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CONATION AND CREATIVITY

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Abstract

Creativity can be defined as a person's ability to bring something into existence that is both original and worthwhile. Researches focusing on the understanding of the association between various cognitive processes and creativity are abundant in the field of psychology. However, after more than half a century of research, psychology scholars more or less agree that creativity is not just a cognitive construct. A multitude of other variables contribute to the expression of creative ideas. One such variable is conation. Conation may be defined as an individual's natural way of taking action. It is the personal, intentional and goal oriented component of motivation. As and how creativity invades every aspect of our lives such as arts, business, science, education, etc., it becomes more and more important to identify what motivates people to persist in creative endeavours and to organize their activities around those motivators in a manner that encourages creative behaviour.

The present study was designed to explore the relationship between creativity (verbal and non-verbal) and the four action modes that define an individual's conative style, namely, Fact Finder (FF), Follow Through (FT), Quick Start (Q) and Implementor (I). The sample comprised of 389 undergraduate and post-graduate students (male and female), in the age group of 18-24 years. Results of regression analysis suggested that the Fact Finder action mode is a significant contributor to overall creativity, especially verbal creativity. The theoretical and practical implications of these findings are discussed.

Keywords: creativity, conation, motivation

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CONATION AND CREATIVITY

Creativity has suddenly (or not so suddenly) earned the title of being the most valued commodity in current times. Scholars, scientists, researchers, philosophers, economists, educators, artists, etc. have come to value creativity in a way probably no other human attribute has been appreciated. This increasing interest in the construct of creativity is understandable considering its vast and significant applications in the field of education, arts, science and technology, business, politics, etc. (Florida, 2002; Runco, 2007; Simonton, 1997).

Guilford (1950) was debatably, among the earliest researchers to believe in the scientific study of creativity. He defined creativity as "the abilities that are most characteristic of creative people. Creative abilities determine whether the individual has the power to exhibit creative behaviour to a noteworthy degree. Whether or not the individual who has the requisite abilities will actually produce results of a creative nature will depend upon his motivational and temperamental traits. To the psychologist, the problem is as broad as the qualities that contribute significantly to creative productivity. In other words, the psychologist's problem is that of creative personality."

Probably the most widely quoted definition of creativity was give by Torrance (1974). He wrote that "creativity is a process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on; identifying the difficulty; searching for solutions, making guesses, or formulating hypotheses about the deficiencies; testing and retesting these hypotheses and possibly modifying and retesting them; and finally communicating the results."

As and how creativity invades every aspect of our lives, such as arts, business, science, education, etc. it becomes more and more important to first of all identify what motivates people to persist in creative endeavours and secondly, to organise their activities around those motivators in a manner that encourages creative behaviour (Amabile, 1996). For at least five decades, questions about what drives individuals to take up and pursue creative endeavours have been addressed by various psychologists (for example, MacKinnon, 1962; Amabile, 1983; Csikszentmihalyi, 1996; Dollinger, 2003, etc.). Creative individuals often face disheartening and intimidating challenges. Sometimes, to achieve success, they need to

patiently pursue their goal for years together. In the process, they may have to let go of comforts and rewards. Such dedication requires a powerful and resilient will or drive (Hayes, 1989). The nature of the constructs of conation and creativity is such that studying their relationship and the implications of this relationship is bound to be a complex and arduous challenge. Smith and Osborn (2008) differentiated between creative talent and creative ability in terms of this drive. They said that mostly all individuals possess a certain degree of creative talent, but it is utilised only by those with an internal drive to do so. Amabile (1990, 1996) agreed and stated that it is one's level of motivation that indicates what one *can* do and what one *will* do. An individual cannot and will not undertake a creative activity if not duly motivated, regardless of the presence of knowledge or talent (Zhou and Shalley, 2010).

Conation has been studied by various researchers since the early 1900s (eg., Spearman, 1927; Terman, 1916; Webb, 1915; Hilgard, 1980; Snow, Corno and Jackson, 1996, etc.). However, nomenclature related to the construct has failed to develop at an adequate pace, though construct development has been steadfast (Corno and Snow, 1986). While research with the exact term conation is hard to come by, there is no dearth of literature on parallel constructs such as volition, intrinsic motivation, etc. Researchers like Riggs and Gholar (2009) opine that intrinsic motivation and conation belong to the same learning realm. Both refer to a personal call to undertake a task, to be inspired, they include one's effort and irrepressible drive to maintain goal-directed behaviour.

Conation can be defined as the way one strives to put effort into tasks, one's natural tendency to function (Berry, 1996). It derives from the Latin word *conatus* which refers to conscious effort or endeavour. It can most closely, but not completely, be linked to the construct of intrinsic motivation (Riggs and Gholar, 2009). According to Reitan and Wolfson (2000), conation, is a cardinal element of the mind, alongwith cognition and affect. They have defined it as one's ability to utilise one's potential for completing a task, tirelessly and productively.

For the present investigation Kolbe's (1990) conceptualisation of conation has been adopted. Kolbe (2004) is of the opinion that inconsistencies persists in the abilities and behaviour of individuals, to understand which an additional component, the conative aspect must be studied. According to Kolbe (2002), assessment of an individual's conative style requires the

analysis of his affinity towards four different kinds of action modes, namely Fact Finder, Follow Through, Quick Start and Implementor. The Fact Finder conative mode refers to the instinctive way in which an individual gathers and shares information. A person who has a strong affinity for this action mode is likely to collect data and prioritise before taking a decision. He will do better at tasks that require him to define, deliberate, calculate and evaluate. The Follow Through conative mode refers to the instinctive way in which an individual organises and designs tasks. A person who has a strong affinity for this action mode needs to be organised and planned in his tasks and prefers to follow schedules and establish time-lines. He will do better at tasks that require him to consolidate, coordinate, budget and arrange. The Quick Start conative mode refers to the instinctive way in which an individual deals with risks and uncertainties. A person who has a strong affinity for this action mode is likely to be more open to taking risks, extemporising and seeks pleasure in improvising and trying new things. He will do better at tasks that require him to device, intuit, brainstorm and contrive. Finally, the Implementor conative mode refers to the instinctive way in which an individual handles space and tangible material. A person who has a strong affinity for this action mode is more comfortable doing work related to equipment and machines and enjoys dabbling with space and material. He will do better at tasks that require him to demonstrate, craft, build and repair. While Kolbe's conceptualisation reduces the concept of conation to 'doing', this helps in making conation comparable to the 'knowing' of cognition or the 'feeling' of affection. This approach, although reductionist, makes the construct more applicable to practice and assess.

Review of Literature

Conation or motivation is pivotal to the creative process (Nakamura and Csikszentmihalyi 2003; Hayes, 1989; Torrance, 1972). Innumerable researchers have attempted to study its connection with creativity (Amabile, 1983; Ruscio, Whitney and Amabile, 1998; Sternberg, 2006). Few substantive studies on conation and creativity emerge in the last 60 years of psychological research (Reiter and Wolfson, 2000). But ample research using closely related terms such as intrinsic motivation, volition, etc. is available.

In their 'confluence approach' to creativity, Sternberg and Lubart (1995) insisted that only possessing creative potential is insufficient for the generation of creative ideas and products. Motivation plays a key role in the process of using this potential to fulfil the needs of the

situation and producing a creative outcome. They asked a group of 48 adults to complete 8 measures of creativity (eg., drawings, stories, science fiction problems, etc.) and a series of cognitive and conative questionnaires. Using Amabile's (1996) Consensual Assessment Procedure, 15 peer judges evaluated the subjects' creativity. A significant percentage of variation in creativity scores was attributed to the cognitive and conative variables, as shown by the results of multiple regression analysis. These findings support the importance of an interaction between cognitive and conative factors in the creative process.

In a fairly recent study, interviews were conducted with 27 professional artists to delineate the factors that according to the artists themselves are crucial to their creative process. Conative elements were found to be a major facilitating factor, among other cognitive, affective and environmental factors (Botella, Glaveanu, Zenasni, Storme, Myszkowski, Wolff and Lubart, 2013).

Another study by Stanko-Kaczmarek (2013) explored the effect of intrinsic motivation on evaluation, affect and product creativity. 36 female fine arts students were asked to make a collage each, which was sampled on three occasions: (1) five minutes into the activity, (2) ten minutes into the activity, (3) end of the activity, by 13 judges. Intrinsic and extrinsic motivation was induced by two types of instructions. Findings revealed that intrinsically motivated subjects not only exhibited higher levels of positive affect but also evaluated their performances more highly, as compared to the extrinsically motivated subjects. In a study with video/film major university students, intrinsic motivation was seen to play a mediating role in imaginative capability development (Liang, Hsu and Chang, 2012). Also, studies focused on the development of creativity in women show that families that advocate achievement motivation are significant contributors in the development of creative potential in women (Helson, 1990).

A recent meta-analysis of 15 papers published between 1990 and 2010, including 26 independent samples (N=6435) gave a significant positive correlation between intrinsic motivation and creativity (deJesus, Rus, Lens, Imaginario, 2013). This widely supported connection between intrinsic motivation and creativity can be explained in terms of affect. Researchers like Amabile (1983) and Hennessey (2000) have shown that intrinsic motivation is usually accompanied by positive emotions and extrinsic motivation is usually accompanied

by negative emotions. This is probably due to the fact that emotions are linked to how one perceives their own actions. When motivated intrinsically, one views their activities as enjoyable and interesting and finds a sense of satisfaction in doing so. On the other hand, when motivated extrinsically, one views their activity simply as a duty or obligation that they are being made to do for something in return. It is this association of positive emotion with motivation that enhances creativity (Amabile, 1983; Ashby, Isen and Turken, 1999). Explaining the role of intrinsic motivation in the creative process Nicholls (1983) stated that first of all, it helps to keep up the efforts required to acquire the skills and knowledge needed to generate creative solutions. Secondly, it helps cultivate an attitude that prioritises the task over everything else.

In one study, Dollinger (2003) studied two motives: need for uniqueness and need for cognition. He defined need for uniqueness as a need to be different. Uniqueness-motivated individuals feel less bound by social restraints and do not require much social support. They resist conformity and have high self-esteem. By means of a word association test, Dollinger concluded that high uniqueness-motivated individuals scored higher on creativity as compared to low uniqueness-motivated individuals. Dollinger stated that the second motive, need for cognition, manifests as finding pleasure from engaging in complex and effortful thought. Cognition-motivated individuals are optimistic about finding solutions and constantly engage in knowledge acquisition. Both, need for uniqueness and need for cognition, were seen to make significant contributions to creativity. According to Hayes (1989), individual differences in motivation can lead to cognitive differences as well. If one is motivated to work hard, he/she can amass more knowledge, which can help in the problem solving process by qualitatively and quantitatively adding to the inferences and associations being made. A motivated individual also sets high standards for oneself, thus being able to evaluate one's own work critically and objectively.

Based on the above review of literature and on Kolbe's conceptualisation of the construct, it was hypothesised that creativity would be closely associated with the Fact Finder conative mode and the Quick Start conative mode. The Follow through and Implementor conative modes are characterised by a reliance on existing knowledge and skill, and will thus not be conducive to creative production.

Method

Sample

A total of 389 students (Males=215; Females=174), belonging to various parts of the country, currently studying in reputed educational institutions in Punjab, served as subjects for the present research investigation. The age of the subjects ranged from 18-24 years, with the mean age being 20.76. Subjects were selected only after appropriate consent was taken. They were duly informed of the purpose of the investigation and were assured of the confidentiality of their responses.

Measures used

Torrance Test of Creative Thinking (Torrance, 1990, 2007): The Torrance Test of Creative Thinking was used to assess the creative ability of the subjects. This test was first developed by Torrance in the year 1966. For the current research, the latest (2007) edition was used. The Torrance test of creative thinking is designed to identify and evaluate creative potential using two parts: a verbal test and a figural test. The Verbal form A comprises of seven activities and the Figural form A comprises of three activities. The Torrance test of creative thinking is the most widely used creativity test (Treffinger, 1985; Swartz, 1988; Johnson and Fishkin, 1999; Davis, 1997). Studies have reported high levels of inter-scorer reliability (0.90) as well as test-retest and alternate form reliabilities (0.59-0.97) (Taylor, 2008).

Kolbe Conative Index (Kolbe, 1993): To assess the conative abilities of the subjects, Kolbe's Conative Index was used. The Kolbe conative index is a forced-choice measure that provides the subject with 36 situations. Each situation has four alternate responses and the subject has to mark his most preferred option. The subjects are then scored on the four action modes, namely, fact finder, follow through, quick start and implementor. While the test is mostly used in the organisational settings, it has been seen to have adequate test-retest reliability (0.69-0.85) and predictive validity in other areas as well (Kolbe, 2002; Gall, Gall, & Borg, 2003).

Results

This study examined the role of four conative modes, namely, fact finder, follow through, quick start and implementor, in the expression of creative ability. Table 1 depicts the means, standard deviations and correlations among all variables.

Table 1: Means, Standard Deviations and Correlations among Variables

	M	SD	V-C	F-C	T-C	FF	FT	Q	I
Verbal Creativity	109.26	44.86	-	.519**	.951**	.134**	-.056	-.002	-.108*
Figural Creativity	78.68	20.89		-	.747**	.003	.037	.014	-.091
Total Creativity	187.94	58.25			-	.104*	-.029	.003	-.116*
Fact Finder	12.23	3.51				-	-.241**	-.460**	-.387**
Follow Through	8.64	3.09					-	-.496**	-.118*
Quick Start	8.66	3.68						-	-.212**
Implementor	6.56	2.71							-

**p<0.01, *p<0.05

The fact finder conative mode was seen to correlate positively and significantly with verbal creativity (r= 0.134, p<.0.01) and total creativity (r= 0.104, p<0.05). The implementor conative mode, on the other, negatively and significantly correlated with verbal creativity (r= -0.108, p<0.05) and total creativity (r= -0.116, p<0.05).

In order to find out the relative contribution of each of the four conative modes in the outcome variables of creativity, regression statistics was applied. A summary of the results is shown below.

Table 2: Summary of regression results for Verbal creativity

Model Summary

Variables	R	R^2	Adjusted R^2	SE of estimate	R^2 change	F	df	p
Fact Finder	.134	.018	.015	44.51	.018	7.08	1/387	.008
Implementor	.108	.012	.009	44.66	.012	4.54	1/387	.034

Coefficients

Variables	Unstandardized coefficients		Standardized coefficients	t	Sig.	% of variance explained
	B	Std. Error	Beta			
1) Constant	88.31	8.19		10.78	.000	
Fact Finder	1.71	.644	.134	2.66	.008	1.8%
2) Constant	120.97	5.95		20.35	.000	
Implementor	-1.79	.838	-.108	-2.13	.034	1.2%

As is shown in the table, multiple R for Fact Finder is 0.134, which is significant at 0.01 level, with the F ratio being 7.08. The regression coefficient (Beta) of 1.34 with a t-value of

2.66, p<0.01 shows that there is a significant and positive relationship between the fact finder conative mode and verbal creativity. The value of R^2 change which is 0.018 reveals that 1.8% of variance in verbal creativity scores is accounted for by the fact finder conative mode. On the other hand, multiple R for Implementor is 0.108, which is significant at 0.05 level, with the F ratio being 4.54. The regression coefficient (Beta) is -0.108 with a t-value of -2.13, p<.0.05 shows that there is a significant and negative relationship between the implementor conative mode and verbal creativity. The value of R^2 change which is 0.012 reveals that 1.2% of variance in verbal creativity scores is negatively accounted for by the implementor conative code.

Table 3: Summary of regression results for Total creativity

Model Summary

Variables	R	R^2	Adjusted R^2	SE of estimate	R^2 change	F	df	p
Fact Finder	.104	.011	.008	58.01	.011	4.27	1/387	.039
Implementor	.116	.013	.011	57.93	.013	5.23	1/387	.023

Coefficients

Variables	Unstandardized coefficients		Standardized coefficients	t	Sig.	% of variance explained
	B	Std. Error	Beta			
1) Constant	166.74	10.67		15.62	.000	
Fact Finder	1.74	.839	.104	2.07	.039	1.1%
2) Constant	204.25	7.71		26.48	.000	
Implementor	-2.49	1.09	-.116	-2.29	.023	1.3%

Similar findings have been obtained for total creativity. As is shown in the table, multiple R for Fact Finder is 0.104, which is significant at 0.05 level, with the F ratio being 4.27. The regression coefficient (Beta) of 0.104 with a t-value of 2.07, p<0.05 shows that there is a significant and positive relationship between the fact finder conative mode and total creativity. The value of R^2 change which is 0.011 reveals that 1.1% of variance in total creativity scores is accounted for by the fact finder conative mode. On the other hand, multiple R for Implementor is 0.116, which is significant at 0.05 level, with the F ratio being 5.23. The regression coefficient (Beta) is -0.116 with a t-value of -2.29, p<.0.05 shows that

there is a significant and negative relationship between the implementor conative mode and total creativity. The value of R^2 change which is 0.013 reveals that 1.3% of variance in total creativity scores is negatively accounted for by the implementor conative code.

Discussion

The results show that the fact finder conative mode plays a significant role in creative productivity, specifically for verbal creative. The fact finder conative mode is characterised by an inclination towards acquiring new knowledge and gathering information. This implies that the process of collecting facts, probing details, filtering and distilling information is crucial to the creative process. These findings find support in studies such as Dollinger's (2003) which showed that a need for cognition, i.e. a need to constantly engage in knowledge acquisition, is a significant contributor to creative performance.

Another interpretation of this finding can be made using Wallas's (1926) four part stage model of the creative process. The first stage that Wallas suggests is that of preparation. It encompasses one's learned education. At this stage, the basis for future creative thought is laid and essential information, experiences and abilities are acquired. To benefit the most from this stage, it is essential that the individual develops rich and interconnected structures that can be utilised for the production of novel ideas. To do so, Spiro and Myers (1984) have proposed certain methods: encode ample amount of knowledge, encode the knowledge in multiple ways, encode it by using varied forms of thought (verbal, visual, etc.). This stage is meta-cognitive in the sense that creative individuals are more capable of objectively evaluating whether the information they have gathered is complete, rich and relevant for further use. Furthermore, they can skilfully regulate how and what to encode, as Spiro and Myers (1984) suggested. This stage of preparation has been considered to be crucial by many psychologists (Cropley and Cropley, 2008). Many researchers agree that one's existing knowledge base directly contributes to the quality of creative ideas (Cropley, 1999; Feldhusen, 1995, 2002; Mumford and Gustafson, 1988; Sternberg and Lubart, 1995). Thus, there is ample literature supporting our hypothesised and proven relationship between the fact finder conative mode and creativity.

The second significant finding is the negative contribution of the implementor conative mode in the creative process, which is in line with our hypothesis. This conative mode is

characterised by a need to demonstrate one's existing skills, and a discomfort when dealing with research problems and new information. It is, thus, contrary to what is required for the creative process. This finding finds support in personality studies as well which state that an individual who prefers to work with familiar ideas and situations will be less creative compared to those who are open to new experiences (Dollinger and Clancy, 1993; Mumford, Costanza, Threlfall, Baughan and Reiter-Palmon, 1996; Cattell, 1971; Burch, Hemsley, Pavelis and Corr, 2006; Charyton and Snelbecker, 2007; Dollinger, Urban and James, 2004; Prabhu, Sutton and Sauser, 2008).

Additionally, no significant relationship was observed between the quick start conation mode and creativity, which is not in line with what was initially hypothesised. The quick start conative mode is characterised by improvisation and a sense of urgency. This finding finds support in the work of researchers like Vernon (1989) and Boden (1990) who are in favour of the view that creative thinking is characterised by purposeful cognitive analyses and transfigurations, and give importance to a vast collection of knowledge, elaboration and evaluation. Many researchers refute the existence of a sudden illumination process stating that a creative idea is formed in a gradual and effortful manner (De Cruz and De Smedt, 2010; Weisberg, 1993; Johnson-Laird, 1988). Thus, according to the present research as well, the creative process is not a spontaneous process, but requires careful planning and a strong knowledge base.

Conclusion

For the longest time, creativity was considered to be the prerogative of the divine, to the extent that human beings are a product of their creation. Today, the tables have been reversed. Humans hold the capacity for creativity, to the extent that God is a product of our imagination (Csikszentmihalyi, 1996). In the present scenario, creativity has been accredited with being a potent force in molding human civilization. Inspite of immense historical support, studying creativity has never been considered as crucial as it is today (Mishra and Henriksen, 2013). The present investigation, which has focused only on the association between different conative styles and creativity, has revealed that creative productivity is the result of an elaborate process involving knowledge development and cognitive disinhibition. These findings are an encouragement for people who consider creativity to be a mysterious

ability, a gift given to some people and not to others. The truth is that it is not a rare gift, but an understandable process, characterised by knowledge acquisition and preparation.

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