Original Article

One of early maladaptive schemas' causal relationship through metacognitive beliefs with borderline and antisocial personality patterns

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ABSTRACT

Introduction: This study aimed at determining the causal relationship of metacognitive beliefs as a mediator between one of early maladaptive schemas including (emotional deprivation, abandonment, mistrust/abuse, social isolation/alienation and defectiveness/shame) and borderline and antisocial personality patterns. **Materials and Methods:** The study type has been relational and seeking causal modeling of path analysis has been used. The population used in this study included outpatients in counseling, psychological and psychiatric centers in 2012–2013. We randomly distributed 350 questionnaires in five centers out of three parts in Isfahan, and finally 230 valid questionnaires were evaluated and analyzed. Data collection tool has been Millon Clinical Multiaxial Inventory-III's (MCMI-III's) personality questionnaire, Yang's schema questionnaire (75 items), Metacognition Questionnaire-30 (30 items). Reliability of the Yang's Schema Questionnaire in this study was calculated by Cronbach's alpha (α =96%), and that of metacognition was calculated the same way (α =87%). Data analysis has been done using MCMI-III's software for Millon's personality questionnaire, and SPSS-16 and AMOS-18 software. We used path analysis method for testing each model in statistical data analysis. **Result:** The results of this study suggest a possible causal relationship between the number of one of the early maladaptive schemas and the patterns of anti-social and borderline personalities through some metacognitive beliefs. **Conclusion:** This study showed that cognitive beliefs can be activators of the early schema and continuation's coping behaviors in personality patterns.

Key words: Anti-social personality, borderline personality, metacognition, personality pattern, schema

INTRODUCTION

Personality indicates a deep-rooted and widespread pattern of thoughts or cognitive-emotional habits and dominant behavioral characteristics that remain relatively constant over time. This model arises from a complex network consisted of the biological status and accomplished experiences and its main part consists of two processes: First, how the individual does interact with the environmental and surrounding conditions. Second, how the individual communicates with himself.[1] Personality has cognitive, emotional, and behavioral dimensions that alone or together, or in combination with other factors can lead to non-adaptive behavior.[1] In this research "the personality" is meant as the same character

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pattern acting as the stable methods and stable features of a person in understanding and interacting with the self and environment; Also concord with classifications (Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition Text Revision [DSM-IV-TR]).[2] Personality patterns lead to a certain way of individual thoughts and behaviors and enables inflexible and limited responses for the person.

One of the major features of personality pattern is their being immutable. They are very deep-rooted and established, and the individuals have no certain concern in their functional habits.[3] Taking a glance at the definition of the personality and its patterns, the characteristics and dimensions of this structure are summarized as follows: (1) Personality has cognitive-behavioral and emotional dimensions. (2) It has also biological and physiological aspects. (3) It is stable. (4) It is in the interaction with the environment and owns limited and special styles. (5) It is self-ego syntonic. (6) It is structured and inflexible. (7) It may be non-adaptive, and inconsistent with the norm.[3] According to the schema definitions and characteristics and cognitive and metacognitive beliefs, there are similarities between these psychological constructs. For example, from schemas' cognitive dimensions, we can mention their persistence, their evolutionary origins, and they are being maladaptive. In metacognitions, we can also notice the same dimensions. Among which we can mention that they supervise, monitor, and evaluate the individual cognitive dimensions, and also positive or negative metacognition beliefs would have non-adaptive functions and may cause mental disorders. And also their stable and inflexible model will focus the thinking process in a specific shape on disruptive trends. Studies indicate that there is a correlation between psychological disorders and cognitive dimensions in individuals, and cognitive therapies have shown efficacy in the treatment of these disorders. Kazemi *et al*.[4] suggested that students who suffer from the activation of schemas like cuts and sidelines face the lack of proper gratification of individual needs for security, love, and empathy. Students which has grown up in families that are unpredictably sparing or ill-mannered will face the metacognition processes more defectively. Salary far and poor Etemad research's showed that metacognitive beliefs are positively related to depression and anxiety and considering the metacognitive beliefs in educational programs and psychological interventions can be effective enough in prevention, reduction, and treatment the emotional disorders.[5] Salavati in a study conducted on female patients with borderline personality disorders showed that schema therapy leads to a significant reduction in the symptoms of borderline personality disorders except for impulsiveness and emptiness. He also suggests that, it also has little impact on short-term anger. The mentioned study resulted in the fact that schema therapy can be effective in the treatment of patients with borderline personality disorder. However, to achieve the treatment goals, long-term therapy is needed.[6] Another Study on patients with category B personality disorders showed that, they have more incompatible schemas than healthy people have.[7] Also, a research was performed on metacognition associated with schizotypal personality by Stirling *et al*.,[8] which represents a significant positive correlation between five subscales of Metacognition Questionnaire (MCQ) with high levels of schizotypality. In another research conducted by Shah Gholyan *et al*. findings protect the interfacing metacognition and some of its components in the relationship between neuroticism and cognitive failure.[9] It has been shown that there is a significant relationship between the subscales of cognitive beliefs and narcissistic and dramatic personality patterns.[10]

Lumley and Harkness research's show that depression and anxiety significant relationship with early maladaptive schema and they significantly predicted the depressive symptoms with two schemas of social isolation/alienation and self-sacrifice in their study.[11] Roelofs *et al*. evaluated the model of depression in the Dutch students and found that after applying some changes consistent with fundamental theories, this model is in a good fit with data and is in coordination with metacognitive model of depression in which there is a relationship between rumination and depression and also includes negative metacognitions.[12]

Furthermore, Roussis confirmed the fitness of a model, where positive beliefs affect the obsessive symptoms through the concerns strategies.[13] Another study on borderline personality disorder shows that, borderline personality disorder had relation with attachment, defectiveness/shame, emotional deprivation and attachment/incompetence, vulnerability to harm and mistrust/abuse.[14] The mentioned researches express the relationship between certain personality and clinical disorders and metacognitive beliefs.[3] They also represent the association between the patterns and personality disorders and early maladaptive schemas as well as the effectiveness of therapy schema approach in the treatment of chronic disorders of personality and traits.[3] It should be noted however that it term cognitive therapy faces serious problems, according to the characteristics of personality disorders which are in summary; inflexibility, avoiding to deal with the emotions, extensive interpersonal problems and vague and confused problems.[3]

However, cognitive therapists have tried to provide a more efficient and reformed model in order to conceptualize better and having a more complete treatment of personality disorders by adding some assumptions. It is introduced as schema therapy with the purpose of being an appropriate clinical guideline for the therapists. Schemas are cognitive structures in order to designate, encode and evaluate the stimulants that the organism is exposed to them.

The cognitive theory also is similar to cognitive schema therapy in a way that emphasizes on the principle that personal beliefs can affect mental processing.[15] Since both theories belong to the field of cognitive therapy and that have been raised in the past two decades, it is clear that they need several controlled studies to provide strategies and therapeutic techniques and their own scientific and practical expansion.

Such studies seem to be necessary since the relation of these approaches could provide a clear explanation of cognitive behavioral infrastructures and nonadaptive stable styles. Also, the research gap existing in terms of the relationship between the two theories) schema and metacognitive) and their role in shaping the character patterns.

Hence, the current study tries to examine the causal relationship between these variables. We hope to be helpful to clarify these relationships and provide a more efficient and scientific model for assessing, evaluating, and treating the chronic personality disorders.

MATERIALS AND METHODS

Present research was path analysis using causal modeling based on multiple regressions performed. According to the five areas of the schema, and also its overlapping in each area an independent model was sketched. In this model, schema is considered as an exogenous variable and cognitive beliefs and anti-social and borderline personality patterns as endogenous variables.

The population of the study consisted of outpatients aged over 18 with having junior high school referring to the counseling, psychology, and psychiatry centers in 2012–2013 in Isfahan. Sampling type has been random sampling. Sample size is determined based on the ratio of sample size to the number of free parameters using the general rules of thumb.[16] It is in minimum the ratio of 5:1, in average 10:1, and in maximum 20:1. Regarding the free parameters, the minimum amount is estimated 115, the average is 230, and the maximum is 460. Since the sizes higher than 400 may lead to greater sensitivity in examining the differences of the parameters estimated zero, and while the parameters have statistically significant differences with zero, it is possible for the goodness of fit indices to show a weak model.[16] The sample size will be calculated more realistically with the ratio of 10:1. Thus, first, we randomly selected regions two, three, and five among the eight regions of Isfahan city, and also five centers among the public and private centers of counseling and psychological services. Attracting the cooperation and coordination support from the administrators of these centers, and making the clients consent to complete the company questionnaires, from the total of 350 questionnaires distributed, 230 valid questionnaires were evaluated and analyzed. Since sampling has been done randomly, the resulted gender composition is related to the normal composition of the people referring to the centers. Millon III clinical multiracial questionnaire: A self-assessment scale with 175 yes/no items which measures14 characters of clinical patterns, and 10 clinical syndromes and is used for the adults over 18 years old referring to mental health centers for the treatment or psychological assessment. This test is made based on psychopathology.[17] This test is one of the most important tools to objective measurement of the clinical symptoms outlined in Axis I and personality disorders in Axis II DSM-IV. This questionnaire has been standardized twice in Iran. Mogehi[18] in Tehran did the standardization of the second version of the test and Sharifi[19] did the same with the third version in Isfahan. Validity of the test has been confirmed through factor analysis and the reliability has been reported properly through internal consistency and test-retest method in a way that a high coefficient of retest reliability with a median of 91% has been reported for Millon Clinical Multiaxial Inventory-III (MCMI-III).[20]

Young Schema Questionnaire (short form) 75 items

Many studies support the reliability of the Young Schema Questionnaire short form (YSQ-SF) questionnaire. In Welburn *et al*.'s studies all 15-fold subscales of the short form schema questionnaire benefited from an adequate to a very good internal consistency. Cronbach's alpha for all schemas was calculated from 0/76 to 0/93[21] disconnection and rejection 0/91, impaired autonomy and performance 0/90, impaired limits 0/73, other directedness 0/67, overrigilance/ inhibition0/78. Other studies that were conducted to examine the internal consistency of YSQ-SF showed acceptable reliability so that Cronbach's alpha coefficient for the 15 schemas is between 0/61 and 0/85 which is significant.[22] In Isfahan University this questionnaire has also been standardized, the reliability has been calculated using the Cronbach's alpha, the result has been 0/94, which has been significant.[23] In this study, Young's reliability of the short form questionnaire was calculated (96%) in Cronbach's alpha method that was indicative of a good reliability. The results of factor analysis in Welburn's *et al*. study[21] strongly support the internal structure of the questionnaire. In this study, the relationship between the schema questionnaire subscales and the symptoms of anxiety, depression, and paranoia were measured. The results supported the construct validity of the questionnaire and indicated that cognitive schemas are strongly associated with pathological symptoms.

Metacognition questionnaire short form

In 1997 Karet Wright, Hathon, and Wells MCQ completed by the creators of the tests were introduced in order to assess the dimensions of metacognitive beliefs and individual differences on the positive and negative beliefs about worry and intrusive thoughts, metacognitive monitoring and judging and cognitive efficacy.[24] Three methods of retest, split half, and internal consistency coefficient was used in order to examine the reliability of the test. Test-retest reliability coefficient for the total scale is 73%, for negative beliefs about being uncontrollability and danger, positive beliefs about worry, cognitive self-consciousness, cognitive confidence and negative beliefs about thoughts in order is 59%, 83%, 81%, 64%, and 65% in examining the reliability in bisection method, the correlation coefficient of the test based on Spearman's corrected coefficient was reported 90% for the total scale and between 89% and 96% for the subscales. Also the Cronbach's alpha for five factors including positive beliefs about worry, negative beliefs about worry, sure cognitive, the need to control thoughts and self-consciousness in order was 92%, 91%, 93%, 72%, 92% and the estimation of alpha for the total score was 93%. These coefficients indicate good

internal consistency of the test.[25] The reliability and validity of the MCQ were evaluated by Dasgerdi *et al*.[26]

In the research process, the researcher gives out the questionnaires to outpatients referring to psychological and counseling centers in person. They were asked to complete the questionnaires at the same time and place, if possible. Then, the data obtained from MCMI-III's personality questionnaire were graded by the MCMI-III's software (made in Iran by Pars Madar company's in 2007). These data and the data obtained from other two questionnaires and also the demographic information entered the SPSS-16 (IBM company. NY). Then, the given model was drawn in AMOS version-18 (IBM company. NY), and it was examined. In statistical analysis of the data, path analysis method was used to test each model. Model parameters and summary of the parameters estimated for each model were described in details.

RESULTS

There is a causal relationship between one of early maladaptive schemas (cuts and sidelines) and the patterns of anti-social and borderline cognitive beliefs. In the path analysis of this model, it is assumed that the cuts and sidelines area of maladaptive schemas are exogenous variables that have a causal relationship with anti-social and borderline personality patterns through metacognitive beliefs as endogenous variables.

Statistical fitting of the initial model (the assumed one) to the research data was examined using AMOS software. The result indicates that $P = 0.00$ and the value being <0.05 shows that the proposed model is not of the necessary utility, and it should be modified. In addition, the root mean squared error of approximation (RMSEA) index value is higher than 0.05 which indicates that the model does not fit the sample data. The adjusted path model coefficient based on direct and indirect paths of exogenous variables of cuts and sidelines area of maladaptive schemas through the mediating endogenous variables of metacognitive beliefs on anti-social and borderline personality patterns is given in Figure 1. Briefly in this study, all models drawing based on hard cognitive theories; that expression irrational beliefs or schema's Albert Ellis and Aron T. Beck emphasized or at least continues and their influence are metacognitive product.

The overall fitting indices of this model are presented in the following table as seen in the table, Chi-square value is not significant, and the normalized Chi-square value is (6/5) which indicates the relative desirability of the model. 16/0 for RMSEA index indicates that just in some indexes the model has been fitted limitedly to the sample data.

As seen in Table 1, the model does not fit some indexes. Regarding the fitting indexes and lack of good fitness assessing the output file of AMOS software and implementation of the proposed reforms some changes consistent with the theoretical basis were carried out in order to achieve good fitness indexes. The model was modified and examined. Its path coefficients based on direct and indirect paths of exogenous variables through mediating endogenous variables on the anti-social and borderline personality patterns are given in Figure 2.

The final model parameters are given in the table above. The results in Table 1 show that the final model has a good fitting

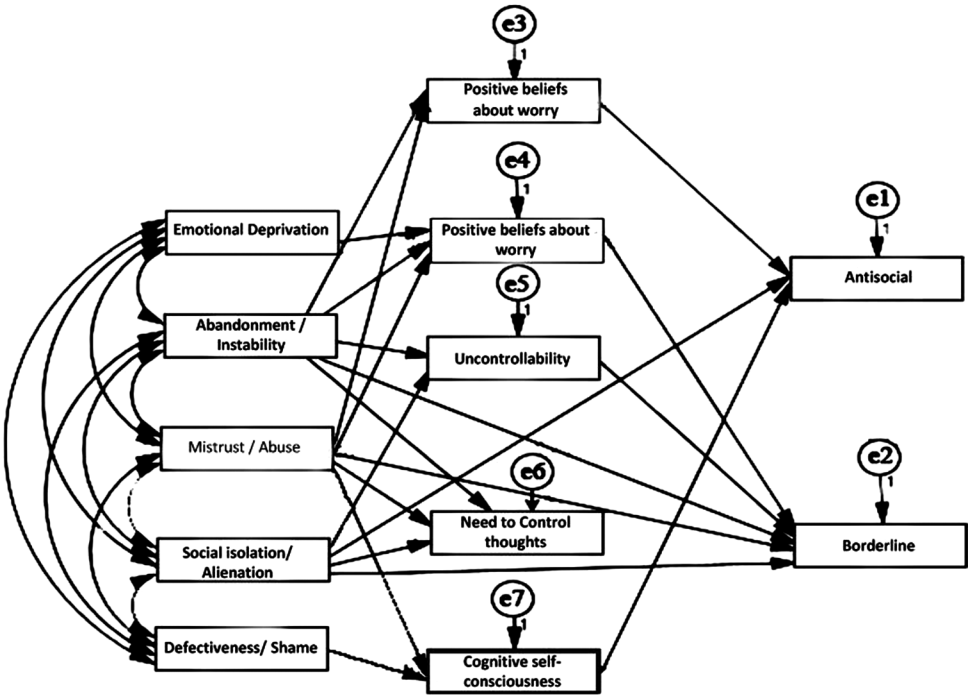

Figure 1: One of the default model

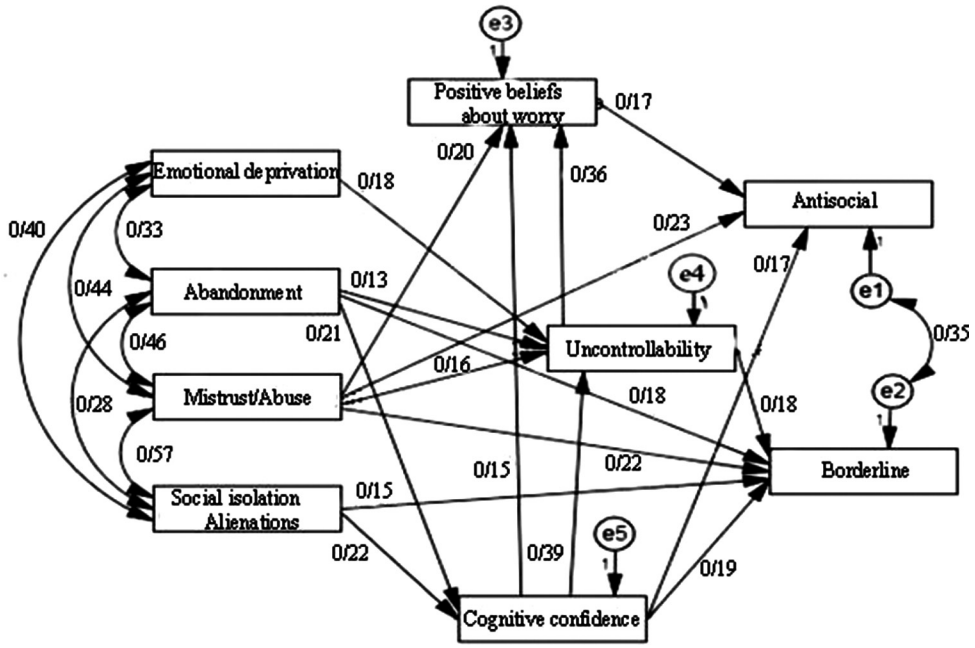

Figure 2: Final model having sufficient fitting

Table 1: Results for the fitting test indexes of the final and adjusted model

Index	Acceptable domain	AGFI model		GFI model	
		Value	Result	Value	Result
χ^2	*P*>0/05	183	Rejection	17/50	Confirmation
df		28		12	
P		0/00		0/13	
CMIN/DF	1-5	6/5	Fairly good	1/45	Confirmation
RMSEA	RMSEA<0/05	0/16	Fairly good	0/04	Confirmation
GFI	GFI>0/9	0/86	Fairly good	0/98	Confirmation
AGFI	AGFI>0/9	0/66	Rejection	0/93	Confirmation
NFI	NFI>0/9	0/78	Fairly good	0/97	Confirmation
CFI	CFI>0/9	0/80	Fairly good	0/99	Confirmation
IFI	IFI>0/9	0/80	Fairly good	0/99	Confirmation

AGFI=Adjusted goodness of fit index, GFI=Goodness of fit index, RMSA=Root mean square error of approximation, NFI=Normal fit index, CFI=Comparative fit indices, IFI=Incremental fit index, CMIN/DF=Chi-square/degree of freedom

to the data. Standardized coefficients of the variables are presented in the table.

According to the results obtained in Table 2 in the first hypothesis, the possible causal relationship of abandonment/instability, mistrust/abuse and social isolation/alienation schemas due to the metacognitive belief, positive belief of concerns, and inadequate sure cognitive with anti-social personality pattern has been approved and there was no significant relationship in other predicted paths in the initial assumed model and antisocial personality pattern.

And schemas of emotional deprivation, abandonment/instability, mistrust/abuse and social isolation/alienation through metacognition beliefs of uncontrollability and danger, and inadequate cognitive confidence have significant relationship with borderline personality pattern and all the other paths of initial presumed model is not approved.

DISCUSSION AND CONCLUSIONS

Anti-social personality pattern has a significant correlation with abandonment/instability schema through metacognitive belief of low cognitive confidence, and this indicates the decisive role of metacognitive belief in this pathway. And yet, it is also associated with the schema of mistrust and abuse due to the positive beliefs about worry. It also shows a direct relationship with schemas of mistrust and abuse that represents synergistic effect on metacognitive belief of positive belief about worry and the above schema. It should be noted that in the mentioned path the positive belief about worry is influenced by the metacognitive beliefs of low cognitive confidence and uncontrollability and danger which can be the symptom of overlapping and attunement effect of these two metacognitive beliefs and the positive belief about worry on antisocial personality pattern. There is also a significant relationship between antisocial personality pattern and social

Table 2: Summary of estimated parameters for one of cuts and sidelines

Parameter	B	C.R.	*P*
Social isolation/alienations-cognitive confidence	0/22	3/35	0/0001
Abandonment/instability-cognitive confidence	0/21	3/30	0/0001
Mistrust/abuse-uncontrollability	0/16	2/60	0/009
Abandonment/instability-uncontrollability	0/13	2/20	0/030
Emotional deprivation-uncontrollability	0/18	3/10	0/002
Uncontrollability-borderline	0/18	3/10	0/002
Mistrust/abuse-borderline	0/22	3/30	0/0001
Cognitive confidence-anti-social	0/17	2/60	0/010
Abandonment/instability-borderline	0/18	3/35	0/0001
Mistrust/abuse-anti-social	0/23	3/60	0/0001
Social isolation/alienations-borderline	0/15	2/50	0/013
Positive beliefs about worry-borderline	0/17	2/70	0/007

isolation/alienation schema due to metacognitive belief of low confidence cognitive that expresses the influential role of this metacognitive belief in the mentioned direction.

According to the results observed in Table 2 in the first area, it can be concluded that possible causal relationship related to abandonment/instability, mistrust/abuse and social isolation/alienation schemas due to metacognitive belief of positive belief about worry and inadequate confidence cognitive has been approved with anti-social personality pattern and no correlation has been found with anti-social personality pattern in other predicted directions in early assumed model. It also can be mentioned about borderline personality that its pattern is affected by emotional deprivation schema interceding metacognitive beliefs of uncontrollability and danger. It also has a significant correlation with early maladaptive schema of abandonment through metacognitive beliefs of uncontrollability and danger and inadequate cognitive confidence. It also has maintained its direct association as well. This personality pattern shows significant relationship with early maladaptive schemas of mistrust/abuse interceding metacognitive belief of uncontrollability and danger and yet it has maintained its significant and direct correlation with the mentioned schema that is indicator of the synergistic effect of metacognitive beliefs with this maladaptive schema in the mentioned path. Borderline personality pattern also has a significant relationship with early maladaptive schema of social isolation/alienation interceding metacognitive belief of inadequate cognitive confidence and it is also directly in significant correlation with the above schema based on the model.

On borderline personality pattern, it can be concluded that within the first area it has significant relationship with the four early maladaptive schemas despite the metacognitive beliefs' influence on the path leading to this personality pattern, three schemas of abandonment/instability, mistrust/abuse and social isolation/alienation schema yet retains its significant direct relationship with borderline personality pattern and metacognitions have had synergistic effect to the mentioned schemas. Emotional deprivation schema just through uncontrollability and danger has a significant relationship to the borderline personality pattern which indicates this belief's determining role in the cited path.

The results of this study are partly in attunement with the results obtained from the studies of Jovev and Jackson,[27] Lotfi *et al*.,[7] Arntz *et al*.,[28] Nordahl *et al*.,[14] and Torres.[29] In explaining the results obtained in this study with regarding the differences and similarities between the two approaches of metacognition and schema, these two viewpoints are eventually in parallel with each other and they both are categorized in the area of third-wave cognitive approach. However, they have salient differences in the techniques and explanations of psychological disorders.

For example, in the schema approach, it is referred to emotional aspects and physical sensations in processing the information activating the schemas. Similarly, metacognition approach in the area of metacognitive experiences refers to impressive role of emotions in maintaining self-regulatory executive function and that the emotions can be prior to the cognition. However, schema approach within the content of thoughts explains the psychological disorders. And shows that the reason to its continuation is schema activation and the choice of coping styles but the reason of how to think and also the continuation of the process is not mentioned, and yet the behavioral responses are being isolated from the schemas and rebuff it as a part of schema. And it has not provided an explanation of how to choose coping styles. This is precisely the point that is studied in the metacognition approach, and it considers the reasons for the persistence of psychological disorders in the thought process level.

And about the individuals how to response states that metacognition believes are important factors that affect the way an individual responses to the thoughts and beliefs, symptoms, and emotions. And explains this type of response in the area of cognitive control strategies and thereby explains the individual's coping behavior.

However, metacognitive approach is aware of the role of ideas and fortifications in the area of the content and form of the schemas. According to the empirical researches done which shows the relationship between early maladaptive schemas and chronic disorders and personality and also treatment effects of schemas in personality disorders and the researches existing about the relationship of metacognitive beliefs and clinical and personality disorders and the results obtained from the current study according to the final model having good fitness, it seems that the schema approach and especially its evolutionary origins have been able to provide a well-managed explanation to the formation of the primary structures of organizing personality. While metacognition approach can also provide explanations about coping behaviors and cognitive processes that lead to the persistence of these disorders and maintenance of personality patterns. And also about how the people respond in particular situations. Hence, it can be hoped that the two consistent

approaches predisposes better understanding of personality disorders and also develops using the variety of tools and techniques in order to improve the diagnosis and treatment of psychological disorders.

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Conflicts of interest

There are no conflicts of interest.

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