can be seen, the factor 1 is composed for the items developed for the measurement of the behavioral dimension, the factor 2 for the items that refer to the affective dimension, and lastly, the factor 3 is formed by items of the cognitive dimension, this structure corresponds to the model underlaying the items construction and provide evidence for the answer to the second research question.

Table 1. Factor loadings according to exploratory factor analysis for the 45 items of attitudes towards creative persons (source: created by authors)

Factor	Item	Factor loadings		
		Factor 1	Factor 2	Factor 3
Behavioral	P35	.760	.270	.426
	P6	.696	.202	.339
	P17	.769	.273	.449
	P29	.754	.297	.454
	P36	.720	.233	.428
	P45	.682	.230	.356
	P27	.691	.233	.385
	P18	.694	.283	.392
	P8	.694	.220	.473
	P10	.671	.362	.373
	P12	.685	.218	.475
	P2	.578	.150	.336
	P34	.613	.236	.364
	P4	.555	.317	.371
	P41	.349	.213	.229
Affective	RP25	.344	.838	.151
	RP24	.313	.815	.184
	RP26	.324	.778	.199
	RP14	.257	.720	.155
	RP44	.369	.759	.237
	RP40	.245	.701	.179

End of Table 1

Factor	Item	Factor loadings		
		Factor 1	Factor 2	Factor 3
	RP15	.224	.694	.138
	RP23	.245	.690	.168
	RP33	.231	.673	.111
	RP13	.180	.639	.080
	RP22	.146	.623	.082
	RP7	.267	.626	.148
	RP3	.256	.593	.102
	RP9	.222	.541	.109
	RP1	.176	.520	.089
Cognitive	P30	.398	.219	.612
	P32	.388	.217	.603
	P31	.295	.087	.549
	P38	.439	.213	.626
	P19	.398	.172	.597
	P37	.437	.239	.615
	P42	.188	.076	.473
	P39	.336	.120	.535
	P20	.465	.309	.593
	P28	.479	.261	.583
	P43	.180	.014	.411
	P16	.271	.099	.445
	P5	.277	.033	.436
	P11	.471	.314	.529
	P21	.144	–.033	.303
	P30	.398	.219	.612
	P32	.388	.217	.603

To determine if the model obtained from the EFA is valid, it was necessary to analyses the statistics of goodness of fit (GF) and the matrix of residual correlations. In the first case, the statistics are adequate: GF (UWLS) = 0.903 and RMQ = 0.042. Through the matrix of residual correlations, it is observed that the number of residues greater than 0.05 is 18, with a percentage of 18.82%, therefore, the EFA model is valid.

2.2. Confirmatory factor analysis

Second, a CFA is performed to confirm with even more certainty the answer to the second research question. Table 2 presents the different confirmatory models carried out through the CFA, and the model is graphically represented in Figure 1. The first CFA was performed with the 45 items defined in the EFA, from there, and analyzing the modification indexes, items that yielded values greater than 20 were eliminated. Correlation in the errors were not contemplated because of the assumption of independence that the items should have in a

measure instrument. The last row of Table 2 corresponds to a second-order model in which the three dimensions are subsumed in a latent common factor (ACPs). This second order model is represented in Figure 2.

Table 2. Fit indices of the tested models (source: created by authors)

First order model	x^2	*df*	*P*	*Comparative index*	*Non-regulated adjustment index*	*Root-mean-square deviation*	*Residuals mean quadratics*
45 items	2800.108	942	0.000	0.980	0.979	0.052 (0.049–0.054)	0.054
Removing P31	2500.705	899	0.000	0.983	0.982	0.049 (0.047–0.051)	0.052
Removing P37	2328.375	857	0.000	0.983	0.983	0.048 (0.046–0.050)	0.051
Removing RP26	2192.091	816	0.000	0.982	0.982	0.048 (0.045–0.050)	0.052
Removing P35	2018.538	776	0.000	0.983	0.982	0.046 (0.044–0.049)	0.051
Removing P43	1885.920	737	0.000	0.984	0.983	0.046 (0.043–0.048)	0.051
Removing RP15	1744.235	699	0.000	0.984	0.983	0.045 (0.042–0.048)	0.050
Removing P19	1576.275	662	0.000	0.986	0.985	0.043 (0.040–0.046)	0.049
Removing RP40	1452.741	626	0.000	0.986	0.985	0.042 (0.039–0.045)	0.048
Removing P21	1308.721	591	0.000	0.988	0.987	0.040 (0.038–0.043)	0.047
Removing RP24	1216.032	557	0.000	0.987	0.987	0.040 (0.037–0.043)	0.047
Removing RP22	1157.736	524	0.000	0.987	0.986	0.040 (0.037–0.044)	0.047
Removing P27	1050.887	492	0.000	0.988	0.987	0.039 (0.036–0.042)	0.046
Removing RP13	968.974	461	0.000	0.988	0.987	0.039 (0.035–0.042)	0.046
Removing P41	911.040	431	0.000	0.989	0.988	0.039 (0.035–0.042)	0.045
Removing P4	817.113	402	0.000	0.990	0.989	0.037 (0.034–0.041)	0.045
Removing P34	743.265	374	0.000	0.990	0.989	0.037 (0.033–0.040)	0.044
Removing P10	634.118	347	0.000	0.992	0.991	0.033 (0.029–0.038)	0.042
Second order model	634.118	347	0.000	0.992	0.991	0.033 (0.029–0.038)	0.042

The high and significant factor loadings and the GF of the final models (first and second order) lead to evidence that the scores obtained with the test validly measure the components of the construct hypothesized in the underlying model.

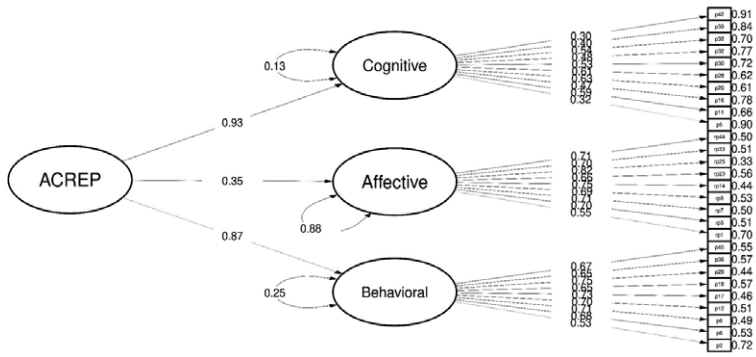

Figure 1. Confirmatory factor analysis: first order model (source: created by authors)

Note: ACREP – attitudes towards creative persons.

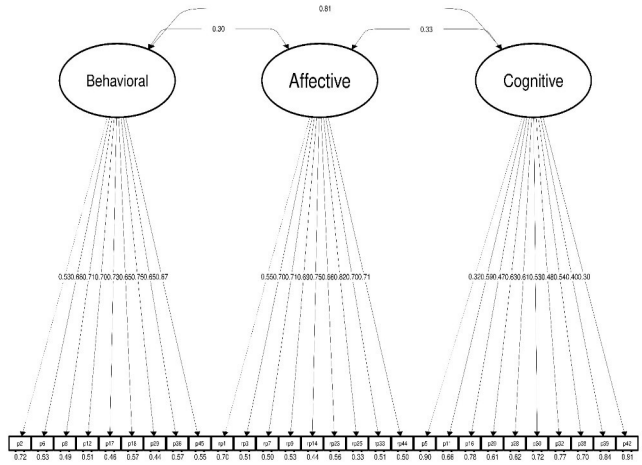

Figure 2. Confirmatory factor analysis: second order model (source: created by authors)

The Table 3 present the items and dimensions that finally compose the ACPs so that other researchers can make use of the instrument.

Table 3. Final version of attitudes towards creative persons (source: created by authors)

Factor	Dimension	Item
Behavioral	Analysis or abstraction ability (+)	I look for creative persons when I need to have a greater understanding of a problem that I seek to solve.
	Ability to synthesize or redefine (+)	I look for creative persons when I need to better develop an idea to solve a problem.
	Ability to synthesize or redefine (+)	I work with creative persons to have a broader understanding of the problem I am trying to solve.
	Elaboration (+)	I work with creative persons for reach the maximum level of development in the solutions or products that I am looking for.
	Flexibility (+)	I look for creative persons to find out different points of view on a problem.
	Flexibility (+)	I listen from creative persons all possible solutions to a certain problem.
	Fluency	I work with creative persons to have new ideas that allow me to solve a problem.
	Originality (+)	I interact with creative persons to learn their perspectives on a problem I need to solve.
	Viability (+)	I ask creative persons to help me find the most viable solution to a problem.

End of Table 3

Factor	Dimension	Item
Affective	Analysis or abstraction ability (–)	What overwhelms me about creative persons is that they need to understand all the elements of the problem to achieve a global understanding of it.
	Analysis or abstraction ability (–)	It bothers me that creative persons can understand all the elements that are part of a problem.
	Ability to synthesize or redefine (–)	I dislike that creative persons show interest in many problems.
	Ability to synthesize or redefine (–)	I dislike that creative persons can build new ideas from different perspectives.
	Elaboration (–)	I dislike that creative persons are deeply involved in finding the solution to a problem.
	Fluency (–)	It bothers me that creative persons can connect many ideas at the same time.
	Originality (–)	I dislike that creative persons can see reality from different points of view.
	Viability (–)	I dislike creative persons finding workable solutions to a problem.
Cognitive	Analysis or abstraction ability	Creative persons understand all the elements that compose a problem.
	Ability to synthesize or redefine	Creative persons' curiosity enables them to tackle myriad problems.
	Elaboration	Creative individuals are demanding with the quality of the solutions obtained for a problem.
	Flexibility	Creative persons propose different solutions to the same problem.
	Fluency	Creative persons generate multiple ideas for a problem in a short time.
	Originality	Creative persons amaze others with the solutions they have found for a particular problem.
	Originality	Creative persons can see the complexity of a problem from different points of view.
	Sensitivity for problems	Creative persons evaluate the different difficulties they face in the process of solving a problem.
	Sensitivity for problems	If a creative person visualizes the solution to a problem, he gives himself fully to the elaboration of this.
	Viability	Creative subjects face problems that apparently have no viable solution.

3. Reliability analysis

According to Cronbach's alpha (Table 4), the reliability for each of the dimensions of the ACPs, as well as of the total scale of the attitudes, is highly satisfactory. This result is confirmed by the other indices presented (ordinal omega and ordinal alpha). This result helps us to confirm the answer to the third research question as the test is very reliable in measuring ACPs.

Table 4. Reliability coefficients according to dimension and total test (source: created by authors)

Dimension	Cronbach's alpha	Ordinal omega	Ordinal and Cronbach's alpha
Behavioral	.866 (.856–.876)	.889 (.881–.898)	.889 (.880–.897)
Affective	.849 (.838–.860)	.887 (.879–.896)	.886 (.878–.895)
Cognitive	.753 (.734–.772)	.787 (.771–.804)	.786 (.769–.802)
Attitudes towards creative persons	.881 (.872–.889)	.899 (.891–.906)	.901 (.894–.908)

Discussion

The main contribution of this research is to provide a new and reliable instrument for the measurement of the attitudes of the university students towards the creative persons, which is framed within the three-dimensional model of Allport (1935) and incorporate the characteristics of the creative persons described by Muñoz de Luna (2015) and Díaz Gamba and Morales Bopp (2011), so it can be said that the first research question has been answered.

A lack of instruments to measure ACPs was detected in the scientific literature, this is the reason for which the present work becomes relevant. In addition, the present research also presents the psychometric properties of the proposed instrument, as a result, ACPs is an objective instrument that may be used to obtain a reliable and valid measure, in different contexts, of the ACPs and to detect profiles of people that exhibit negative attitude in order to generate intervention programs to change the attitude.

The results confirm the theoretical factorial structure evidencing that the test presents construct validity. The three resulting dimensions are conformed according to the hypothesized classification of attitudes, which has allowed us to resolve the second research question.

Regarding to the reliability, Borgstede and Hoogeveen (2014) and Sanz de Acedo Lizarraga et al. (2014) affirm that creativity is a multidisciplinary concept, which is in continuous evolution, and that therefore the task of conceptualization is complex. This complexity leads to a low precision in the measure of the construct. In contrast, the ACPs exhibit very good reliability and precision contributing to the theoretical discussion of what a creative person is. Also, the proposed instrument allows to understand the concept of ACPs, allowing us to answer the third research question.

One of the limitations of the present research is that the sample was non-probabilistic, however, its big size, and the participation of students of different faculties, allowed us to have a greater variability of ACPs. The present study collects data from variety of faculties of

CUM such as: Education, Medicine, Information Sciences, Art, or Biology but expand the representativeness of different universities in research, through a probabilistic study, could suppose a future improvement in the ACPs, since would allow to generalize the evidences of validity and reliability found in the present research.

Regarding to future studies within the field of creativity, it would be interesting to extend the study of identification of the characteristics of the creative person. As noted previously, the concept of creativity is constantly evolving, so an in-depth analysis of it, considering various perspectives of study, would involve a theoretical enrichment that would be reflected in a more practical conception of the term. This will facilitate the measurement of both, the characteristics presented by creative persons and the attitudes towards them.

Another interesting future line of research would be the analysis of the attitudes in two samples: one of people with a high level of creativity and other with a lower level. The analysis of the differences in ACPs based on other variables of interest such as university studies or gender also may be the origin of futures studies.

Another possible application of the ACPs refers to teachers. Using the ACPs is possible to establish a teaching profile that favors creativity because of its attitudes. This aspect is considered of great importance, since it directly affects a fundamental axis of the transmission of the creative act, as is the teacher himself. This analysis would allow to establish guidelines and suggestions of changes that allow a greater creative development in the classrooms.

The test also may be applied in the job context, for example, to analyses whether ACPs are predictors of the ability to work in a group that has a creative person. This analysis could be relevant in different areas where teamwork is required, such as in the workplace, to generate intervention programs in which a more positive ACPs is encouraged.

Conclusions

1. There is much research in the field of creativity, its definition and the factors that affect its development but not in the field of ACPs;
2. Instruments to measure attitudes or perceptions towards creative persons are scarce or do not have proven psychometric properties;
3. This study presents a reliable and valid instrument to measure ACPs that can be used not only in the educational field, but also in multiple contexts for both diagnosis and intervention.

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