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Original Research Paper

Creativity as Related to Perceived Family Environment

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ABSTRACT

The present study was conducted to explore the relationship between four dimensions of creativity and variables of perceived family environment. Two hundred fifty Senior Secondary School male students participated in the study. Data were collected by administering Torrance Tests of Creative Thinking with Pictures and Family Environment Scale. Obtained data were analysed by applying Descriptive Statistics, Pearson's Correlations, and Principal Component Factor Analysis. Results have revealed Expressiveness, Independence, Achievement Orientation, Active Recreational Orientation, Intellectual Cultural Orientation, Organization, and Independence to be significant positive correlates all the four dimensions of Creativity whereas Control emerged as the negative correlate. More large scale studies are suggested for generalization of present findings.

Keywords: *Creativity, Perceived Family Environment.*

From the time it was first discussed, creativity has been enclosed in abstract questions and relates to issues larger than itself (Runco & Albert, 2011). Darwin's assertion about processes underlying natural selection led creativity and its value in adaptation into academic focus. Galton (1883) attempted to conceptualize creativity in terms of his notion of individual differences that could be measured. From Galton upto 1950, so many scholars attempted to conceptualize creativity with a common theme that it is integral to intelligence. Guilford (1950) first of all pleaded for empirical investigation of creativity independent of intelligence in his APA Presidential address. Guilford's emphasis combined with a number of other factors i.e. increase in post world war II scientific inventions , emergence of space age, advent of computer and electronic revolution , information technology, and globalization contributed in launching the contemporary scientific investigation of creativity which all have attempted to explore its different facets. Many scholars (Guilford, 1950, 1970, Getzel and Jackson, 1962; Torrance, 1966; Wallach & Kogan, 1965; Taylor & Barron, 1963; MacKinnon, 1960, 1983; Mumford & Gustafson, 1988; Amabile, 1988; Sternberg, 1988, 1999, 2003; Runco, 2004,2007; Runco & Albert, 2011) have attempted to explore the complex and multifaceted nature of this highly important psychic energy i.e. creativity.

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As a result of investigation of creativity in different contexts with various approaches, it has become difficult to evolve a consensual definition rather it has led to the use of similar, ,overlapping and synonymous terms(e.g., imagination ,ingenuity , innovation, inspiration, inventiveness, novelty, originality, talent, uniqueness, divergent ability), and the definitions of each term vary widely (Plucker & Makel, 2010). This abundance of definitions manifests the complex and multifaceted nature of creativity, so it is natural to have numerous definitions which Rhodes (1961), Mooney (1963), Kneller (1965), and Runco (2004) have condensed into four distinct approaches popularly known as four P's of creativity, (a) As Product,(b) As Process, (c) As Person and (d) As Press. More recent version of this framework (Runco, 2007; Simonton,1990) consists of six P's adding (e) Persuation, and (f) Potential(Runco,2003). Product approach to creativity focuses on outcomes or products of creative process in terms of their novelty, utility, quality, and value such as works of art, inventions, publications, musical compositions, and so on which can be counted permitting quantitative objectivity. Positive aspect of this approach is that these products are available for a judgement, so inter rater reliability can be ascertained.

The negative side of this approach is that little can be said directly about processes leading to products or about creator's personality. Though it tells about highly creative individuals but not about the person with as- yet- unfulfilled creative potential(Runco,1996).

Process approach basically aims to understand the nature of mental mechanisms underlying creative thinking. Research attempts in this regard have been made to specify different stages of processing (Mace& Ward,2002; Simonton,1984; Ward et.Al.,1999) or specific mechanisms as components of creative thinking (Mumford et al1991/1997), such as removal of repression or drive discharge (Frued, 1963), preconscious functions (Kubie, 1958), perceptual openness and meta-cognition (Baer & Kaufman, 2006; Kaufman and Beghetto, 2013), associative processes (Runco, 1991a) and active search for gaps in knowledge, problem finding, and consciously breaking the existing boundaries and limitations of one's field (Gardner, 1986; Perkins, 1983; Sternberg, 2003; Baer & Kaufman, 2006; Kaufman & Beghetto, 2013). In terms of process approach , Torrance (1966, 2004) has defined creativity as a "process of becoming sensitive to problems, deficiencies, gap in knowledge, missing elements, disharmonies, and so on; identifying the difficulties , searching for solution, making guesses or formulating hypotheses; and possibly modifying and retesting them; and finally communicating the results."Some important issues in studying creativity as a process include the extent which creative thinking involves the same basic cognitive mechanisms as non-creative thinking, the relative contributions of conscious v/s unconscious processes, the relative role of chance or stochastic processes v/s controlled and guided processes; and the nature and reliability of evaluative processes of creative thinking. These issues have been empirical addressed.

Person (personality) approach has attempted to conceptualize creativity in terms of personality and motivational characteristics, cognitive abilities and behavioural or biographical dispositions of creative individuals. In much of the researches in this regard,

mathematicians, architects, writers, scientists and other pioneers across various fields have been compared in terms of their personality and temperamental traits that may be indicative or contradictive of creative potential. Several traits have been found common across the domains including intrinsic motivation, wide interests, openness to experience, autonomy, self confidence , tolerance of ambiguity, autonomy resolution, accommodation of opposite or conflicting traits in one's self concept, and psychological mindedness (Barron & Harrington, 1981; Barron, 1995; Helson, 1972; Eysenck, 1997; Cattell & Butcher, 1970; Baquedano & Lizarraga, 2012; Sung & Choi, 2009; Wolfradt & Pretz, 2001). The expression of personality depends on the setting or context in which individual resides.

The **Press** approach to creativity emphasizes the importance of total complex situation (press) in which creative processes are stimulated and sustained upto completion through interaction between person and environment (Rhodes, 1961, 1987). Press influences may be general or specific, and operate through implicit evaluation in the society. Creativity flourishes when there are opportunities for exploration, independence and autonomy in working; and when the originality is supported and valued in the environment (Amabile, 1990; Witt & Boerkem, 1989). Researchers (Amabile & Gryskiewicz, 1989; Witt & Boerkem,1989) have identified some situational influences on creative thinking such as freedom, autonomy, good role models and resources, encouragement for originality, freedom for creativeness, innovation rewarding norms, and failures not being punished. Some inhibitive influences have also been identified such as lack of respect, red tapism, constraints, lack of autonomy and resources, inappropriatenorms, unrealistic expectation, over competition, etc. Family structure and school environments have also been found relevant in the cultivation of creative potentials (Gaynor & Runco, 1992; Hasirci & Demirkan, 2003).

Simonton (1990) proposed another approach conceptualizing creativity as **Persuation** stating that creative persons change the way others think, so they must be persuasive to be recognised as creative. Notion of creativity as persuation shares assumptions with the social perspective (Amabile, 1990), attributional theory of creativity (Kasof, 1995), and systems model (Csikszentmihalyi, 1988a). Persuasive individuals are those who can influence the direction taken by a domain. Here persuation implies everyday originality (Runco & Richards, 1998). The **Potential** approach emphasizes the exploration of yet-unfulfilled-potentialities and subjective processes of the individuals who could not manifest their creativity despite having cognitive and personality dispositions relevant to creativity. As per this approach, creativity develops overtime from potential to achievement mediated by interaction between person and environment (Runco, 2003).

Thus, creative thinking involves the simultaneous interaction among all the elements of above mentioned Six P's and hence, is multidimensional in nature. Creativity is associated with multidimensional characteristics and can only be understood from various viewpoints (Isaksen, 1987; Sternberg & O'Hara, 2000; Hennassey & Amabile, 2010; Baquedano & Lizarraga, 2012). The present study is mainly conducted to understand the multifaceted nature of creativity in relation to perceived family environment. The available literature

pertaining to family environment-creativity relationship is not well organized, but most of the studies in this regard accept the importance of family environmental characteristics in impacting the development of creativity and other cognitive abilities of the children.

Authoritarian family environment which shapes, controls, and evaluates the behaviour of child with a set of rigid standards is negatively associated with creativity. Authoritative family environmental conditions which direct child's activities in a rational, issue orientated manner is positively related with creativity, (Baumrind, 1996, Lee, Daniel, and Kissinger, 2006; Querido, Warner and Eyberg, 2002). Nicholos (1964) argued that authoritarian childrearing practices of mothers are negatively related to measures of creativity and originality of child. Miller and Gerard (1979) suggested that creative children have parents who treat them with respect, have confidence in their abilities, give them responsibility with autonomy and freedom; and children's creativity tends to be lower in families where parent-child relationships are characterized by overt hostility, rejection and detachment. Dewing and Taft (1973) also explained that creative children have mothers who held equalitarian attitude and preferred their children to have friends who show constructive interests and are inner-directed, whereas mother of non creative children are more concerned with socially desirable qualities. Children's analytical, creative and practical skills are affected by family, school, and peers (Kaufman and Sternberg, 2008). Ramey and Ramey (2012) revealed that several family characteristics influence children's cognitive development, such as socioeconomic status and type of occupation of the parents are closely linked with intelligence scores and academic achievement. McLoyed (1998) reported that family structure also impact the development of intelligence and other cognitive abilities through cognitive stimulation (Steelman, et. al, 2002). Available literature reveals that the development of cognitive functioning and creativity varies across different socio-cultural and environmental contexts (Buchmann & Hannum, 2001). Thus, the present study is also an empirical attempt to understand the relationship between various variables of perceived family environment and four dimensions of creative thinking among Senior Secondary male students.

METHOD

Sample:

The sample for the present study was .drawn from the Senior Secondary students of the various Senior Secondary Schools of Ambala and Kurukshetra Districts of Haryana. Sample consisted of 250 male students ranging in age between 17 and 22 years with the mean age of 19.5 years. Only those students who volunteered to participate in the study were included in the sample.

Measures:

Following measures were used for data collection.

1. Torrance Tests of Creative Thinking-Figural Form (Torrance, 1966). The Torrance Tests of Creative Thinking representing the original set in the series, comprise of verbal battery (Six subtests) and a pictorial or figure battery (three subtest). The first battery is labeled 'Thinking Creatively With Words; and the second, 'Thinking Creatively With

Pictures. Torrance Test of Creative Thinking with Pictures (TTCT) was developed by Torrance (1966) to assess the same four creative abilities: Fluency, Flexibility, Originality and Elaboration. This test consists of three activities: Picture Construction; Picture Completion; Lines Activity. Tentative norms are given with means and SDs of special groups for comparison purposes. Ninth Mental Measurements Year-Book (Chase, 1985; Fox, 1985; Renzuli, 1985; Rust, 1985; Treffinger, 1985) provides the evaluation of current status of the test. In general, this test has been regarded as useful instrument of research and experimentation on creativity. Treffinger (1985) analyzed several studies of TTCT test-retest reliability. He pointed out that these range from .50 to .93 with most test retest reliability figures in .60 and .70s. The predictive validity of TTCT has evidenced insignificant correlation with creative achievement criterion in several studies involving periods as short as 9 months and as long as 22 years (Treffinger, 1985).

2. Family Environment Scale (Moos & Moos, 1981) is one of the ten social climate scales. The FES is composed of 10 subscales that measure the actual, preferred and expected social environment of families. These 10 FES subscales assess three underlying sets of dimensions-relationship, personal growth (or goal orientation) dimension system, maintenance dimensions, primarily reflect internal family functioning, where as the personal growth dimensions primarily reflect the linkage between the family and the large social context. Authors have provided a scoring key that makes scoring a simple task. FES items are arranged so that each column of responses on the answer sheet constitutes one subscale. To determine a person's raw scores, number of responses given in the keyed declaim as identified on the scoring key of each column are counted and the total is entered in raw box at the bottom.

Procedure:

The investigator contacted all the students personally in their respective classrooms and established a rapport for making them acquainted with purpose of the study in collaboration with class teacher. Then tests were administered strictly following the instructions specified in the respective test manual. Total 14 scores (four of creativity, ten of family environment) were obtained and analysed with appropriate statistical techniques.

RESULTS

Obtained data were analyzed using Descriptive Statistics, Pearson's Correlations, and Principal Component Factor Analysis, Frequency distributions for all the 14 variables were set up for the total group of 250 subjects. Descriptive Statistics (mean, standard deviation, skewness and kurtosis) along with frequency distributions depicted the data to be normally distributed. After ascertaining the normalcy of data and applicability of Product Moment Method of Correlation, Pearson's correlations among the 14 variables were obtained (Table-1). Degree of freedom being 248 (N-2), correlation coefficients of .13 and .17 have been found significant at .05 and .01 probability levels respectively.

Inspection of inter-correlations matrix reveals that inter-correlations among four measures of creativity are in general positive ranging from .36 to .78. All the six correlations are positive

and significant depicting substantial amount of variance sharing, existence of a general factor of creativity; and construct validity of TTCT-Figural Form.

Table-1, Descriptive Statistics and Interco relations Matrix

Varia	FLU	FLEX	ORIG	ELAB	C	EX	CON	IND	AO	ICO	ARO	NRE	ORG	CTL
FLU	XX	.62	.59	.49	.51	.54	-.52	.57	.52	.55	.56	.51	.55	-.54
FLEX		XX	.78	.36	.40	.61	-.47	.61	.70	.63	.66	.72	.62	-.57
ORIG			XX	.43	.36	.55	-.35	.54	.61	.56	.58	.64	.54	-.42
ELAB				XX	.67	.53	-.55	.62	.49	.52	.57	.47	.48	-.56
C					XX	.67	-.70	.84	.64	.71	.71	.60	.62	-.79
EX						XX	-.53	.75	.67	.76	.71	.74	.75	-.58
CON							XX	-.71	-.68	-.71	-.68	-.59	-.66	.90
IND								XX	.74	.76	.82	.74	.74	-.81
AO									XX	.76	.82	.76	.75	-.71
ICO										XX	.74	.70	.71	-.74
ARO											XX	.81	.76	-.73
MRE												XX	.83	-.64
ORG													XX	-.64
CTL														XX
N	250	250	250	250	6.22	6.10	4.85	5.56	5.86	5.89	5.50	5.25	5.40	4.74
Mean	34.72	31.76	36.78	52.00	2.07	1.72	2.46	2.17	1.89	1.79	1.77	1.89	1.88	2.83
SD	9.12	9.15	8.24	17.64	-.63	.06	.49	-.32	.23	.22	-.10	.10	-.09	.47
SK	-.047	.48	-.57	.06	-1.13	-.82	-1.25	-1.35	-1.29	-1.06	-1.42	-1.39	-1.31	-1.36

Correlations between four measures of creativity and ten of perceived family environment are ranging between -.57 and .72 with all the 40 correlations being significant at or above .01 level, of which 32 are positive and 8 are negative. Fluency has correlated positively with Cohesion (r=.51 p<.01), Expressiveness (r=.53 p<.01), Independence (r=.57 p<.01), Achievement Orientation (r=.52 p<.01), Intellectual Cultural Orientation (r=.54 p<.01), Active Recreational Orientation (r=.55 p<.01), Moral Religious Emphasis (r=.51 p<.01), Organization (r=.54 p<.01); and negatively with Conflict (r=-.52 p<.01), and Control (r=-.54 p<.01). Flexibility has marked positive association with Cohesion (r=.40 p<.01), Expressiveness (r=.61p<.01), Independence (r=.60 p<.01), Achievement Orientation (r=.70 p<.01), Intellectual Cultural Orientation (r=.63 p<.01), Active Recreational Orientation (r=.66 p<.01),

Moral Religious Emphasis (r=.71 p<.01), Organization (r=.62 p<.01); and negative association with Conflict (r=-.47 p<.01), and Control (r=-.56 p<.01). Originality has yielded positive relationship with Cohesion (r=.36 p<.01), Expressiveness (r=.55 p<.01), Independence (r=.53 p<.01), Achievement Orientation (r=.61 p<.01), Intellectual Cultural Orientation (r=.56 p<.01), Active Recreational Orientation (r=.58 p<.01), Moral Religious Emphasis (r=.64 p<.01), Organization (r=.53p<.01), and negative with Conflict(r=-.34 p<.01); and Control (r=-.41 p<.01). Elaboration has marked positive association with Cohesion(r=.67 p<.01), Expressiveness (r=.53 p<.01), Independence (r=.62 p<.01), Achievement Orientation (r=.49 p<.01), Intellectual Cultural Orientation (r=.51 p<.01), Active Recreational Orientation (r=.57 p<.01), Moral Religious Emphasis (r=.47 p<.01), Organization (r=.48 p<.01); and negative with Conflict (r=-.54 p<.01) and Control (r= -

.56p<.01). Obtained correlations depict substantial amount of variance sharing between two types of measures

Inter-correlations among ten measures of perceived family environment are ranging from -.81 to .90 with all the 45 being significant, of which 29 are positive and 16 are negative. Obtained pattern of correlations depicts substantial amount of variance sharing among the variables of family environment and existence of some higher order factors of perceived family environment.

Factor Analysis:

Though the bivariate correlations provide meaningful information about the commonality among variables, yet a genuine overlap can be best examined through Factor Analysis. So, the inter-correlations matrix was processed for Principal Component Factor Analysis to examine the structured overlap among measures of creativity and perceived family environment. Principal Component Factor Analysis (Hotelling, 1935) yielded two factors with Eigen values greater than 1.00 accounting for 75.22% of total variance. Extracted factors were rotated to Kaiser's (1958) varimaxcriterion of orthogonal rotation.

Table-2, Unrotated and Rotated Factor Matrix

Variables	Unrotated Factors		Rotated Factors		h^2
	I	II	I	II	
FLU	.698	.184	**.396**	**.604**	.522
FLEX	.765	.501	.235	**.884**	.837
ORIG	.689	.570	.131	**.885**	.800
ELAB	.673	-.270	**.681**	.249	.526
C	.814	-.423	**.888**	.229	.842
EX	.828	.089	**.557**	**.620**	.694
CON	-.798	.384	**-.851**	-.248	.785
IND	.905	-.169	**.786**	**.479**	.848
AO	.871	.084	**.592**	**.644**	.766
ICO	.869	-.038	**.671**	**.553**	.756
ARO	.895	.007	**.661**	**.604**	.802
MRE	.861	.211	**.499**	**.733**	.785
ORG	.852	.078	**.582**	**.628**	.732
CTL	-.850	.338	**-.858**	**-.317**	.837
Eigen values	9.31	1.22	9.31	1.22	--
% of Variance	66.51	8.71	66.51	8.71	75.22

Perusal of rotated factor matrix reveals that factor (I) has positively loaded on eight variables of FES namely, Cohesion (.888), Independence (.786), Intellectual Cultural Orientation (.671), Active Recreational Orientation (.661), Achievement Orientation (.592), Organization (.582) and Expressiveness (.557); and negatively on Control (-.858) and Conflict (-.851. Two measures of creativity i.e. elaboration and fluency have also marked positive loadings on this

factor with the respective loadings of .681 and .396 respectively depicting positive association between them; and their positive with eight variables of FES as mentioned above; and negative with Conflict and Control. Obtained structure apparently suggests it to be a factor of Independence Oriented and Supportive Family. It has accounted for 66.51% of total variance. Obtained structure resembles with one reported in earlier studies (Broke & Salmon, 1983; Canavan, 1989; Oliver et. al., 1985; Wood& Mathews,1989). Obtained structure hereby portrays the students who perceive their family environment characterized by commitment, support, assertiveness, self-sufficiency and decision autonomy; interest in political, intellectual, and cultural activities; participation in social and recreational activities; achievement orientation, planned family activities and responsibilities; expression, autonomy, and controlled conflict resolution among the members of family. Such individuals tend to be having high fluent and elaborative of creative thoughts.

Factor II has highly loaded on the three measures of creativity VIZ; Originality (.885), Flexibility (.884), and Fluency (.604). Elaboration has also marked substantial positive loading on this factor. Seven of FES scales have marked positive associations with this factor, namely Moral Religious Emphasis (.733), Achievement Orientation (.644), Organization (.628) Expressiveness (.620), Active Recreational Orientation (.604), Intellectual Cultural Orientation (.553); and Independence (.479) and Control has marked negative associations (-.317) with this factor. In view of the nature of markers, this factor is labelled as Creativity. It has accounted for 8.71% of total variance. Obtained structure hereby depicts that students perceiving their family environment characterized as encouraging values, achievement orientation and competitive frame work, planned activities and responsibilities, self expression, participation in social recreational activities, potential, intellectual and cultural activities, assertiveness and self sufficiency, and flexibility in family rules tend to be high in creative thinking characterized by originality, fluency, flexibility and elaboration of thoughts and problem solving.

DISCUSSION

The main objective of the present study was to understand the relationship between four dimensions of creativity and ten variables of perceived family environment indexed by Family Environment Scale. Both the correlations and factor analysis have revealed the structured relationship between the two, that is, encouraging and achievement oriented family environment is conducive for the cultivation of creative thinking among children. There is dearth of earlier studies which might have studied the relationship between Creativity and Family characteristics indexed by FES used in the study. Earlier studies in this regard have been conducted with specialist approach taking one or few variables of family structure to examine their relationship with creativity such as authoritarian and authoritative parenting. Earlier studies have revealed that authoritarian and authoritative parenting interferes in the development of creativity among children whereas autonomy, freedom, expressiveness, facilitate the creativityBaumrind,1996; Rubinstein,2003; Kaufman& Sternberg,2008; Ramey & Ramey, 2012; Lee et. al, 2006; Querido et.al). Findings of the present study are indirectly confirmatory to the earlier findings, rather the findings of present study have

provided more comprehensive information about the relationship between creativity and family environment variables. But the present findings can't be considered generalised, so more large scale studies are suggested in this regard.

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