

Developing a Creativity Model Based on Perceptions of Family Parenting Style and Triple Intelligence by Individualism mediation in Tehran's Talented Girl Students

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Article

Abstract

Introduction: The family, as the first social unit, has different duties and functions and is the main place of education and socialization of human beings. This study aimed to develop a model of creativity based on perceptions of family parenting style and triple intelligence by individuality mediation in talented female students in Tehran.

Method: the methodology of this research was descriptive-correlational. The statistical population of this study was all 15-17-year old talented girl students in Tehran in 2019. One sample out of this statistical population with 276 people was selected by multi-stage cluster sampling method, and the participants responded to Torrance's creative thinking test (1974), individualism questionnaire (2015), parenting styles questionnaire (1989), and Knox cubes (1971), and Cattell Intelligence Test (Form B) (1994).

Results: Pearson correlation coefficient method and equations were used to analyze the data. Findings showed that creativity has a positive correlation with analytical intelligence ($p = 0.001$, $r = 0.275$) and academic intelligence ($p = 0.034$, $r = 0.127$). However, there was no significant relationship between individuality, parenting styles, and creativity ($p = 0.387$, $r = 0.052$). In addition, the results of structural equation modeling (SEM) showed that the direct path coefficient of academic intelligence ($P = 0.015$, $\beta = 0.175$) and experimental intelligence ($P = 0.020$, $\beta = 0.158$) with individualism, and analytical intelligence had positive and significant effect on creativity ($P = 0.001$, $\beta = 0.194$).

Conclusion: According to the results of this research, creativity is not just a secondary phenomenon to be the product of positive or negative life experiences or personal characteristics, etc., it should be considered by an interactive and comprehensive view.

Keyword: creativity" talented girls " family parenting style" individualism

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Introduction:

Observation, recognition, and experience of creativity are some of the most satisfying aspects of humans. However, creativity and its meaning for us is so complicated and will get more different definitions, ideas, and meaning as much as it is discussed (1). Creative thinking is the observable ability that can be seen in all aspects of human life. The human can increase its intrinsic potentials of society, solve the problems, and move toward perfectionism by this creative thinking. How to parent the creative children in families to solve the existed dilemmas, create the leading methods to self-sufficiency, and get release of dependence are significantly important. Wieth et al in research titled “contradiction and adaptation in the creative education and research in students” showed that personal difference and daily time influence the emergence of creativity (2). Today, specialists of family parenting know that creativity should not be considered as a unique and specific intelligence of certain people. Amabile and Pillemer studied various landscapes about the social psychology of creativity. Amabile was one of the first individuals to look at creativity with the environmental approach and studied the facilitating environmental factors and family parenting styles (3). One of the effective factors on creativity is the personal traits of autonomy, individualism, and dependence in many studies which have been emphasized as the personal traits of creative people (4). The creative person pays special attention to his/her individuality, evaluates, and takes care of his/her affairs, and shows a strong belief and feeling in personal creativity (5). In this way, the creative characteristic is independent in all his/her thoughts and acts, not easily joined in groups, and does not obey the group values if the groups' values and activities do not adapt with his/her personal selections (6). On the other hand, it seems that various factors are related to the personality traits of students, one of them is family. Family as the first social unit has different duties and functions and is the main place of education and socialization of human beings, learning values, norms, and formation of interpersonal interactions and actions. Yao-Zhong Zhang in his research to study perceptions for the parenting style (parents' involvement) and academic goals of students with the mediating role of parenting styles showed that perceptions of parenting styles are related to the objectives of students' functional approach (7). The impact of the family environment is clear for all on the formation of personality and adaptive behaviors of individuals especially in adolescence, which is the period of identification and isolation seeking of adolescents. The family environment is the most suitable place for the intellectual and physical excellence and growth of a person. For example, perceptions of parenting styles have a significant and direct relationship with the individualism of students (8). What important is actually children's perceptions about their interactions with parents not what happens in their social-emotional and mental environment of family. Based on self-determination theory, perceptions of the family environment are an important resource to make the motivational cognitive and functional consequences. Based on Grolnick & Ryan's view, family environment perceptions have 3 components of support, the autonomy of family structure, and parenting involvement (9). Arefi with research under the title of “the relationship between the emotional intelligence and parenting styles of mothers with the primary school girl students' creativity in Kermanshah city” concluded that there is a positive relationship between

the authoritative parenting styles and creativity, and a negative relationship between the authoritarian and permissive parenting styles (10). Creativity has two general levels based on the interactive school: intelligence and talent levels (6). Creativity in intelligence level has 9 main aspects based on triple intelligence system. The triple intelligence system has 14 factors that are classified into three main territories of experimental, analytical, and academic intelligence (5). Experimental intelligence means the ability in experiences to clarify this fact that it starts with each vague and complicated issues by simulating the pervasive curiosity. The experimental intelligence encompasses active sensory learning, especially the use of observation and action in the environment which is associated with the turbulence to experience knowledge by insisting on it. Actually, no training is accepted without experience (6). Analytical intelligence means the ability to perceive, receive, and train keenly in axing, root the concepts simply, analyze issues, classify concepts easily by modern method, arrange the new classifications of concepts easily, and finally to organize the concept simply which lead the ability to arrange the usefulness design by the modern methods simply (5). Academic intelligence means the ability to succeed in learning, develop in learning, ability to succeed academically, to get higher academic levels, ability to succeed in learning and develop learning than a past time, increase valid awareness, improve students' perception in the curriculum, and increase academic efficiency which is obtained by the valid academic tests (6). Azimi research, which was conducted to study the relationship between the characteristics of intelligent personality and emotional relativity on the students of Varamin city, showed the positive and significant relationship between the personality traits (except receptivity factor) and emotional intelligence (11).

Since the surprising technology passes with the incremental speed in science, industry, and art, the necessity to use innovative and creative strategies in all activities is inevitable. In addition, students will be employed in relatively a short time later as a potential force in society. Therefore, the employment of students for jobs in addition to recruit others as the resources for the economic and social development and growth of the society is proposed as the main and the prioritized objective for the executive authorities of the state. According to what was mentioned, this research tried to test the creativity explaining pattern based on the perception of parenting styles with the mediating role of individualism and whether the proposed model has a proper fit or not.

Method:

The methodology of this research is descriptive-correlational, the statistical population of this research is all the 15-17-year-old talented girl students in Tehran in 2019 that the relationships between research variables were studied by a structural equation model. The sample volume was estimated at 276 people based on the Tabachnick & Fidell formula ($n \geq 50 + 8M$, M number of independent variables) and research components (12). The sampling method was in a way that first the girl talented students of Tehran city in 2018-2019 were selected by multi-cluster sampling method from 3 schools, and 3 class from each school from the majors of math and

physics, natural science, and humanities. First, Torrance's creative thinking test (1974), Kazemi Haghghi individualism (2015), and parents' parenting styles questionnaire (1989), Cattell analytical intelligence (1994), and experimental intelligence questionnaire (1971) were distributed among girl students after the permission of education administration. First, ethical principles of questionnaire were written, then voluntarily and freely participation and confidentiality of answers was explained. Then, they were asked to read and answer the questions precisely and do not leave any question non-answered based on the instruction above the questionnaires. The inclusion criteria of the 15-17-year-old talented girl students in 10th to 12th grade were having higher than medium level IQ, lack of psychiatric and sensorimotor disorders, the self-satisfaction of students and parents to participate in the study. In addition, the exclusion criteria include reluctance to participate in research and lack of favorable cooperation to respond to the questions. Research tool:

A) Parents' parenting styles questionnaire:

The perception scale of parents' parenting styles was prepared by Grolnick, Desi, and Ryan (the adolescent version) (13). This questionnaire has 42 questions. The scoring method is done by 7-point Likert continuum from completely agree (7 scores) to relatively agree (6 scores), very low agree (5 scores), not know (4 scores), very low disagree (3 scores), relatively disagree (2 scores), and completely disagree (1 score). The structure validity of the questionnaire was confirmed by two explanatory factor analyses (EFA) and confirmatory factor analysis (CFA) approaches. At the beginning of the results in CFA, the Kaiser-Mayer-Olkin (KMO) test (0.91) and Bartlett Test of Sphericity (8.24) confirmed the ability of scale clauses for factor analysis. In addition, Cronbach's alpha coefficient was used on the Tehran samples to study the internal consistency of the questionnaire whose coefficients were obtained 0.76 for mother involvement, 0.8 for support of mother autonomy, 0.82 for mother warmth, and 0.77 for father involvement, 0.78 for support of father autonomy, 0.81 for father warmth, and 0.94 for whole questions (9).

B) Torrance's creative thinking test

Torrance's creative thinking figural test (form B) made by Torrance (1974) was used in this research to measure the participants' creativity. This form has 3 activities, and the participant forms figures by his/her selection for each activity in 10 minutes, that each activity for each participant needs 30 minutes. The test activity has 4 scores for 4 components of creativity (14). The excellent skill in painting or drawing is not emphasized in the scoring of this test. The evaluation criterion is the existence of the idea in each image. The art quality of the drawing is not the evaluation criterion. Therefore, each figure showing creative thinking will get a score. Torrance reported the reliability of this test in 0.86 to 0.99 scores for the trained and non-trained scorers (15). Pirkhaefi in the Iranian sample found the reliability coefficient 0.8 in two-week time intervals by the re-test method on 48 students (16). He found this coefficient 0.78 in fluid components, 0.74 in the invention, 0.81 for flexibility, and 0.9 for expansion. The reliability of the questionnaire in this research was obtained 0.67 by Cronbach's alpha coefficient method.

C) Triple intelligence questionnaire

Knox cube test was used to measure the experimental intelligence which was made by Wechsler (1971) which is applied for 5 to 15 years old. This test is practical and is made to avoid the language factor involved in the measurement of intelligence. Only figures (1) to (18) are scored. Each figure should be made at the proper time. Each figure not made at the end time correctly, will not gain any score. When a participant succeeds, it means he/she can make the provided model completely by cubes and get scores that differs based on the spent time. The number of scores and the required time to make figures is different. The scoring method and essential time for various scores are written on the score paper. David Wechsler confirmed the correlation of 0.73 between his cube subtests and total test and correlation of 0.06 between general information subtests and cubes subtests (17). Abedi and Sadeghi reported the validity of the Knox cube test 0.78 in Chaharmahal and Bakhtiari Province (18).

D) Cattell Test (Form B)

Cattell test (form B), made by Raymond Cattell in 1994, was used to measure analytical intelligence. One score was considered to score each correct answer. If a person gives two answers to the question with one answer or one answer to the question with two answers, he/she will get no score. The score of each subtest is recorded separately and the total score is written. Finally, the IQ of the participant is obtained according to his/her raw score, mental age, and table of answer key of the dependent test to Cattell culture. The validity of the Cattell intelligence scale was obtained 0.77 using Cronbach's alpha coefficient and 0.81 using Kuder-Richardson formula 21 (19). Jokar used retest, peer species, bisection, and Cronbach's alpha coefficient methods in 1230 people (606 girls and 624 boys) from the fourth grade of elementary school to the third grade of high school to examine the reliability of test with coefficients of 0.7, 0.77, 0.84, and 0.78, respectively (20).

E) Individualism questionnaire

The individualism questionnaire was prepared and coded by Kazemi Haghighi in 2015 for the first time. This tool includes 21 items that totally measure two factors of personal commitment and independence. Independence includes 9 questions. The questionnaire was scored based on the Likert spectrum from 1 to 9. Therefore, the minimum score was 9 and the maximum score was 81. The scores of these questions are obtained by summing all scores of questions for each component and dividing them into the number of questions to score based on the instruction of the questionnaire designer. The component of personal commitment has 12 questions and is based on a five-point Likert spectrum. Thus, the minimum score is 25 and the maximum score is 75. The scores of these questions are obtained by summing all scores of questions for each component and dividing them into the number of questions to score based on the instruction of the questionnaire designer. Kazemi Haghighi studied the reliability of a 437-member sample of

11-16-year-old students of Tehran city whose validity coefficients fluctuated from 0.54 to 0.81 based on various groups by internal consistency method (Cronbach) (6). In this research, the internal reliability of this questionnaire was calculated and obtained 0.71 using Cronbach's alpha coefficient.

In this research, data was analyzed by SEM and Pearson correlation coefficient. SPSS₂₆ and AMOS₂₄ software was used to analyze the results. The goodness of fit indexes (GFI) including Chi-2 square (c2), the ratio of chi-2 to the degree of freedom (X^2/df), RMSEA, the goodness of fit index (GFI), adjusted goodness of fit index (AGFI), incremental fit index (IFI), Tucker-Lewis index (TLI), and comparative fit index (CFI) were used in SEM model, and bootstrapping method to study the mediating effects. The sig. level of chi-2 and Pearson correlation coefficient was considered 0.05. The accepted values higher than 0.9 were obtained for adjusted goodness of comparative fit index (AGCFI) including GFI, IFI, TLI, and CFI, higher than 0.8 for AGI, lower than 5 for x^2/df , and finally lower than 0.08 for RMSEA (21).

Results:

This research has 276 15-17-year-old girl students from three fields of natural sciences (94 members (34%)), math and physics (92 members (33%)), and humanities (90 members (33%)). Data shows that the mean creativity of students is 158.75 and the standard deviation was 67.09. The range of changes in the individual variable was also between 2 and 351. Furthermore, intelligence had a mean of 16.73 and a standard deviation of 2.16, and parenting style had a mean of 5.05 and a standard deviation of 1.35. Skewness and kurtosis indexes of all variables were in the range of +1 and -1 which shows the distribution normality of these variables.

Table 1: Pearson correlation coefficient matrix between the main research variables (n = 279)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother involvement (1)	1							
Mother support (2)	.576**	1						
Mother warmth (3)	.587**	.611**	1					
Father involvement (4)	.398**	.261**	.329**	1				
Father support (5)	.342**	.401**	.297**	.745**	1			
Father warmth (6)	.333**	.356**	.373**	.667**	.752**	1		
Individualism (7)	-.073	.042	.042	.047	.086	.062	1	
Creativity (8)	-.041	-.016	-.045	.061	.075	.074	.038	1

According to the reported correlation coefficient in the matrix of Table 1, the parenting style components of mother and father have positive and significant coefficients with each other, but the correlation coefficient of these variables is not significant with individualism ad creativity.

The main hypothesis of research: the explanation pattern of creativity, based on the perceptions of parents' parenting styles and triple intelligence, has a proper fit with individualism mediator. SEM with maximum likelihood was used to answer this hypothesis.

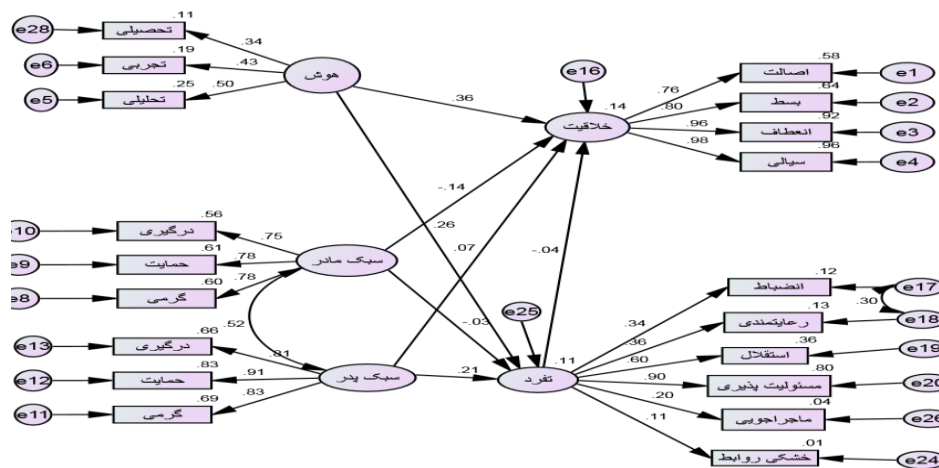


Fig 1: research hypothesis model

Table 2: Significance of non-standard direct coefficients between variables in the model

From	To	Structure	b-value	S..E	C.R	P-value
Triple intelligence	→	Individualism	0.006	0.003	2.032	0.042
Mother style	→	Individualism	-0.009	0.030	-0.299	0.765
Father style	→	Individualism	0.044	0.020	2.195	0.028
Triple intelligence	→	Creativity	0.570	0.213	2.678	0.007
Mother style	→	Creativity	-3.238	1.910	-1.695	0.090
Father style	→	Creativity	1.015	1.147	0.884	0.376
Individualism	→	Creativity	-2.522	5.315	-0.475	0.635

P<0.05

As it is seen in Table 2, three path coefficients between the triple intelligence to individualism, parent style to individualism, and triple intelligence to creativity are significant in 0.05 level.

Table 3: The effects of direct and indirect standard and general main variables of the research

From the structure	To the structure	Direct effect	Indirect effect	Total effect	explained variance
Father style	Individualism	0.207*	Not have	*0.207*	0.11
Mother style		-0.026	Not have	-0.026	
Triple intelligence		0.265	Not have	0.265	
Father style	Creativity	0.070	./././	0.062	0.14
Mother style		-0.137	./././	-0.136**	
Triple intelligence		-0.357**	./././	0.348**	
Individualism	Creativity	-0.037	Not have	-0.037	

***P<0.001

According to the data of Table 3, the direct coefficients between the father style structure and individualism and between triple intelligence and creativity are positive and significant. However, the indirect coefficients between the mother style, father style, and triple intelligence on creativity are not significant by the mediating variable of individualism. The explained variance in the last column between the endogenous variables of the model was reported based on the exogenous variables. The value of the explained variance for the main endogenous variable of the model, creativity, is 0.14 by two structures of triple intelligence and parenting style of parents and the mediating structure of individualism. It means they explain 14% of the main dependent variables by the model variables, and 86% of the variance is related to the variables out of the model. Moreover, 11% of the individualism structure variance is explained by two structures of triple intelligence and parenting style of parents.

The bootstrapping method was used to determine whether individualism mediates the relationship between triple intelligence and parenting styles with creativity or not. As it is seen from the results of Table 3, the direct coefficient of triple intelligence and creativity is significant, but the indirect coefficient between these two variables is not significant. Therefore, it is claimed that the individualism structure does not have a mediating role between these two variables and there is only a direct effect between them.

Conclusion:

This research aims at studying the mediating role of individualism in the relationship between the triple intelligence (experimental, analytical, and academic), and perceptions of parents' parenting styles with creativity. Despite the importance of creativity in explaining psychological consequences such as the positive and negative emotions psychological impatience (5), personality traits, skills of problem-solving, adaptation, and self-sufficiency intelligence abilities, and release of attachment, and solving contradiction (4), studying the explanatory models and their mechanism are mainly associated with an emphasis on simultaneous and linear relationships. The methodology in this research was based on the necessity of studying structural effectiveness and SEM. The results showed that creativity, as the nature output of the model of this research, is the resultant of the individual variables in the deep levels (triple intelligence) to the current levels (perceptions of the parenting styles of parents). Totally, the obtained results from this research emphasize the interactive role of creativity and its effect on the various aspects of personal life. Kazemi Haghighi opposes the pure and separated recognition of a mental phenomenon from the other phenomena, which is called the school of elementalism, by a narrow-minded and vain emphasis and persistence and introduces the interactive school of psychology against such an approach. Creativity based on the interactive school has aspects in two general levels: intelligence level and talent level (6).

In interactive theory, multi-aspect confrontation is mentioned instead of one aspect of each issue, and each phenomenon is the result of the interaction of several components. Amabile and Sternberg are the most important theorists with a multi-aspect attitude about creativity (5).

In addition, the results of comparing this research with Azimi research, conducted to study the relationship between the intelligent personality traits and emotional creativity on the students of Varamin city, showed the significant and positive relationship between the personality traits (except receptivity factor) and emotional intelligence (11). This result shows the close relationship between creativity and intelligence and the role of all intelligence types in the occurrence of creativity. In this regard, this research has added new findings to the literature of this field.

Arefi research was conducted along with this research, and the results showed a positive relationship between the authoritative parenting styles and creativity and a negative relationship between the permissive and authoritarian parenting styles with creativity (10). Thus, what important here is children's perceptions and their interactions with their parents not what actually happens in the emotional-mental, and social environment of family.

According to self-determination theory, family environment perceptions are an important resource for making motivational, cognitive, and functional consequences. According to Grolnick & Ryan's view, family environment perceptions include three components of the family structure autonomy and parents' involvement (9). In the inference of this finding and its comparison with Wieth et al. (2), it happens because most students have one culture and similar social manner. Each student forms a personal manner in addition to his/her genetic nature

because of his unique interactions with the first social unit, family. The combination of environmental-social experiences particularly parents' behavior and performance with an individual determines the nature of the efficient personality of an adult; although, it cannot be definitely imagined. There are limitations in this research and the obtained results similar to the other studies because this research was only conducted among the talented girl students of Tehran city and only a test tool was used to collect data. Moreover, the test tool was limited to Torrance's creative thinking test, parents' parenting styles, Knox cubes, Cattell Test (B form), and individuality questionnaire. Lack of controlling some interrupting variables such as economic, family, and social status in the research sample reduced the internal validity of this research. Furthermore, it is suggested to have a comparative study of the variable in the talented boy students as a statistical population in addition to consider the important and new research aspects which was the correlation form of variables in the talented girl students' population. It is suggested to conduct this research in other groups with higher aspects, use the causal and comparative methods to provide more precise experimental pieces of evidence, to research in a longer time, and longitudinal research to obtain the precise results about the effect of personality and triple intelligence on the creativity, and to insert other effective variables on the talented people creativity from the various groups (family, friends, others, etc.) in further studies. It is suggested based on the use of findings of this research to apply the results of this research for the academic and psychological counseling activities to help talented students, the parent-teacher association, and the educational subject.

Research application

This research can be used for the specialists of education, teachers, parents, and university and school students. Many variables can have a mediating role to develop the objectives in academic achievements. Therefore, the mediating role of individualism was studied in this research.

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