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Original Article

The role of family communication dimensions in adolescents' depression with the mediation of cognitive flexibility

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Abstract

Introduction: The aim of this study was to predict depression on the basis of family communication dimensions with the mediation of cognitive flexibility.

Materials and Methods: In this correlational study, 390 students (201 girls and 189 boys) constructed the sample group. They were selected from 2nd grade of high schools in Shiraz in the academic year of 2015-16 through randomized multi-stage cluster sampling style. To measure the research variables, Fitzpatrick and Ritchie's family communication patterns (RFCP), Dennis and Van der Wal's cognitive flexibility (CFI) and Beck depression-second edition (BDI-II) inventories were used. Pearson correlation coefficient and path analysis by SPSS 22 and AMOS 20 were used to analyze research data.

Results: The results of path analysis indicated that the conversation orientation has direct negative effect (P=0.005) and an indirect effect through the mediation of cognitive flexibility (P=0.001) on depression. Also conformity orientation had only direct and positive effect (P=0.001) on depression.

Conclusion: In overall, the results of this study showed that cognitive flexibility plays mediating role in the relationship between conversation orientation and depression.

Keywords: Cognitive flexibility, Communication, Depression, Family

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Introduction

Depression and anxiety are the most common psychiatric disorders in human societies. Depression is a disorder characterized by a decrease in energy and interest, feeling guilty, difficulty in concentrating, inferiority, and thoughts of death and suicide, and is associated with a change in the level of activity, cognitive abilities, speech, sleep, appetite and other biological rhythms and leads to impairment in job performance, social and interpersonal relationships. This disease is accompanied by a feeling of disappointment, discomfort, lack of motivation and hope, and a decrease in self-esteem and pessimism (1). Depression is associated with a lack of flexibility in various areas. Depressed people report less perfect mood or inability to enjoy life, and often consider their surroundings to be unchangeable; the world is considered constant, disconcerting, absurd, and useless. As a result, depressed patients consider their condition to be disappointing, and their behavioral habits often collapse (2). Depression is one of the most common neuroses in adolescence and youth. About 1.6% of adolescents suffer from major depression before the completion of high school (3). Due to the spread of depression and its highly potent effects, many attempts have been made to identify the underlying causes of this disorder. One of the important factors in this regard is the family and how they communicate with each other (4). Interactions between parents and children are considered to be the basis of the emotional development of the child, and this interaction is reflected in all stages of his life. Adolescence is one of the most important stages in life (5). Family Communication Pattern or the manner in which family members express their thoughts and feelings differs from one family to another. Family communication pattern is one of the functions that can affect children (6). Ritchie and

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Fitzpatrick (7) identified two basic dimensions of conversation and conformity in family communication patterns by examining McLeod and Chaffee's theory (8). The concept of conformity orientation is the amount of pressure the families puts on members in order to uniformity and assimilate tendencies, values and beliefs (9). These families have a traditional structure and parents expect members to do things according to their parents' wishes (10). Another dimension in this model is conversation, which refers to an environment where family members are encouraged to engage in spontaneous interactions and participate in open and free discussions on a wide range of topics and new ideas (9). It seems that most adolescents and their parents can confront the conflicts that they face, but in some cases, the relationship between the parent and the adolescent develops a severe disorder, which is usually the result of a premise of the relationship between the parent and the child. Such relationships often come with negative consequences such as criminal behavior and psychological disorders (11). It seems that parental compatibility and mutual understanding are transmitted to outdoors, including the educational environment. Students who are accepted by their parents can better accept the outside environment and interact with the conditions adaptively. In these families, the flexibility of common roles and decisions increases, the growth and promotion of members are considered, and the stress level decreases (12). In fact, the pattern of parental relationships is a very important factor in the health of children and adolescents.

Meanwhile, the variable that is likely to be affected and related to the type of communication and the quality of information exchange among family members (family communication patterns) and also affects depression is cognitive flexibility. Cognitive flexibility is described as "an attribute of human cognition" (13). Cognitive flexibility is an aspect of executive performance. These executive performances are a set of interdependent internal skills, such as controlling desires, planning, and organizing, which are considered necessary for higher-level mental functions such as problem solving and creativity (14). In general, the ability to change cognitive approaches in order to adapt to changing environmental stimuli is the main element in operational definitions of cognitive flexibility (15).

In families with high conversation orientation, children are encouraged to engage in free discussion, debate and exchange on a wide range of topics without time constraints. In this relatively free environment, not only children are exposed to challenging issues, they are encouraged to discover new beliefs and make decisions without fear (9). In these families, children feel that they are accepted by the family, and their view is considered as one of the pillars of decision making in families in confronting the challenges and issues in the family and community. As a result, they have the ability to solve problems and make decisions (16), have cognitive flexibility (17) and better mental health. The children of the high conformity level families feel that their opinions, attitudes and beliefs are not important to family members, and they believe that they are worthless for their parents and they have less self-esteem, self-confidence and less cognitive flexibility. As a result, the risk of developing or increasing psychological problems such as depression, increases.

In this regard, and considering the problem of depression growth during adolescence, one of the issues to be considered is identifying the role of variables affecting depression. So far, several studies have compared the predictive power of family conformity and conversation orientations in different areas, but any research has not been conducted on the role of family communication dimensions in predicting depression in adolescents through intermediation of cognitive flexibility. Hence, the findings of this research can provide thematic content to parents, family therapists and education professionals.

Materials and Methods

The present study has a correlation-descriptive method. The statistical population of this study included all senior high school students in Shiraz, who were studying in the school year 2014-2015. According to the data obtained from the Department of Education of Shiraz, they were 22298 students. The sample size was determined 378 individuals using Cochran's formula. To compensate for the potential drop, the questionnaires were added 5 percent to the sample size. A total of 400 individuals were the whole sample of which 390 questionnaires (189 boys and 201 girls) were collected and the rest of the questionnaires were excluded due to incompleteness. Multistage cluster random sampling was used for in the present study. So that one of the four educational areas of Shiraz was randomly selected and eight schools are selected from this area, including four female high schools and four male high schools, and then from each school two classes from different educational fields

(Humanities, Sciences, and Mathematics) were randomly selected. This research was approved by Yazd University and inclusion criteria included satisfaction for participating in the research and studying in senior high school in Shiraz, in one of the Humanities, Sciences, or Mathematics fields. Exclusion criteria were deficiencies in completion of questionnaires or unwillingness to continue. Regarding the ethics of research, it should be noted that the participants volunteered to participate in the research and there was no need to mention their names, so the privacy and confidentiality of information were also observed. The process and methods of research were transparent and data management was made in an objective and accessible manner.

Research instrument

- *Family Communication Patterns Inventory (RFCP):* Fitzpatrick and Ritchie (18) family communication tools were used to measure the dimensions of family communication patterns. This tool is a self-report questionnaire and questions the extent to which the respondent agrees or disagrees with the 26 items that relate to the status of his family's communications in a 5-point likert scale. The first 15 items refer to the conversation orientation and the next 11 are related to the conformity orientation. Koerner and Fitzpatrick (19) reported the reliability (Cronbach's alpha coefficient) scale for conversation dimension equal to 0.89 (in the range of 0.82 to 0.92) and 0.79 for conformity dimension (in the range of 0.73 to 0.84). Also, content validity and construct validity of this scale were desirable. In Iran, Kuroshnia (20) reported the reliability of this instrument through the Cronbach's alpha coefficient for conversation dimension as 0.87 and 0.81 for the conformity dimension. He also reported a satisfactory validity for this test (factor analysis and internal consistency). Jokar and Rahimi (21), Tajalli and Latifian (22), Rahimi and Khayer (23) obtained favorable validity (factor analysis) and reliability (Cronbach's alpha) for this scale. In the present study, Cronbach's alpha coefficient for the conversation dimension was 0.78 and for the conformity dimension was 0.84.

- *Cognitive Flexibility Inventory (CFI):* The Cognitive Flexibility Inventory has been developed and utilized by Dennis and Vander Wal (15). The questionnaire has 20 items that are used to measure the type of cognitive flexibility that is needed for a person's success in challenges and replacing ineffective thoughts with more efficient thoughts. The method of scoring is based on a 7-point Likert scale and seeks to measure three aspects of cognitive flexibility: a) the desire to understand difficult situations as controllable situations; b) the ability to understand several alternatives for events of life and human behavior; and c) ability to create several alternative solutions for difficult situations. Dennis and Vander Wal (15) showed that this questionnaire has a favorable factor structure, convergent validity, and concurrent validity. The concurrent validity of this questionnaire with Beck Depression Inventory-II (BDI-II) was -0.39 and its convergent validity with the cognitive flexibility scale of Martin and Robin was 0.75. The researchers obtained reliability of Cronbach's alpha of 0.91 and 0.81 using a re-test method. In Iran, Fazeli, Ehteshamzadeh and Hashemi Sheikhshabani (24) reported the reliability of this tool equal to 0.75 using Cronbach's alpha coefficient. In the present study, the Cronbach's alpha coefficient of this questionnaire was 0.80.

- *Beck Depression Inventory-II (BDI-II):* The second edition of Beck Depression Inventory (BDI-II) is a 21-item questionnaire developed by Beck, Steer and Brown (25), which evaluates the psychological and physical symptoms of depression as self-reported. Scores range from zero to three in each item. The convergent validity of the Beck Depression Inventory (BDI-II) with the Hamilton Rating Scale for Depression-2 (HRSD) was found to be r = 0.71. Also, the reliability of the test-retest after one week was reported 0.93 (25). This questionnaire has been used in many studies. Its psychometric properties are also confirmed; for example, Dobson and Mohammad Khani (26) and Feta, Birshak, Atef Vahid and Dobson (27). In this study, the Cronbach's alpha coefficient was 0.89.

Results

Table 1 shows the mean and standard deviation, and Table 2 shows the zero-order correlation matrix of the research variables.

Table 1. Mean and standard deviation of the research variables (n=390)

Variable	Mean	Standard deviation
Conversation	33.95	11.33
Conformity	22.64	8.89
Cognitive flexibility	91.12	14.56
Depression	17.17	11.10

Table 2. Correlation matrix of the research variables

	1	2	3
Conversation	1		
Conformity	**-0.21	1	
Cognitive Flexibility	**0.32	*-0.11	1

Depression	*-0.26	**0.22	**-0.35

**p<0.01 *p<0.05

The result of Table 2 indicates that the communication dimensions of the family have a negative and meaningful relationship with each other. In the following, conversation has a positive and significant relationship with cognitive flexibility and conformity has a negative and significant relationship with cognitive flexibility. The relationship between family communication dimensions and depression is in the opposite direction. So that the relationship between conversation and depression is negative and significant and the relationship between conformity and depression is positive and significant. Cognitive flexibility also has a negative and significant relationship with depression.

Since the purpose of this study was to investigate the role of cognitive flexibility mediation in the relationship between family communication dimensions and depression, first, the normal distribution of research variables was investigated by Kolmogorov-Smirnov test and the results indicated that this assumption was not violated. In addition, the linearity of the relationship between variables was also verified by observing the dispersion diagram. Table 3 shows the results of regression analysis of the lines in the conceptual model implemented in AMOS software.

Table 3. Prediction of depression by family communication dimensions and cognitive flexibility

Criterion Variable	Predictor Variable	b	β	S.E.	C.R.	P
Cognitive Flexibility	Conversation	0.41	0.32	0.06	6.76	0.001
	Conformity	0.06-	-0.04	0.08	0.84	0.40
Depression	Conversation	-0.13	-0.13	0.04	-2.79	0.005
	Conformity	0.20	0.16	0.05	3.41	0.001
	Cognitive Flexibility	-0.22	-0.28	0.03	-5.92	0.001

As shown in Table 3, conversation is the predictor of cognitive flexibility, and cognitive flexibility predicts depression. Thus, it can be said that cognitive flexibility plays the role of mediation in the correlation between conversation and depression. Of course, it should be noted that this mediation is not complete and conversation directly predicts depression. Conformity also predicts depression directly and without mediation of cognitive flexibility. Research variables account for 17% of variance in depression.

The fitness indexes of the model are also presented in Table 4, all of which indicate the optimal fitness of the final model of research.

Table 4. Fitness indexes of the final model

Index	Value
CMIN/DF	0.70
CFI	0.99
IFI	0.99
NFI	0.99
CN	165
RMSEA	0.01
GFI	0.98
AGFI	0.98

Table 5 also shows the direct and indirect effects (significant) of family communication dimensions on depression with cognitive flexibility mediation.

Table 5. Direct and indirect effects of family communication dimensions on depression

Criterion Variable	Independent Variable	Direct Effect	Mediation Variable	Indirect Effect	Total Effect
Depression	Conversation	-0.13	Cognitive Flexibility	-0.08	-0.21
Depression	Conformity	0.16	Cognitive Flexibility	_	0.16

Based on Table 5, the dimension of conversation in predicting depression is more effective than conformity, and it explains more variance of this variable.

Discussion

The aim of this study was to predict depression based on the family communication dimensions and cognitive flexibility. At the same time, the probable mediation of cognitive flexibility was also examined in the relationships between the variables. The results showed that conversation orientation is a negative and significant predictor of depression. This finding is consistent with the findings of a large number of studies investigated this relationship using the similar structures. Previous researches indicated the existence of a positive relationship between the conversation orientation and mental health (17,22,28), quality of life (23), emotional intelligence (22,29), happiness (30,31), self-esteem (32,33) and its negative correlation with anxiety (20,34, 35), social anxiety (36), and depression

(20,35). In addition, the conformity orientation is a positive and significant predictor of depression. This finding is in line with the studies conducted in this regard. Previous research indicated that there is a negative relationship between the conformity orientation and mental health (17,22,28), emotional intelligence (22,29), happiness (31,37), self-esteem (32,33), quality of life (23), and it is positively associated with the anxiety (20,35) and depression (20,35,38).

Furthermore, the results showed that among the family communication dimensions, only the conversation orientation predicts cognitive flexibility. In a relatively open environment of conversation-oriented families, not only children are exposed to challenging issues, but also they are encouraged to discover new beliefs and make decision without fear (9). In these families, children feel that they are accepted by the family, and they are considered as one of the pillars of decision making in families when facing with challenges and issues related to the family and community. Therefore, they gain a good level of ability in problem solving and decision making (16) and self-confidence (32). As a result, one can consider difficult situations as controllable situations (15), and have the ability to control the dominant responses when an unsuitable or inappropriate solution is to a problem (39). In this way, individuals gain the ability to change their thoughts and beliefs and evaluate alternative solutions in the case of facing with changes. This finding confirms a large number of previous studies examined this relationship using the same structures. In this regard, studies indicated a positive relationship between the conversation orientation and resiliency (31,37,40), problem-solving ability and leadership (41), self-efficacy (12,37,42), cognitive flexibility (17), desire for control (everyday life events) (33), and its negative relationship with the fear of communication (41), listening anxiety, and lack of intellectual flexibility (43).

The findings of the prediction of depression by cognitive flexibility showed that cognitive flexibility can negatively and significantly predict depression. Individuals having the ability to think flexibly (cognitive flexibility) use alternative justifications, positively rebuild their thinking framework, accept challenging situations or stressful events, and are psychologically more resilient than those who are not flexible in thinking (44,45). Cognitive flexibility can adapt the person's thinking and behavior in response to changing environmental conditions (46). To put it simply, cognitive flexibility is what empowers a person to control a dominant and powerful response. So, it can measure other solutions.

Therefore, those who do not have cognitive flexibility cannot adapt their thinking and behavior to respond to environmental changes, they are not able to control the strong dominant responses to these changes and cannot use appropriate responses. Consequently, this can lead to some psychological problems, such as depression in these individuals. This finding was in line with the results of the studies conducted by Caouette and Guyer (47), Gunduz (48), Soltani et al. (49), Brooks, Iverson, Sherman, and Roberge (50), and Meiran, Diamond, Toder, and Nemets (51).

Regarding the mediating role of cognitive flexibility with respect to the relationship between family communication dimensions and depression, the results indicated that conversation orientation is a predictor of cognitive flexibility, and then cognitive flexibility is a predictor of depression. Therefore, it can be stated that cognitive flexibility plays a mediating role in the relationship between the conversation orientation and depression. Of course, this mediation is not absolute and the conversation orientation also directly predicts depression. As conformity orientation was also not a predictor of cognitive flexibility, it directly predicted depression (without the mediating role of cognitive flexibility).

This study is important in both theoretical and practical aspects. In theoretical perspective, the research findings can clarify the role of family communications in predicting depression with the mediating role of cognitive flexibility and thereby helping the literature on cognitive flexibility and knowledge available in this field. In practical terms, these findings can inform families of their role in the cognitive flexibility of children. Human beings as a product of the educational system, in addition to growing in the educational and academic fields, need to be developed in other fields as well. Therefore, paying more attention to the mental health of individuals, including the depression, and preparing the ground for individuals to access cognitive flexibility, is one of the responsibilities of this system. As the statistical population of this study included high school students, the revised version of family communication patterns scale was applied; it is suggested that future studies try to compare the perceptions of children and parental communication patterns using the parental version of this scale. It is also recommended that in future studies, four types of family communication patterns

be selected and examined based on the two orientations of conversation and conformity so as to determine which family communication pattern is more common in Iran and whose children have more cognitive flexibility. Given the fact that the present study was conducted in high school, it is better to proceed with caution in generalizing the results of this study to other statistical population, including university students and students of other educational levels.

Conclusion

In general, the findings of this study showed that family communication dimensions play a significant role in the level of depression in adolescets, and cognitive flexibility also plays a mediating role in relation to the correlation of conversation orientation and depression. Therefore, it is possible to prevent the occurrence of depression by entering, modifying, and training in the field of family communication, or, in addition to the therapeutic interventions, the family and its members' communications with each other can also be considered. Moreover, focusing on the effective variable of cognitive flexibility can be considered at schools, universities, institutions, and educational media and thus reduce the cognitive biases of depressed people and, consequently, lower the severity of this problem.

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