

## **Creative Behaviour Questionnaire: Assessing the Ability of Managers to Produce Creative Ideas**

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This paper presents the development process of a new scale for assessing creative behaviour in organizational setting. In this scale creative behaviour includes both behavioural and cognitive aspects. To assess the creative behaviour a scale was developed which consists of 17 items before standardization. In this scale subjects have to give responses based on self-perception about their thinking and behavioural creative ability. Sample of 155 managers working in different private sector organizations in India were selected for the standardization of this scale. The reliability index was ascertained by computing Cronbach's alpha coefficient which is found to be 0.803 for this scale. Based on corrected item-total correlation, 4 items are excluded and 13 remaining items are retained from the original scale. This scale has good reliability index and could be a useful tool for assessing creative behaviour in organizational setting.

**Keywords:** Creativity, Creative behaviour, Competitive environment

In today's highly competitive marketplace, one of the key components of a company's survival is its ability to generate new ideas or better ways of doing things. It may be the most important tool in a manager's arsenal. Without creativity, the firm may become predictable. The predictable firm may be at a competitive disadvantage. It is impossible to escape the reality that corporations must be innovative in order to survive. Domestic and international competition, changing government regulations, and rapidly shifting market conditions demand constant and visionary innovation (Amabile, Conti, Coon, Lazenby, & Herron, 1996). Creativity can lead to new and better solutions to business and customer problems. Thus creativity may be the key to market success and improved operating efficiencies (Herbig & Jacobs, 1996).

The term Creativity is derived from the Latin word 'Creatus' or 'Creare' i.e., to make. The Greek word 'Krainein' to accomplish, and the Sanskrit 'Kar' to make, also have similar connections. Therefore, creativity refers to the

creative ability to originate or to produce new ideas. After exhaustive research, Morgan (1953) listed the universal factor for creativity to be novelty (Cropley, 1999). Novelty requires originality and newness. There must be something fresh to the idea.

Traditional approach of creativity, even creativity researchers, seemed it as something produced by 'creative people'. In contrast to the traditional approach, the contemporary approach to creativity research assumes that all humans with normal capacities are able to produce at least moderately creative work in some domain, some of the time - and that the social environment can influence both the level and the frequency of creative behaviour. (Amabile, et al., 1996). Many researchers defined creativity in different fashion; some of which define it as a characteristic of a person and others as a process (Amabile, 1988). However, with concern to organizational setting, most contemporary researchers and theorists have adopted a definition that focuses on the product or outcome of a

product development process (Amabile, 1983, 1988; Shalley, 1991; Pareek, 1993). According to Amabile, creativity typically refers to the production of new and useful ideas by an individual or a small group of individuals working together (Amabile, et al., 1996). Woodman, Sawyer and Griffin (1993) defined creativity in an organizational context, as “organizational creativity is the creation of a valuable, useful new product, service, idea, procedure, or process by individuals working together in a complex social system”. Kao (1991, p. 14) suggests that creativity may be defined as “a human process leading to a result which is novel (new), useful (solves and existing problem or satisfies an existing need), and understandable (can be reproduced)”. Ward, Finke, and Smith (1995) defined creativity in the products made, the differences in people, the pressures that motivate, and the processes behind creativity. The products made are new and fresh which is the clearest example of creativity.

The concepts of creativity and innovation are often used interchangeably in the literature (Rank, Pace, & Frese, 2004). However, some authors may differentiate between the two concepts i.e. creative performance refers to products, ideas, and so forth produced at the individual level, whereas innovation refers to the successful implementation of these products at the organizational level (Amabile, et al., 1996; Oldham & Cummings, 1996; Rank, et al., 2004). In addition, creativity is truly novel and it must be coupled with appropriateness for something to be considered creative (Sternberg & Lubert 1991), whereas innovation can be based on ideas that are adopted from previous experience or different organizations.

For defining the mechanism of creativity, Wallas (1926) proposed that creativity involves four consecutive stages: preparation, incubation, illumination, and verification (Bogen & Bogen, 2003). During preparation, the person absorbs information. During

incubation, the information settles. During illumination, the solution manifests itself to the person, and during verification, the final product is created. Gabora (2002) asserts that the creative process requires a thought shift from associative thinking to cause and effect thinking. Associative thinking might reveal some correlation or relationship between two things, but this correlation might not provide a solution and might not be appropriate. This replaces the preparation and incubation stages of creativity. There is then a shift to cause and effect thinking which is analytical and searches for a direct solution and for appropriateness. This replaces the illumination and verification stages of creativity.

In the ‘Investment theory of creativity’ by Sternberg & Lubart, (1991) they describe creative people as ‘buy low and sell high’. According to this theory, creativity requires a confluence of six distinct but interrelated resources: intellectual abilities, knowledge, styles of thinking, personality, motivation, and environment (Sternberg, 2006). To know the factors playing their roles in creativity in organizational work setting, Amabile and Grysiewicz (1987) conducted an interview study on R&D scientists and with the help of content analysis of this study they reveal 10 qualities of problem solver that promote creativity, whereas 5 another qualities that served to inhibit creativity. Promoters were various personality traits, self-motivation, special cognitive abilities, risk orientation, expertise in the area, qualities of the group, diverse experience, brilliance, and naivete (new in the field); and inhibitors were listed as unmotivated, unskilled, inflexible, externally motivated, and social unskilled. Many other researchers have reported various different variables, including cognitive styles or abilities, particular cognitive process such as divergent thinking, motivation orientation, and personality traits, attraction to complexity, tolerance of ambiguity, and self-confidence pertinent to creativity (Barron & Harrington,

1981; Davis, 1989; Tierney, Farmer, & Graen, 1999; Choi, 2004; Sternberg, 2006).

Earlier measures of creative potential were focused on divergent thinking and these tests were based on mainly on Guilford's Structure of Intellect model. Four different cognitive components of creativity were assessed through these tests: fluency (the quantity of ideas), flexibility (the generation of different types of ideas), originality (the degree responses are uncommon), and elaboration (the enrichment of ideas). These four creativity components were first measured on Torrance's battery of creativity which is known as Torrance Test of Creative Thinking – TTCT (Torrance, 1972). It has two forms; verbal and figural. This test has been translated in 35 different languages (Millar, 2002) and it is the most widely used test of creativity.

These tests measure general creativity, more specifically, artistic or children creativity. In the organizational work setting other factors are also involved in determining creative behaviour as shown by employees, additionally, 'nature of job of personnel' and 'lack of time' are the causes of unsuitability of this test. Product-oriented definition, instead of other definitions, is most appropriate and mostly supported by researchers working in the field of organizational psychology because of other approaches having complexities in observation and assessment (Amabile, 1988). However, Indian organizations don't provide base-data of their organization, like personal achievements of particular employee, number of patients etc., so forth, in this research we followed creativity as 'process-oriented' and tried to assess personal perceptions of individuals to produce creative behaviour in organizational setting.

### **Method**

#### **Sample:**

155 private-sector managerial personnel working in different Indian organizations were randomly selected as sample for this study.

Out of 155 managers 105 (about 68 %) were males and the remaining 50 (about 32 %) were females. They were all having age range from 22 to 40 years (mean = 29.95 years). They were having work experience with minimum 1 to maximum 17 years, having mean value of 4.69. More than 58 percent participants were below age of 31 years – they were youngsters. Younger person is more likely to intrinsically motivated towards his work and have courage to take risk due to his energy, which are positively correlated with creativity. Similarly, 86 percent (86.5%) participants were having work experience of 2 to 7 years (maximum frequency at 2 and 3 years i.e., 52 participants, 33.6%), it is showing that most participants were new to their job, so it is expected that, they might explore some better solutions of the problem and will not stick to it's previous routine way. In a study, Wu, Cheng, Hoi Man, and McBride-Chang (2005) supported this by reporting that 'functional fixedness' may occur in knowledge-learn tasks. As far as the occupation is concerned, managers working in some limited fields such as human resource, software, research & development, advertising, marketing, etc were selected for this study, since they get more chances to show the creativity, than the other regular fields of work, due to nature of their works. The attempt to get a reliability heterogeneous sample was made in order to ensure wide variations in response so that reliability of the questionnaire is not artificially truncated because of restricted response variance.

#### **Development of Questionnaires:**

The original item pool for the questionnaire was composed based on researches on the creativity. Initially 17 items were constructed. Each items have five responses i.e., Never, Seldom, Occasionally, Often, and Very often. The entire item pool of the questionnaire was initially prepared which involved three phases:

Phase-1: Extensive research of relevant articles of creativity. The conceptual base for the development of creative behaviour was drawn from the literature on creativity. Determinants of creativity in the organization emerged in extensive reviewing of the empirical studies and scale reviews of creativity (Amabile, 1998, 1997, 1988, 1982; Barron, & Harrington, 1981; Mostafa, 2005; Rank, et. al, 2004; Oldham, & Cummings, 1996; Woodman, et. al., 1993), which were grouped in two broad aspects- cognitive and behavioural. Cognitive aspect includes divergent thinking style and creative thinking skill; whereas behavioural aspect includes risk taking behaviour, accept failure, expertise, giving sufficient time to task.

There are two concepts which are seemed to be same but they are differing with each other. It is not clearly differentiated with each other in the available literatures. One is divergent thinking and other is creative thinking style. Divergent thinking involves producing multiple or alternative answers from available information. It requires making unexpected combinations, recognizing links among remote associates, transforming information into unexpected forms, and the like. Person having creative thinking style are used to generate new ideas; idea flows rapidly in their mind. They take every situation as new and try to find its alternate solution.

Phase 2: Item writing and discussion with experts on it. Based on extensive literature review, initial pool of 17 items were prepared. Items were constructed based on determinants of creativity (cognitive and behavioural aspects). These all items were presented to three experts for examining the suitability of each item for inclusion of the test. With slight corrections, all the items were accepted by these experts, hence, included all these items for the test after corrections.

Phase 3: Initial administration on students to check the difficulties in administration. This scale was administered on a group of 20

students (most of them were research scholars) in the original format with instructions written in the English, to check the suitability and understandability of instructions and items. Review of responses revealed that instructions and items were having good meaning and easily understandable. Instructions were clear and exactly telling 'what have to be done' to give responses.

## Results and Discussion

**Table1: Reliability for Creative Behaviour Questionnaire-Person with initial items**

	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items	
	.723	.735	17	
Item-Total Statistics				
	Scale Mean if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
cbq1	56.66	.062	.338	.735
cbq2	56.22	.353	.358	.708
cbq3	56.08	.451	.481	.698
cbq4	55.79	.158	.257	.724
cbq5	55.95	.370	.306	.706
cbq6	56.52	.519	.502	.688
cbq7	56.04	.384	.331	.706
cbq8	56.41	.427	.423	.697
cbq9	55.94	.441	.346	.701
cbq10	56.19	.463	.472	.695
cbq11	56.75	.233	.401	.720
cbq12	56.45	.257	.245	.716
cbq13	56.86	.056	.365	.738
cbq14	55.86	.222	.301	.719
cbq15	56.34	.520	.498	.691
cbq16	56.94	.419	.348	.699
cbq17	56.52	.076	.285	.736

cbq representing the items of initial Creative Behaviour Questionnaire-Person and following digit representing the serial number of the items.

Item-analysis of the items of the scale has been done by the 'Corrected item-total correlation' method. Its value comes to be ranged from 0.06 to 0.52 (table-1). Item

number 1, 4, 11, 13, and 17 were having low item-total correlation, so forth, these items are deleted from the questionnaire to increase the homogeneity between items. After deleting these items corrected item-total correlation comes to be ranged from 0.26 to 0.64. Deleting items for the purpose of increasing the reliability is supported by Hinken (1995). He reported in his review on scale development practices in organizations that 'several researchers deleted items to increase coefficient alpha in the construction of their measure'. None of the 'alpha if item deleted' value exceeds the overall alpha value.

### **Internal Consistency Reliability**

The internal consistency reliability of this scale was measured using the Cronbach's alpha coefficient method. Hinken (1995) argued that use of reliability is considered part of newly developed measure. Although reliability may be calculated in a number of ways, the most commonly accepted measure is internal consistency reliability using Cronbach's Alpha (Price & Mueller, 1986). This method is widely used in the newly developed scales especially by development practices in the field of organizations.

Internal consistency reliability of this scale was calculated by using Cronbach's Alpha and its value was found to be 0.723 initially (table-1); after deleting some psychometrically poor items based on corrected item-total correlation, again alpha value was calculated with remaining 13 items and the value comes to be 0.808 (minimum recommended by Nunnally, 1978 is 0.70) which is good reliability index (George & Mallery, 2007).

The Squared multiple correlation is another index of item reliability (item homogeneity and validity) which indicates the amount of variance explained in a given item by the remaining items. It ranged from 0.159 to 0.481. The Squared multiple correlation values are also highly satisfactory (except for item no. 16) and provide additional evidence

for the reliability of this questionnaire.

**Table-2 Reliability for Creative behaviour questionnaire-Person after deletion of some psychometrically poor items**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items		
.803	.806	13		
Item-Total Statistics				
Scale Mean if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted	
cbq2	43.63	.437	.344	.790
cbq3	43.49	.536	.457	.782
cbq4	43.20	.306	.219	.800
cbq5	43.36	.380	.256	.794
cbq6	43.93	.534	.475	.780
cbq7	43.45	.488	.312	.787
cbq8	43.81	.538	.394	.780
cbq9	43.34	.462	.270	.788
cbq10	43.60	.507	.434	.783
cbq12	43.86	.273	.230	.803
cbq14	43.26	.357	.242	.796
cbq15	43.74	.638	.481	.772
cbq16	44.35	.259	.159	.808

cbq representing the items of initial Creative Behaviour Questionnaire and following digit representing the serial number of the items.

### **Conclusions and Limitation**

Overall, the findings of the reliability analysis suggest that the items of this questionnaire are composed of internally consistent and homogeneous items. This scale could be a good tool to assess the creative behaviour of managers. It has some limitations. Firstly, to check the factor structure and to get construct validity, factor analysis should be done; secondly, sample size should also be increased up to some extent, and finally; participants belongs to managerial level, but in some organizations, lower employees also get chances to show creativity in their works so this scale could not be

administered on lower level employees. However, regardless of these limitations, it can be concluded that this scale have good reliability index and could be a good assessment tools in the future researchers.

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