

Development of Creative Personality Inventory (CPI): Hypothetical Concept

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This study reports the development and testing of a creative personality measurement tool called Creative Personality Inventory (CPI). The theory that this inventory is built upon is based on the premise of a Creativity Trait. A test of the validity of the inventory was done using Spearman-Brown and reliability with Split-Half. The study focused on high school students in the province of Lampung – Indonesia. The number of participants in the study is 149 people (96 women and 50 men) aged between 16-18 years. The study's results suggest that the CPI serves as a reliable self-report to measure the creative personality of students with a reliability coefficient of 0.911.

Keywords: CPI, inventory, personality, creative, student



Creativity is at the heart of the modern technological world and correspondingly no less a focus in schools across the globe (Lynch, et al, 2015). In line with that expressed by Runco (2007), "creativity is important in daily life and in work settings, as it describes a core aspect of human adaptability". Put simply, creativity is an important aspect in the modern-day work setting. Creativity can be broadly defined as the ability of the individual to create something new or create a useful new idea. Fuller, cited in MA Runco (2014), stated that creativity is "... capacity to develop novel and useful ideas, behaviors, or products, and tends to be seen as a complex capacity bearing on a mix of individual, situational, and cultural variables". In summary creativity by Runco is seen as an individual's capacity to establish novelty and useful ideas.

In the past, creativity a valuable commodity in developed countries today. Many attempts have been made to conduct the study of creativity. This was done to understand the factors that make people be creative. Studies conducted also aims to help predict and develop the creative potential of the individual self (Park, 2013). Training and development efforts to maximize the function of creative thinking initiated by Edward de Bono in 1967 and Tudor Rickards in 1988 (Ind and Watt 2004, p. 5). Starting from this effort began research to measure the creative talent and potential of individuals who discuss creativity in cognitive perspective.

Guilford, Wilson, Christensen, & Lewis, in 1951, has developed a series of tests such as the series of tests stressing ingenuity, the ability to Overcome constraining sets, and fluency in ideation. There is also a researcher who developed the scale of creativity in the form Adjective Check List. Measurements using a self-assessment checklist can be used (self-rating). Smith and Schaefer also developed 27 adjectives subset of items in the form of a self-rating scale. Domino develops 59 item subscale of the ACL. While Gough developed a 30-item scale creative personalities (creative personality scale) (Park, 2013). All of these instruments were developed for school-age children and students, however, need to be re-examined for its relevance today.

In a creative personality research still to this day are still having problems theory. Among the experts still, do not meet the agreement because it is still waiting for empirical evidence gathered to be used as the basis of the theory. Nevertheless, this study is based on the opinion of experts is currently in the measurement of creative personalities. With hope, this research can



provide empirical inputs for future research related to the measurement of creative personality. If the main purpose of the study of creativity is directed to identifying a creative person, then the choice of personality theory as the basis for the theory (Smith, 2008). I agree with Runco (1999) in Smith (2008) that ignores the social environment as a factor that can affect one's creativity. However, this does not mean to underestimate the importance of social factors that can make or hinder the creativity of a person to function optimally.

In this research, I tried to establish the concept of a creative personality, then proceed with the development of the instrument. The instrument was developed aiming to measure the creative personality in adolescents of school age in Indonesia. Before speaking further need to understand the limits of creativity definitions referred to in this article. It was agreed that creativity will have different forms in different domains (MA Runco, 2004). Creativity here is the educational context rather than in the context of art, industry or economy. Because the definition of creativity will be different when the context is the different benchmark. While the perspective used in this article looked at the creativity in the perspective of personality (personality perspective). As a basic starting point of creativity here defined as creative characteristics which tend to appear in person. In the trait approach believes that the characteristic (trait) that are likely to appear on the behaviors that make up a person's personality, can be a mirror that illustrates the creative potential in a person. Runco even mentions creativity as the capacity within individuals.

Once the importance of the role of creativity in the life of the investment can be seen from the many studies conducted. Compared with other areas of research that study, the study of creativity has not undergone rapid development. The statement appeared in an article in one of the articles in the Creativity Research Journal. In the era of information technology and global era led to competition is so tight in all areas. Countries that gave rise to many innovators and creative people to be in the world spotlight. Even the creative products of these countries can transform lives in the world today. One example of research conducted by Kerr & McKay, (2013) at the University of Kansas with a title SearchingSAT for Tomorrow's Innovators: Profiling Creative Adolescents. This study aims to identify creative adolescents, average age 16 years. Later they were identified as having high creativity will be directed to pursue fields of science, technology, engineering, mathematics, arts, and human services.



Experts believe creativity is basically everyone has the potential to be creative. One's creative potential difference lies in the degree and field as a setting to express their creative potential. Maxim (1980) revealed that in certain children can display a higher degree of creativity than other children. However, it must be understood that no child who has no creativity at all. That is, all children have the opportunity to be creative given the inborn. The creative potential of every child can develop or not is determined by chance, encouragement, and environmental stimulation, family environment (parents and siblings), peers, and teachers. Besides the issue of gender is sometimes also a barrier for some children to apply creative (K., 2000).

Based on the above statement, then the role of the family is very important in developing the creativity of children in addition to genetic factors. Environmental conditions also play a role, the school environment can be a medium for the development of children's creativity. Teachers in schools can also be an instrument for developing the creativity of children. In addition to subject teachers, guidance and counseling teacher is seen to have greater opportunities in the development of creativity of children in school. In Indonesia research on creativity is still relatively minimal. The issue of creativity seems to have made a major theme in the learning process in Indonesia. This may be one of them due to the lack of results of research that addresses the theme of creativity (K., 2000).

Search results on the Internet are still rare to find research on creativity in Indonesia were published online. This became the basis of that research on creativity in Indonesia needs to be improved in quantity and quality. If so, might appear reasonable if not many creative people in Indonesia, seen from the research and efforts to produce creative people are still a little bit done. This state became the rationale for me as a citizen to caregiving attention to the development of creativity in Indonesia. The purpose of this research is to produce a Creative Personality Inventory (CPI) for high school students. Later CPI measurement results can be used as information in the planning of adolescent creativity development program in Indonesia. For the purposes of this research, there needs to be examined from various sources such as journals and books. The beginning of the most important is the study to understand the definition of creativity and personality definition. Results of the study of the basic framework used in the development of the CPI.

Method

1. Design

This study design is research and development, with five stages of development. The final goal as the product of research is Creative Personality Inventory (CPI). Inventory was used to measure creativity in personality perspective to high school students. The measurement results are expected to be used as additional information in the planning of adolescent creativity development program in Indonesia.

2. Participants

In this study, subjects were included as participants are 149 high school students 11th-grade students are in the age range between 16 to 18 years (average 16.17 years), 96 girls (65.75%) and 50 the male students (34.25%). Participants came from different schools in the border area between the towns and villages. Random participants came from villages and towns that the majority of parents work as farmers, civil servants, entrepreneurs, and workers. Schools as a sample chosen purposively, then students as participants were chosen randomly. Students were chosen as participants were placed in one room, then briefed before filling the creative personality inventory. Schools sampled were in Lampung province western region of Indonesia. Lampung is transmigration destination areas inhabited by various tribes and ethnic groups in Indonesia. It can even be said that it is a miniature of Indonesia Lampung because of the diversity of tribes and ethnic culture of the people. So it can be assumed that the samples have taken a closer match to the culture in Indonesia.

3. Instrument

The instrument used in this study is the Creative Personality Inventory (CPI) with a number of statements as many as 24 items. Type answer CPI made in the form of a Likert scale of 1 (Very Match) to 5 (Very Not Available). Test the validity of items using models Spearman-Brown, with a reliability test using a model Split-Half. This inventory measures the Personality Creative of the three aspects of a creativity traits namely product (6 items measure Originality and useful), attitudes (9 items measure curiosity, imagination, and risk-taking) and behavior (9 items measuring flexibility, unique, and valuable). Based on the results of calculation is chosen 24 items declared valid until a significance level of 0.01 with a reliability coefficient of 0.911.



4. Procedure

This study was conducted in two stages, first conducted a study about the concept of creativity from various books and journals. At this stage, the study by reading journals to understand the latest developments related to the concepts and theories of creativity, which is used as the main reference journal is the Creativity Research Journal. It also conducts studies on the books to understand the dynamics of creativity and perspective view of the creativity of the book is used as the main reference is the book written by Mark A. Runco, James C. Kaufman, Robert J. Sternberg. Both concepts of creative personality in the form of operational definitions. The concept is built based on the results of the study on the reference in question.

The third makes grating inventory refers to the operational definitions have been created. Then proceed to make statements inventory. Statement of inventory adjusted to the level of development of high school students. The fourth draft of creative personality inventory. Type of answer choices made a scale of 1 to 5, this is done to facilitate charging and analysis. Draft inventory then corrected by three experts for comments related to the construct validity. Results of expert judgment revised inventory basis. Fifth after the revised spaciousness tested for validity and reliability statistically, followed by analysis and interpretation.

Results

The first and most important is the study of the terminology of creativity and personality. Understand the definition of creativity and personality into an essential part of this study. Literacy assessment results of various journals and books to create a basic understanding of operational definitions. This operational definition which then developed into a lattice CPI. Some definitions of creativity that made reference quoted Batey (2012) with some additions.

Creativity experts acknowledge there are two viewpoints on the creative dichotomy namely cognitive perspective and the perspective of non-cognitive (affective, personality, social, conative, economics) (Runco & Jaeger, 2012). This inventory was developed to identify the creativity in viewpoint or perspective of personality (personality). Personality is defined as "a pattern of characteristic thoughts, feelings, and behaviors, that distinguishes one person from another and that persists over time and situations" (Phares, 1986, p. 4 in MA Runco, 2014, p. 280). Phares adds, "the critical feature is the unique way in the which each person combines Reviews These traits"



(Phares, 1986, p. 6; in Runco, 2014, p. 280). Added also by Runco "This may explain why not every creative person shows exactly the same traits" (Runco, 2014, p. 280). From this statement explains that creativity can be attached to a person's personality. Thus, to identify creative people can be traced through traits (traits) which appeared and settled on one's personality. The standard definition of creativity has, at least, two elements of the originality and effectiveness. Originality or the authenticity of the other commonly labeled as an indication of authenticity, for example, novelty (novelty), uniqueness (unique), and extraordinary (unusual). While Effectiveness or effectiveness is an indication of something of value (valuable) used are also given other labels such as useful / usefulness (usefulness), feasibility (appropriateness), adaptability (adaptability) (Rubenson, 1991; Rubenson & Runco, 1992, 1995; Sternberg & Lubart, 1991; Runco and Jaeger, 2012).

Here are some formulas personal characteristics of the individual creators. Personality characteristics of creative individuals includes broad intelligence, openness to experience, aesthetic sensitivity, autonomy in thought and action and the pursuit of new challenges and solutions, curious, self-assertive, high achiever, self-critical, self-sufficient, intuitive and empathic, emotional sensitivity, imagination, ambition and dominance, self-acceptance, dominance, self-confidence, acceptance of unusual views as their personality characteristics (Vervalin, 1962; Stein, 1974; Feist, 1999; MacKinnon, 1970). In another reference Bonk in his blog wrote three creativity traits, namely (1) products (fluency, flexibility, originality, elaboration), (2) attitudes (curiosity, imagination, complexity, risk-taking), (3) behaviors (flexible, imaginative, nonconforming, novel answers).

The second trial of inventory, the study results demonstrate that CPI can work well in measuring the creative personality of students in high school. Based on the results of the calculation of the validity of the test item, the CPI has a high correlation coefficient, of the 24 items declared valid to the extent that the 0.01. So that CPI can be declared invalid. CPI internal reliability test results were performed using models derived Split-Half calculations in Table 2.

After total items correlated between odd and even with the formula Spearman Rho in Table 1. Then operated in Spearman-Brown Prophecy formula (Brown; 2001, Dimitrov, 2012).

The following calculation formula results in a correlation of Spearman-Brown Prophecy:

$$\rho_{xx} = (2 \times 0,837) / (1 + 0,837) = (1,674) / (1,837) = 0,911$$

From the results of calculations known that CPI has a reliability coefficient of 0.911. According to expert opinion, good instruments and can be used as a research instrument, if it has a reliability coefficient ≥ 0.70 . Thus, the CPI can be declared reliable by the reliability coefficient $0.911 > 0.70$. Based on test validity and reliability of statistical Creative Personality Inventory can be declared valid and reliable so that it can be used as an instrument to measure the creative personality in high school students in Indonesia.

Discussion

After all the data analyzed was obtained information that was encouraging. The question of whether creativity can be traced through the personality trait has been answered. This information will be discussed related to previous studies in the hope of providing new inputs in future studies. The first results of statistical tests of 24 items Creative Personality Inventory (CPI) which are made to have Rho Spearman correlation coefficient between 0.386 to 0.731. 24 items to the CPI it occurred at a significance level of 0.01. For reliability coefficient obtained value of 0.911, according to (Hays, 2013) reliability coefficients used should be between 0.80 to 0.95. Perhaps there will be a comment regarding the statistical analysis used, at least, I've followed the procedure is justified. Be a limitation of this study is the number of samples and the treatment of data is done. Of the 149 participants who included taken at random, they are asked voluntarily to be a participant.

The first reason is the use of a model based on the data analysis the researcher awareness of the limitations of the sample. The reason these two types of data are not yet believed interval scale, although statistically it can be converted using Method of Successive Interval. Because of these two reasons I use a non-parametric statistics (Andrews, Clamps, Davidson, O'Malley, & Rodgers, 1981). Nevertheless, the results of this analysis provide reinforcement on the assumption that creativity can really be measured through psychological attributes attached to an individual's personality. Therefore, this information becomes a positive step for teenagers creativity development efforts in Indonesia. Experiments that I do may still be said to be too early to make a CPI-related justification. For the purposes of wider use as an additional instrument in identifying



creative personality, CPI still needs to be tested in the wider population. Given the limitations of knowledge, skills, and experience that I have, then I am open to receive input from experts in the field of creativity.

I believe in the concept may still exist that will comment regarding the basic theory of CPI I developed what can be accounted for. However, this becomes a bridge discussion will be the input for the improvement of CPI. At least, I have proved that creativity can be traced through the psychological attributes attached to an individual's personality. Indeed, in some of the articles are still searching for a suitable personality theory to understand the creativity of the individual. Personality is often determined by the calculation aspects conceived as elements forming the personality itself (Smith, 2008). Review of aspects Investment Theory believed that creativity is the interrelation of the six elements of intellectual abilities, knowledge, styles of thinking, personality, motivation, and the environment. Much research has been carried out and supports the importance of personal attributes of the functions of creativity (Sternberg, 2006). From these two statements be rational reasons to study the development of the CPI for students in high school in Indonesia.

Besides, the CPI analysis congruent with other studies that have ever done before, namely the path analysis on data from psychological tests that are owned by the Laboratory of Guidance and Counseling Education University of Indonesia. In this study, I perform path analysis between the results of intelligence tests IST (Intelligenz Structure Test), EPPS Personality Test (Test Edwards Personal Preference Schedule) and the Test of Creativity. Creativity test kits used herein are verbal and figural creativity that has been developed previously. This analysis wants to prove any aspect of IST and EPPS that contribute to creativity. In this study, sample totaled 460 candidates for high school students in West Java province. The analysis showed that there is a simultaneous and significant influence of the subtests Test IST Intelligence and Personality Tests EPPS subtest of the Test of Creativity. Subtest that influences creativity of intelligence tests IST is Analogien or flexibility of thinking, Rachen Aufgaben or practical arithmetic abilities, Auswahl Form or the ability of analysis and synthesis. While subtest of Personality tests EPPS affecting Creativity is the Change that personality traits like love to work on things that are new, traveling, meet new friends, experience new events and changes of routine work, eat somewhere different, try different kinds of work, happy to move where participate in new habits and so on.

There are four records that I made in this study (1) Given that that affects student Creativity is the Special Ability (Subtest IST) owned by students. In this case, the special abilities that affect the flexibility of thinking, the ability of analysis and synthesis, as well as practical arithmetic ability. (2) Given that the Special Ability (Subtest IST) as the flexibility of thinking, analytical skills, and synthesis, ability to count practically no effect on the personality of the student. In other words that the students who have special abilities that high will tend to have a different personality. (3) Given that creativity is also influenced by aspects of the personality of students. In this case, the personality aspects that influence is Change (Subtest EPPS). (4) It can be assumed that the Special Ability (Subtest IST) as the flexibility of thinking, analytical skills and synthesis, practical arithmetic ability and personality aspects such as Change (Subtest EPPS) can be used to predict the creativity of students (Susanto, 2015). Why creativity instrument development effort still needs to be done? This is in line with the demands of the indigenous view. In addition, each country has a different culture that allows for diversity and understanding concepts. I am doing this study do not claim that this is a final result. There are still limitations if it will be used widely. Please visit my profile on the site ResearchGATE to get the full report the results of a study that I did this.

Many instruments creativity tests developed by the experts, still have obstacles in implementation. Such as creativity test developed by Utami Munandar still difficult to analyze the test results. In practice, I have done too many aspects to consider and must be done manually one by one. I used to process data such as a computerized test on the test sociometry and specialization test subjects I developed previously using a digital scoring system. Expectations on the study I'm doing this CPI become an adjective test that is easy to implement and easy to analyze the test results. CPI future allows being developed in computerized form. You can access my article on the site with a link https://www.researchgate.net/profile/Eko_Susanto15/contributions ResearchGATE. As in other studies conducted by (Park, 2013) under the title A Study on Item-Analysis of Gough's A Creative Personality Scale for the Adjective Check List, a study conducted in Korea. This study provides the information they need for correction of Gough's A Creative Personality Scale. Similarly, a study conducted by (Kim, 2006) with the title of Creativity Tests Can We Trust? A Review of the Torrance Tests of Creative Thinking (TTCT) provides information related to the influence of culture on creativity test scores.

Of the two studies conducted into the reasons underlying this is the need to develop measurement instruments creativity. This becomes a logical reason for demographic factors come into elements that affect creativity. Kim (2006) also suggested adding and using independent criteria for the different groups. Because the use of TTCT by ignoring the cultural elements and keep using the existing norms, the result can give misleading information. From Kim's suggestion, at least Creative Personality Inventory can be used as a compliment when TTCT be used in Indonesia. See constructs of TTCT described by Kim is very similar to a creativity test developed by Utami Munandar in Indonesia. Barriers are the same as those uttered by Kim related to aspects of originality. Creativity test developed by Utami Munandar scoring originality can be interpreted differently from one tester to another tester. Therefore, it must follow special training to be able to have the same perception in scoring, and training that must be done by the developers of the test. Treffinger (1985) and Cropley (2000) in Kim (2006) suggested that, given the multidimensional nature of the concept of creativity, then the assessment should be based on several different tests rather than relying on a single test. At least two measures to assess a person's creative potential it is recommended by Johnson and Fishkin (1999). Kim (2006) also stated the same thing to use at least two measurements which TTCT and other indicators eg products, performance, rating scales, or Recommendations.

Conclusions and Recommendations

This study is only a fraction early efforts to contribute to the psychometric aspects. It is known that creativity can be traced through the psychological attributes attached to an individual's personality. Creative Personality Inventory (CPI) is expected to be the assessment instrument that can be used in planning development programs at the school students' creativity. This study does not intend to ignore the instruments had already been developed. But as the expected contribution of thinking can be used with all its limitations. Given the multidimensional concept of creativity, it is advisable to use more than one assay creativity Johnson and Fishkin (1999). The study is not the final results still need to be followed up further to be used widely. Recommendations for further research can test the validity and reliability of CPI. Can also extend the sample and ethnic groups in Indonesia, and measure CPI congruence with creativity test tool that already exists.

Creativity is the cultural capital in the twenty-first century. As a new wave of education reform that repositions creativity as a center of education (Sheridan-Rabideau, 2010). Without neglecting other aspects of life creativity into a source of energy for the change of life. Creativity is the meeting point of all the potential of human beings. No exaggeration to education makes room for the development of student creativity. The importance of creativity in the life of this century should be the concern of all parties. Recommendations to the policymakers, education observers, and practitioners to participate in the development of student creativity. In the education units, school counselors have a strategic role to be the pioneer of the development of the creativity of the students at the school.

TABLE 1
Definition of Creativity

(M. A. Runco, 2004)	Creativity is capacity to develop novel and useful ideas, behaviors, or products, and tends to be seen as a complex capacity bearing on a mix of individual, situational, and cultural variables
Plucker, Beghetto, and Dow (2004, p. 90)	Creativity is the interaction among aptitude, process, and the environment by which an individual or group produces a perceptible product that is both novel and useful as defined within a social context
Mumford (2003, p. 110) Vessey & Mumford, (2012)	Over the course of the last decade, however, we seem to have reached a general agreement that creativity involves the production of novel, useful products Creative problem-solving, the production of solutions to complex, novel, and ill-defined problems
Sternberg and Lubart (1999, p. 3)	Creativity is the ability to produce work that is both novel (i.e., original, unexpected) and appropriate (i.e., useful, adaptive concerning task constraints)
Simonton (1999, pp. 5–6)	. . . creativity must entail the following two separate components. First, a creative idea or product must be



	original ... However, to provide a meaningful criterion, originality must be defined with respect to a particular sociocultural group. What may be original with respect to one culture may be old news to the members of some other culture ...Second, the original idea or product must prove adaptive in some sense. The exact nature of this criterion depends on the type of creativity being displayed
Feist (1998, p. 290)	Creative thought or behavior must be both novel-original and useful-adaptive
Ochse (1990, p. 2)	Bringing something into being that is Original (new, unusual, novel, unexpected) and also Valuable (useful, good, adaptive, appropriate)
Barron (1955, p. 553)	...if a response is to be called original ...it must be to some extent adaptive to reality

TABLE 2
The correlation between the item and the item Odd Even

Correlations				
			Ganjil	Genap
Spearman's rho	Ganjil	Correlation Coefficient	1.000	.837**
		Sig. (1-tailed)	.	.000
		N	146	146
	Genap	Correlation Coefficient	.837**	1.000
		Sig. (1-tailed)	.000	.
		N	146	146
		**. Correlation is significant at the 0.01 level (1-tailed).		

$$\rho_{xx} = \frac{2\rho_{12}}{1 + \rho_{12}}$$

Figure 1
Spearman-Brown Prophecy Formula quoted Dimitrov (2012)

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