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Original Article (Pages: 13281-13295)

Modeling the Cognitive Flexibility and Academic Engagement based on Self-Regulation, Psychological Hardiness and Self-Differentiation with Mediation of Family Functioning in High School Students

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Abstract

Background: The researches emphasize the importance of the relationship between psychological hardiness and differentiation of self with cognitive flexibility and self-regulation with academic engagement. Thus, the purpose of this study was to predict cognitive flexibility and academic engagement based on self-regulation, psychological hardiness and differentiation of self by mediating family functioning in students.

Materials and Methods: For this purpose, in a descriptive-correlational study 499 of the second-high school students of Tehran in the academic year, 2019-2020 were selected by random cluster sampling method. The statistical population includes four hundred and ninety students of Tehran who were selected by the multistage cluster random sampling method. Data collection tools included the Cognitive Flexibility Inventory (CFI), The Maslach Burnout Inventory, Self-Regulation Questionnaire, Psychological Hardiness scale, The Differentiation of Self Inventory (DSI), and The McMaster family assessment device. Data were analyzed using the Structural Equation Modeling method using the SPSS software version 20.0 and Amos software version 24.0.

Results: The most frequent were in the 17-year-old group (11th level) with 169 participants and the least abundant belongs to the 18-year-old group (12th level), with 167 participants. The findings showed that there was a significant full effect relationship between self-regulation and academic engagement ($p < 0.001$). According to the results, there was a significant full effect between the differentiation of self with cognitive flexibility ($p < 0.037$). The results showed that there was a significant full effect between self-regulation and academic engagement ($p < 0.001$).

Conclusion: Based on the results, the students who are at a lower level of differentiation of self may be frustrated by the family's excitement, which leads to emotional breakdown or confusion with others.

Key Words: Academic engagement, Cognitive, Self-differentiation, Self-regulation, Student.

*Please cite this article as: Vaziri C, Ghanbaripanah A, Tajalli P. Modeling the Cognitive Flexibility and Academic Engagement based on Self-Regulation, Psychological Hardiness and Self-Differentiation with Mediation of Family Functioning in High School Students. Int J Pediatr 2021; 9(3): 13281-295. DOI: **10.22038/IJP.2020.50410.4011**

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Received date: Nov.10, 2021; Accepted date: Jan.12, 2021

1- INTRODUCTION

Investing in skilled and dedicated employees is one of the key educational tasks, and the development and progression of the academic achievement of learners are regarded as the primary goals of the educational system (1). The Educational system is essentially an open, available, and sensitive framework, involving a common variety of students with different levels of readiness and versatility, and its ultimate aim is to change the curriculum and improve the learner's educational skills (2). Cognitive flexibility is one of the psychological investment components, acting as a positive psychological mood and can be defined as adapting the individual's psychological representation in order to be more compatible with the environment's changeable stimuli (3, 4).

This psychological structure is defined as switching the thought in two or more verity of components simultaneously (4). In other words, cognitive flexibility is one of the essential components in executive function, which plays a key role in students' problem solving, goals following up, and success (5). The nervous system of human being is designed in a way that can be changed through gaining new experiences, which is called nervous flexibility (6). Now, cognitive flexibility can be defined as a distinctive feature in man cognition and smart behavior (7). On the other hand, one of the necessary conditions for evolution and advancement in the education field is students' educational activities, which is effective on increasing the rate of being at school and having no academic failures (8).

Academic engagement illustrates the extent of identifying academic value results by learner's activities in educational system, which is defined as a multidimensional structure in learning activities (9). In fact, the student's engagement, presents their high focus, interest and pleasure in doing their homework (10). Academic engagement makes a useful structure for considering the learner's diligence promotion and maintenance in variety of educational fields; hence, the rate of stress levels will be decreased, having the positive motivation in challenge, which the students encounter (11). Those students who have high level of academic engagement, are highly active in learning processes too, and they do their homework correctly and completely while the partially active students, do their homework well and enough, but not as much as their potential (12). One of the attractive concepts in postmodern educational system is self-regulation, which is considered to be an essential component in schools and even thereafter (13). Majority of the eager and motivated students have readiness to use the self-regulation strategies based on some self-abilities; such as metacognitive thinking, self- monitoring and self- assessment in learning process which can lead to the achievement of the desired goals in terms of cognition, emotion and motivation (14).

Psychological hardiness is a structure, raised in cognitive flexibility filed recently, and considers the connection of internal personality features, which can help to overcome the negative experiences (15). According to the evolutionary perspective, having childhood experiences and existing positive relations with parents can lead to an obstinate personality (16). Obstinacy contains two important elements: eagerness and perseverance; in obstinate pattern, the value of perseverance and adherence to a high level goal for a long period of time are more than the eagerness; and, combining the eagerness with perseverance will make the obstinacy. Therefore, with the student's effort the talent will be changed into skill, and in fact, the effort will make the skills productive (17).

In addition, self-differentiation is considered as one of the essential concepts in mental health and between personalities; variables have the most important relationships with mental maturity (18). The features of self- differentiation (self-steam) are as below: having the high level of a self-rule when the person is in contact with the others, having distinction capacity between intellectual and emotional processes which guides the individual' behavior, flexibility, compatibility, and self-emotion experiences (19). On the other hand, self- differentiation confirms the students' ability to own positive aspects of psychological wellbeing and self-satisfaction, which increases the coefficient of predicting qualification of self and in relation performance (20). On the other hand, Family functioning means adapting with the changes made during the life, resolving conflicts, attachment to members and succeeding in disciplinary models, observing boundaries between people, implementing the rules and regulations governed by this institution, with the aim of preserving the whole family foundation (21). Whenever children enter the adolescence period, they need more protection and development of family functioning level; therefore, as a strong predictor, the importance of the family factors and the members' connections with each other can affect adolescent's growth in all fields (22). Positive relations between adolescents and their families can play the role of anti-shock against the environmentally destructive effects, protecting them from environmental damages and dangers (23). According to the importance mentioned for identifying the effective variables on cognitive flexibility, students' academic engagement and limited studies of mentioned variables with individual's features, such as self- regulation, psychological hardiness, and self-differentiation with family functioning as a mediator, is regarded to have a leading role on adolescents' mental health. Therefore, the present research aims to predict the cognitive flexibility, and academic engagement based on self- regulation, psychological hardiness, and self-differentiation with the mediating role of family functioning (**Figure.1**).

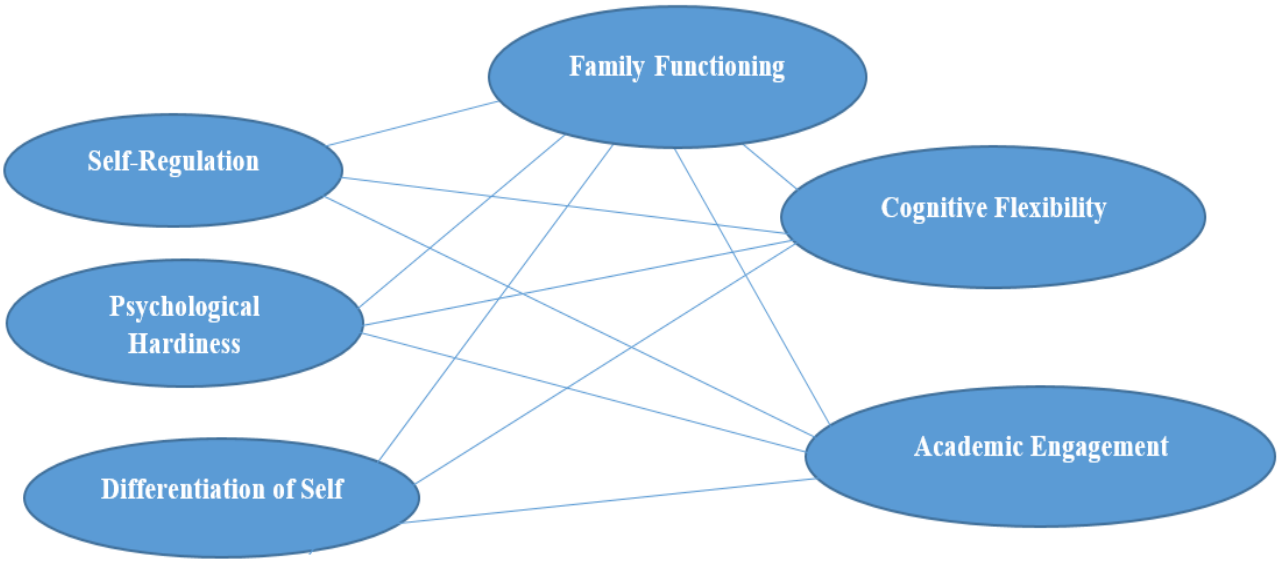

Fig.1: Conceptual model of research.

2-MATERIALS AND METHODS

The present research is a correlational descriptive study, done by structural equation modeling. The statistical population of this project included all the students studying in high school (10^{th}, $11^{th,}$ and 12^{th} grades) in the field of humanities, experimental science, and mathematics in the academic year of 2017-2018, in Tehran, Iran, of which 499 students were chosen by a multistage cluster random sampling method.

2-1. Participants and data collection

Having received a letter of recommendation from the university, coordinating and obtaining the approval of the General Department of Education of Tehran and the education departments of the districts 1, 3, 7, 11, and 16, the researcher distributed a questionnaire in the high schools of the mentioned districts. Then, two high schools (girls' and boys') were randomly selected from each district. Altogether, ten schools were studied in the present research. In district one, 156 students (83 boys and 73 girls); in district three, 162 students (82 boys and 80 girls); in district seven, 168 students (66 boys and 102 girls); in district eleven, 143 students (55 boys and 88 girls); and in district sixteen, 161 students (91 boys and 70 girls) studying in experimental science, mathematics, and humanities from tenth, eleventh and twelfth grades were randomly selected. Due to the female students' distribution in these areas, the highest distribution was reported in district 7, in 10^{th} grade. In the current study, 550 questionnaires were distributed in relation to students' distribution and dropout calculations, and finally, 499 returned questionnaires were entered without any defects. To ensure the accuracy and precision of the questionnaires answered, researchers had given the necessary orders to the students to answer the questions honestly as well as the requested demographic information. Ethical principles of individuals were observed in the implementation of questionnaires and the research process. Therefore, students who did not agree to fill out the questionnaires for any reason were not forced to do so. It should be noted that the questionnaires lacked confidential details such as the first and last names of the individuals. In addition, the executive session assured everyone that the goal was to conduct academic research, not to examine individuals and that all information would remain confidential. Therefore, this research was conducted by observing fidelity and protecting the rights of the participants. Finally, sampling was done in a period of two and half months.

2-2. Measuring tools

In this study, in addition to the personal information form, the Cognitive Flexibility Inventory (CFI) (24), the Maslach Burnout Inventory (25), Self-Regulation Questionnaire (26), Psychological Hardiness Questionnaire (27), The Differentiation of Self Inventory (DSI) (28), and the McMaster family assessment device (29) were used as follows. It should be noted that due to a large number of questionnaires, students were asked to deliver the questionnaires to the school's office after having them completed at home.

2-2-1. Cognitive Flexibility Inventory (CFI): This 20-item self-report scale, consisting of two subscales, the Alternatives and Control subscale (discussed earlier), measures the type of CF targeted in CBT interventions on a 7-point Likert scale (from strongly disagree to strongly agree). The CFI results regarding the highest internal consistency in a student sample was as below (α= 0.90 to 0.91, 0.91, and 0.84 to 0.86, for the total score, alternatives and control subscale, respectively) (24). In Iran, Share, Farmani, and Soltani (2014), reported the validity of this inventory as 0.71, and the perception of controllable subscales, perception of

different options, and perception of justification of conduct were reported as 0.55, 0.52, and 0.57, respectively (30).

2-2-2. The Maslach Burnout Inventory (MBI): Schaufeli, Leiter, Maslach and Jackson designed this inventory in 1996, which consists of 14 questions, including 3 subscales of power, sacrifice and attraction (25). Grading of this application is in six scales (from 0 to 5). The option that indicates maximum academic involvement is given the score of five and the option that indicates no academic involvement is given the score of zero. The lower limit of the zero scores is the average limit of 24 marks and the upper limit is 84 marks. A score between 0 and 28 indicates a low level of academic engagement. A score between 28 and 56 indicates the average academic engagement of the individual. A score above 56 indicates a high level of academic engagement. The internal consistency questionnaires designers gained this application by using Cronbach's alpha for components of power, sacrifice and attraction 0.80, 0.91, and 0.75 alternatively zero. This tool was validated in Iran and Cronbach's alpha for components of power was 0.82, sacrifice was 0.88, and attraction was 0.80 (31).

2-2-3. Self- Regulation Questionnaires:

Bouffard, Boisvert, Vezeao and Larouche designed this tool in 1995 (26). This scale consists of 14 questions and 2 cognitive and non-cognitive subscales. The scoring method of this questionnaire in a five-point Likert scale is from I completely disagree (1) to I completely agree (5). To measure self-regulation in learning, the mean scores of the three components are added together to give an overall score. The lower limit of the score was 14; the average limit of the score was 42; and the upper limit of the score was 70. A score between 14 and 28 indicates low self-regulation. A score of 28 to 42 indicates moderate self-regulation. A score above 42 is self-regulating. In Iran, Kadivar (2001) validated this tool and Cronbach's alpha for cognitive and non-cognitive components to be 0.70 and 0.68, alternatively (32).

2-2-4. Lang and Goulet Psychological Hardiness Scale: Lang and Goulet designed this application in 2003. This questionnaire consists of 42 questions and 3 subscales of control, commitment and challenging. Grading was in a five-point Likert scale from: I completely disagree (1) to I completely agree (5). The total score of the individual in the Long and Goulet Hardiness Questionnaire (2003), and its subscales is obtained from the sum of these scores in each of the questions (27). Low Limit Score was 42, Medium Limit Score was 126, and High Limit Score was 210. Scores 42 to 84 indicated that: A person's psychological toughness is low. Scores 84 to 126 indicated that: The psychological stubbornness of the person is moderate. Scores above 126 indicated that: The person's psychological stubbornness is high. The questionnaire designers used Cronbach's alpha, for determining the validity of the questionnaire and gained it for subscales of control, commitment and challenging 0.67, 0.72 and 0.65, respectively. This application was embedded in Iran and the Cronbach's alpha for subscales such as control, commitment and challenging were 0.86, 0.75 and 0.61, respectively (33).

2-2-5. The Differentiation of Self Inventory (DSI): This application is a 20-item self-report, measuring the self-differentiation in adulthood, which is grounded in BFST (28). This scale consists of 20 questions and 4 subscales of emotional reflexivity, my position, emotional cut and mixing with the others. Grading was in a 6-point Likert from it does not look like me at all (1) to it completely looks like me (6). The scoring method of this questionnaire is in the form of a 6-point Likert scale in which the score of each subscale is the average of its items. In this questionnaire, the highest score that

a person can get is 120 and the lowest score is 20, this means that a high score indicates a higher self-differentiation and a low score indicates a lower self-differentiation. The designer of this questionnaire, estimated internal similarity of this tool with Cronbach's alpha for subscales of emotional reflexivity, my position, emotional cut and mixing with the others as 0.88, 0.85, 0.79 and 0.70, respectively. This application embedded in Iran and Cronbach's alpha for subscales as emotional reflexivity, my position, emotional cut and mixing with the others were 0.63, 0.56, 0.57 and 0.82, respectively (34).

2-2-6. The McMaster Family Assessment Device: This tool was designed by Epstein, Baldwin and Bishop in 1983 (29). This scale consists of 60 question and 7 subscales of solving the problem, connection, roles, emotional responsibility, emotional engagement, behavior control, and overall performance, and their scores were 0.74, 0.75, 0.72, 0.83 and 0.92, respectively. To score the Family Performance Questionnaire for each question, 1 to 4 scores, which is a four-point Likert scale is given, using the following keywords: (strongly agree 1), (agree 2), (disagree 3), and (I completely disagree 4). Questions that describe unhealthy performance are given a reverse score. The obtained scores indicate the score of each person in each of the subscales. The lower limit was 60 marks, the average limit was 150 marks, and the upper limit was 240 marks. A score between 60 and 100: family performance is poor. A score between 100 and 150: family performance is average, and scores above 150 indicate that family performance is high. This application was embedded in Iran and its Cronbach's alpha for all the questionnaires was 0.71, and for subscales such as solving the problem, connection, roles, emotional engagement, behavior control, emotional responsibility and overall performance were 0.72, 0.70, 0.71, 0.73, 0.66 and 0.71, respectively (35).

2-3. Ethical considerations

Ethical principles were observed in the implementation of questionnaires and research process. Therefore, participation in the study was optional. The questionnaires also lacked confidentiality, such as first and last name. This article is taken from the doctoral dissertation of the first author in the field of educational sciences with the approval ID-number: 10120702971002/97, Vice Chancellor for Research, Faculty of Psychology and Educational Sciences, Islamic Azad University, Central Tehran Branch.

2-4. Data analyses

In order to analyze the data, a descriptive statistical index including (frequency distribution table, mean quantitative standard deviation) was applied. It should be noted that the process of analyzing the descriptive statistics was performed by SPSS-20 statistical software. In the inferential part, according to the type of research, the Kolmogorov-Smirnov test was applied to determine the normality of the data, from the confirmatory factor analysis to investigate the validity of the research tools and to the research model and the results obtained from Structural Equation Modeling, (SEM) using the SPSS software version 20.0, and Amos software version 24.0.

3- RESULTS

The findings of descriptive statistics indicate that of 499 students studying in high school, the most frequency belongs to district 7 with 104 students and the least frequency belongs to district 11 with 95 students. In addition, most frequent value belongs to 17 year-olds group (11^{th} grade) with 169 participants and the least frequent value belongs to 18 year olds group (12^{th} grade) with 167 participants (**Table.1**).

Table-1: Frequency distribution of the studied sample by demographic variables.

Variables	Variable Levels	Frequency	Percent
Gender	Male	270	54.1
	Female	229	45.9
Age	16 years	163	32.7
	17 years	169	33.9
	18 years	167	33.5
Education district	1	98	19.6
	3	100	20.0
	7	104	20.8
	11	95	19.0
	16	102	20.4
Educational level	10^{th}	163	32.7
	11^{th}	169	33.9
	12^{th}	167	33.5

The results of the descriptive findings of the subscales illustrated that in the components of family functioning, the highest mean is related to emotional response and the lowest is related to emotional fusion. This section seeks to answer the main research hypothesis: "The mediating role of Family functioning between Self-regulation, Psychological hardiness, and Self-differentiation with Cognitive flexibility and Academic engagement". Structural equation modeling has been used (**Table.2**).

Table-2: Descriptive statistics of the subscales used in the study.

Variables	Sub scale	Mean	SD	Skewness	Kurtosis
Cognitive flexibility	Substitutes	29.84	10.234	.367	-.185
	Control	26.49	8.557	.166	-.206
	Substitutes for human	6.91	2.797	.225	-.522
Academic engagement	Power	11.89	5.844	-.089	-.690
	Sacrifice	14.39	7.363	-.441	-.786
	Attraction	11.01	4.864	-.353	-.455
Self-regulation	Cognition	23.63	4.599	-.195	.114
	Meta cognition	22.78	4.959	-.184	-.281
Psychological hardiness	Control	44.61	6.320	-.140	.257
	Commitment	47.29	5.030	.327	.208
	Challenging	38.74	6.515	-.294	-.045
Self-differentiation	My position	18.64	5.252	.228	-.147
	Mixing with others	18.54	4.924	-.097	-.278
	Emotional cut	9.20	3.606	.222	-.544
	Emotional reactivity	23.09	5.417	-.181	.049
Family functioning	Problem solving	12.69	3.293	.237	.130
	Relationship	15.48	3.306	-.098	-.057
	Roles	21.12	3.290	-.121	-.157
	Emotional fusion	16.66	2.936	.246	.265
	Emotional response	20.66	4.973	.018	-.423
	Control of behavior	20.61	3.579	-.246	-.093
	General performance	28.30	6.008	-.104	-.354

Considering the data in **Table.3**, the results of the descriptive findings of the subscales show that in the components of family functioning, the highest mean is related to Emotional response and the lowest is related to Emotional fusion. This section seeks to answer the main research hypothesis: "The mediating role of Family functioning between Self-regulation, Psychological hardiness and Self-differentiation with Cognitive flexibility and Academic engagement". Structural equation modeling has been used. The data processing is checked before data analysis. One suggestion for missing data is to replace it with a median score. Therefore, to solve this problem, this method was used to paste their values and all the missing data was replaced.

Table-3: The outliers of each variable.

Variables	The largest value of Z	Number of outliers	Variables	The largest value of Z	Number of outliers
Substitutes	3.73	4	My position	3.79	5
Control	3.69	6	Mixing with others	3.75	4
Substitutes for human	3.80	5	Emotional cut	3.18	3
Power	3.59	5	Emotional reactivity	3.11	3
Sacrifice	3.49	4	Problem solving	3.68	5
Attraction	3.27	3	Relationship	3.56	4
Cognition	2.98	2	Roles	3.34	4
Meta cognition	2.90	3	Emotional fusion	3.02	3
Control	3.91	6	Emotional response	2.88	2
Commitment	3.70	5	Control of behavior	3.82	6
Challenging	3.96	7	General performance	3.16	3

The conceptual model of the research is presented in standardized coefficients (**Figure.2**). The most important indicators for fitting the conceptual model of research are reported in **Table.4**. Based on the results, it can be concluded that the model has a good fit. Given that in the model tested above, the paths between variables are the same as the research hypothesis, then the indirect effect is tested for the research hypothesis. In order to investigate the research measurement model (confirmatory factor analysis of research subscales), the coefficients and significance of factor loads of research variables are reported. The results of the **Table.5** show that the factors of all scales have a significant factor load at the 95% of the confidence level.

Table-4: Model fit indicators.

Indicator	Value	Allowable Limitation
(χ2)/df	3.01	Less than 3
RMSEA	0.05	Less than 0.1
CFI	0.92	Above 0.9
NFI	0.94	Above 0.9
GFI	0.91	Above 0.9
AGFI	0.89	Above 0.9

RMSEA: Root Mean Square Error Approximation, CFI: Comparative Fit Index, NFI: Normed Fit Index, GFI: Goodness of Fit Index, AGFI: Adjusted Goodness of Fit Index, X2: Chi-square, df: Degree of freedom.

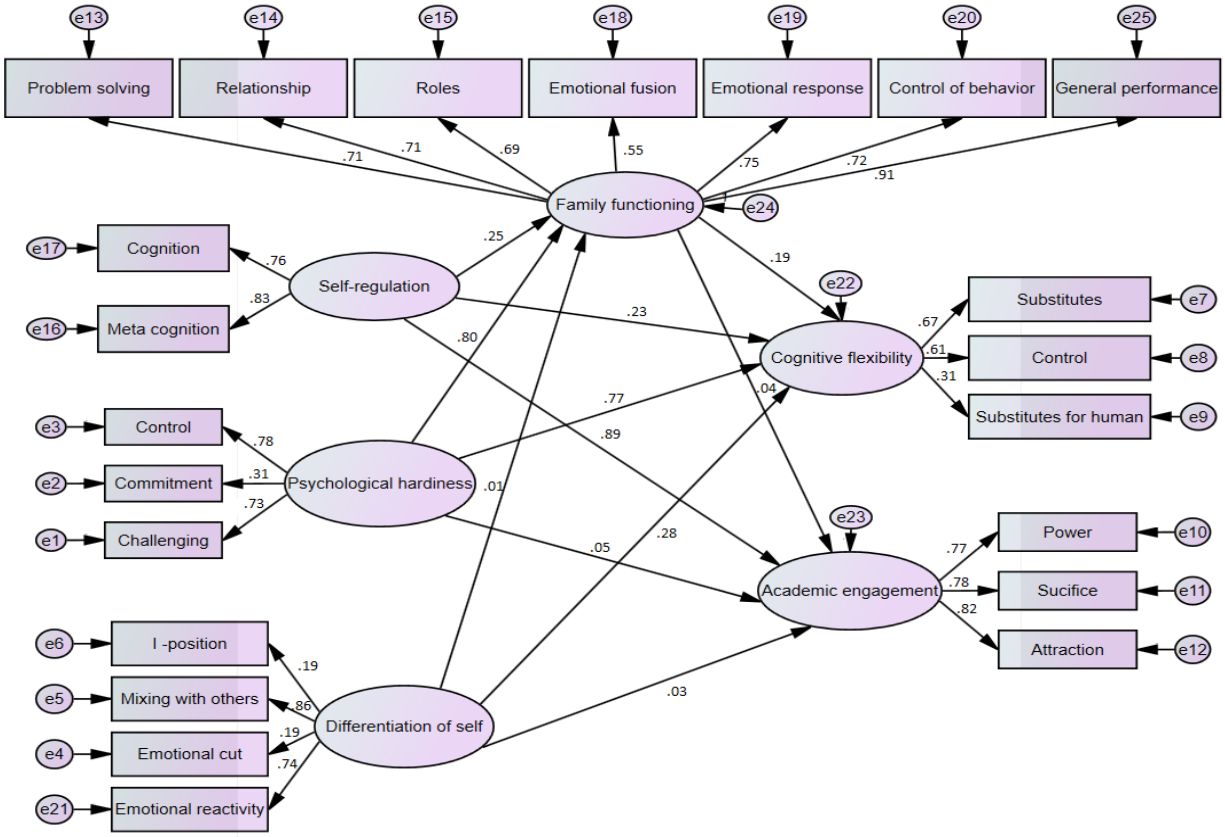

Fig.2: Standardized Coefficient Model.

Table-5: Coefficients and significance of factor loads of measurement models (first-order confirmatory factor analysis).

Variables	Sub-scale	Standardized coefficient	T-test	P-value
Cognitive flexibility	Substitutes	0.67	6.90	0.001
	Control	0.61	6.43	0.001
	Substitutes for human	0.31	3.87	0.001
Academic engagement	Power	0.77	8.01	0.001
	Sacrifice	0.78	8.10	0.001
	Attraction	0.82	8.88	0.001
Self-regulation	Cognition	0.76	6.90	0.001
	Meta cognition	0.83	7.76	0.001
Psychological hardiness	Control	0.78	7.97	0.001
	Commitment	0.31	3.90	0.001
	Challenging	0.73	7.23	0.001
Self-differentiation	My position	0.19	2.26	0.02
	Mixing with others	0.86	9.11	0.001
	Emotional cut	0.19	2.31	0.02
	Emotional reactivity	0.74	6.90	0.001
Family functioning	Problem solving	0.71	6.90	0.001
	Relationship	0.71	6.90	0.001
	Roles	0.69	7.01	0.001
	Emotional fusion	0.55	5.98	0.001
	Emotional response	0.75	7.19	0.001
	Control of behavior	0.72	6.81	0.001
	General performance	0.91	10.34	0.001

Table-6 shows the results of standardized paths between variables with standard error and their critical point are reported. As it can be seen in **Table.6**, there is a significant relationship between psychological hardiness and self-differentiation with cognitive flexibility. In addition, there is a significant relationship between self-regulation and academic conflict. In this study, there is a significant relationship between psychological hardiness and cognitive flexibility (p<0.001, total effect = -0.770). Furthermore, there is a significant direct relationship between psychological hardiness and cognitive flexibility (p<0.001, direct effect = -0.963).

Moreover, another indirect significant relationship is noticed between psychological hardiness and cognitive flexibility mediated by family functioning (p<0.042, indirect effect = 0.193). As a result, there is a slight mediating relationship between psychological hardiness and cognitive flexibility with the presence of the family functioning mediator. According to the results of **Table.6**, there is a significant effect of complete differentiation relationship with cognitive flexibility (p <0.037, total effect= -0.280). In addition, there is a direct significant relationship between self-differentiation and cognitive flexibility (p <0.041, direct effect = 0.227).

In addition, there is an indirect and non-significant relationship between its differentiation and cognitive flexibility (p <0.838, indirect effect = 0.003). The results of this path showed that family functioning could not play a mediating role in explaining and predicting its differentiation of self-cognitive flexibility. There was not any explanation for predicting self-regulation with cognitive flexibility, psychological hardiness, and self-differentiation with academic engagement. There is a significant relationship between self-differentiation and cognitive flexibility (p <0.037, total effect = 0.280). Moreover, there is a significant direct relationship between self-differentiation and cognitive flexibility (p <0.041, direct effect = 0.277). However, there is not a significant indirect effect relationship between self-differentiation and cognitive flexibility (p <0.838, indirect effect = 0.003). It can be concluded that there is only one direct effect and family functioning has not been able to mediate in explaining and predicting between self-differentiation and cognitive flexibility.

The results show that there is a significant relationship between self-regulation and academic engagement (p <0.001, full effect= 0.899), and (p <0.001, direct effect= 0.889). Nevertheless, there is not a significant indirect relationship between self-regulation and academic engagement with the mediating role of family functioning. Moreover, there is a significant relationship between psychological hardiness and academic engagement (p <0.357, full effect = 0.086), and (p <0.656, direct effect= 0.053).

However, there is not a significant indirect relationship between psychological hardiness and academic engagement (p <0.495, indirect effect = 0.033) with the mediating role of family functioning. The full effect of self-differentiation and academic engagement was as below: (p <0.592, full effect= 0.042), and the direct effect of self-differentiation and academic engagement was as follows: (p <0.584, direct effect= 0.041), and indirect effect (p <0.001, indirect effect= 0. 984) were not significant with mediating role of family functioning.

Table-6: The complete, direct and indirect effects and the efficiency of mediatory role of family functioning.

Variables	Indirect Effect	P-value	Direct Effect	P-value	Complete Effect	Result
Self- regulations > Flexibility	0.178	0.097	0.225	0.56	-0.047	Without effect
Self- regulations > Academic engagement	0.899	0.001	0.889	0.001	0.010	Direct effect
Psychological hardiness > Flexibility	-0.770	0.010	-0.963	0.001	0.193	Partial mediator
Psychological hardiness > Academic engagement	0.086	0.357	0.053	0.656	0.033	Effect less
Self-differentiation > Flexibility	0.280	0.0370	0.227	0.041	0.003	Direct effect
Self-differentiation > Academic engagement	0.042	0.592	0.041	0.584	0.001	Effect less

4- DISCUSSION

The present study was to investigate a structural model of the relationship between cognitive flexibility and academic engagement based on self- regulation, psychological hardiness, and self-differentiation with the mediating role of family functioning in high school students. The results revealed that there is a direct and significant relationship between all structures, such as self-regulation, psychological hardiness, and self-differentiation, except for the relationship between psychological hardiness, self-differentiation, and cognitive flexibility. In addition, psychological hardiness has an indirect relationship with cognitive flexibility, which means that the role of the family can be a mediator in the prediction of psychological hardiness and cognitive flexibility. These findings are aligned with previous research results (36), but are not aligned with the results of Dias and Cadime (2016), and Bahadori and Kheir (2012) (37, 38). The results showed that if the parents meet the children's cognitive and emotional needs in an authoritative way, the children will understand the valuable world of the environment and will have commitment. In another study, it has been illustrated that if a family is flexible and all members help to solve a problem, step by step, the children will learn how to be flexible and independent in dealing with problems (39). It should be noted that a balanced family is a family with balanced flexibility, i.e., the obstinacy of their children cannot be increased by families with higher or lower flexibility[40]. Another finding demonstrates that self-differentiation has a direct and significant relationship with cognitive flexibility, but its indirect relationship is not significant. Many studies are consistent with our findings, for example (41, 42), and our result is not consistent with previous findings (43). Some factors such as parents' individual features, existing interest between parents/ children, family members' cultural adaptability: additionally, parents' participant in children's education affairs, existing control, and supervision on correct family functioning are effective (44). Furthermore, the research results showed that there is not an indirect significant relationship between self-regulation and cognitive flexibility. Thus, this finding is parallel with the previous study results Rahimi et al. (45), but it is not in parallel with the findings of Basharpour et al. (46). Flexible family functioning has a direct relationship with a higher level of positive relationship of family members; and, it causes the growth of self-regulation in

children (47). In explaining this finding, it can be said that parents are able to advance the complex supervision capacities in children which an adult achieves after gaining regulation basic emotional and behavioral skills. Furthermore, the results show that there is not a direct and significant relationship between self-regulation and academic engagement. This finding is consistent with the result of Stubbs and Maynard (2017), Moilanen et al. (2018) (48, 49), but it is not parallel with findings of Bordbar and Yousefi (50). The existing relationship between parent/ child and mutual action among adolescents and parents can be influence the improvement of self-regulation (51). Those parents who express their expectations to their child, and, always keep them informed why and how questions about aiming, programming, supervision, and evaluation, have a higher level of self-regulation and respectively have an eager and higher level of academic engagement (42). Also, another finding showed that there is not an indirect and significant relationship between psychological hardiness and academic engagement. This finding is parallel with the results of Sharma and Tankha (43), but it is not parallel with the results of Talebzadeh Nubarian et al. (54). The ongoing appropriate emotional environment in the family, increases academic tolerance and improves academic engagement (55).

4-1. Study Limitations

It can be noted that using a self-reporting questionnaire is one of the major limitations; this case can be a barrier for showing the real level of desired measurements for under research population. Another limitation is in a cross-sectional type and the existing relationship between under researching measurements, that is to say the findings can be as a result of other factors such as inheritance, social-economic situation, and so on, which should be considered, separately. Therefore, applying methods such as observation, interviews together with the questionnaire is suggested. Also, holding training classes for parents and educators to learn cognitive flexibility and academic engagement skills in students is suggested.

5- CONCLUSION

The results showed that family functioning could not play a mediating role in explaining and predicting its differentiation of self-cognitive flexibility. There was not any explanation for predicting self-regulation with cognitive flexibility, psychological hardiness, and self-differentiation with academic engagement. The results are indicator of a significant full effect relationship between self-regulation and academic engagement. Moreover, there is a significant full effect relationship between psychological hardiness and academic engagement.

A full effect relationship between self-differentiation and academic engagement, and a direct relationship between self-differentiation and academic engagements was noticed. It can be concluded that there is only one direct relationship, and family functioning has not been able to mediate in explaining and predicting the self-differentiation and cognitive flexibility. In other words, the secret of human being mental health is having both emotions of belonging to a family and self-differentiation. On the other hand, the cultural role, and its varieties cannot be ignored. The eastern collectivist families define the healthy family functioning as not having a desire for being independent, while in western individualist families, they emphasize autonomy and adherence to personal opinions. Then the existence of such cultural differences can lead to some contradictions in research results. This case highlights the need for more studies and facilitates the way for further research.

6- CONFLICT OF INTEREST: None.

7- ACKNOWLEDGEMENT

This article is extracted from the doctoral dissertation of the first author in the field of educational sciences with the approval number 10120702971002/97, Vice Chancellor for Research, Faculty of Psychology and Educational Sciences, Islamic Azad University, Central Tehran Branch.

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