

Research Article

Comparison between big five personality traits, brain-behavioral systems and cognitive emotion regulation strategies in women who committed suicide by poisoning and normal women

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ABSTRACT

Objective: considering the increasing prevalence of suicide and its social, cultural, familial and personal consequences, the present research was conducted with the aim of comparing big five personality traits, brain-behavioral systems and cognitive emotion regulation strategies in women who committed suicide by poisoning and normal women. *Methodology:* the present research was fundamental in terms of objective and descriptive in terms of data collection. Research population consisted of all women who were hospitalized in the poisoning section of Imam Khomeini Hospital in Kermanshah in October, November and December 2014 among whom 50 individuals were chosen as a sample size using convenience sampling method. In addition, 50 women visitors who were matched in terms of gender, age and education were chosen as a comparison group. The research instrument consisted of Big Five personality traits, also known as the five factor model (FFM), questionnaire, Cognitive Emotion Regulation Questionnaire (CERQ) and Behavioral Inhibition System and Behavioral Activation System (BIS/BAS) scale. The obtained data were analyzed using diagnosis analysis. *Findings:* the results indicated that neuroticism, extraversion, consciousness, behavioral inhibition system, abnormal strategies, normal strategies, openness, acceptance, behavioral activation system and fight-or-flight system assist the two groups of suicide attempters and normal women in order of importance. *Conclusion:* given the importance of the issue of suicide, regarding the issue of prevention and detection of risk factors and implementing various interventions to modify it seems necessary.

INTRODUCTION

Suicidal behavior is one of the serious problems of public health (Henry, Stephenson, Hanson and Hargett, 1993). On other words, the rates of suicide and attempted suicide are of the most important mental health indicators of individuals in society (Conner, Duberstein, Conwell, Seidlitz and Caine, 2001). In addition, suicide has increased by 60% throughout the world during the past 45 years (world health organization, 2010). Although comprehensive

statistics regarding the suicide rate does not exist in Iran, but it is similar to other countries based on conducted studies (Mohseni, 1987; Garmkhani, 1999; Jamshidzadeh, 2003). On other words, epidemiologic studies show that prevalence of suicide in Iran is experiencing an increasing trend especially among teenagers and youth (Khazaie & Parvizi, 2003; Zejaji, Yasmi and Velayeghi, 1999; Mohammadkhani, 2004). According to definitions presented by

WHO (world health organization), committing suicide refers to non-lethal action in which a person intentionally and without others' interference performs an abnormal behavior (such as hurting oneself or medicine consumption more than the amount prescribed for treatment) and he/she aims to realize his/her expected goals (Platt et al., cited in Hawton & Van Heeringen, 2000). According to relevant researches, only a small group of suicide attempters intent on destroying their own and most of them has other motives for this action, as they express. Suicide is related with unmet needs, feelings of frustration, intense psychological pressure and tension, limited options from the perspective of the person and need to escape from problems (Sadock & Sadock, 2003). However, suicide is a kind of destructive violence which most of its victims consisted of women (Morton, Runyan, Moracco and Butts, 1998). The rate of suicide among women is almost three times that of men but it the rate of success among men is about four times than women. Accordingly, the incidence of suicide among women is 3.4 person per 100,000 which includes 0.5% of deaths of women in total. Like any other psychological phenomena, suicide and its components could be studied in terms of dimensions such as biological, psychological, social and spiritual. Most of the conducted studies during the last decades in the field of suicide was based of Joiner (2009) interpersonal psychological theory. According to the theory, there are three essential variables for incidence of suicide or suicide attempts including perceived burdensomeness, thwarted belongingness and acquired capability. Despite the comprehensiveness of the theory, new findings indicate its inability to fully explain suicidal behavior (Anestis & Joiner, 2011; Bryan, Morrow, Anestis and Joiner, 2010; Van Orden, Witte, Cukrowicz, Braithwaite, Selby and Joiner, 2010). It seems that one of fundamental weakness of interpersonal psychological theory and other patterns of suicidal behavior (complete suicide, suicide attempts and suicide ideation) could be lack of

attention to the role of personal and personality variables in individuals. Personality is of the risk factors involved in the occurrence of suicide (Renaud, Berlim, McGirr, Tousignant and Turecki, 2008). Study of performed researches in the field of personality traits of suicide attempters indicates that personality traits of suicide attempters, especially neuroticism, have great impact on experience and report of thoughts and suicide attempts (Duberstein, Conwell, Seidlitz, Denning, Cox and Caine, 2000; Fergusson, Beautrais and Horwood, 2003; Gladstone, Parker, Mitchell, Malhi, Wilhelm and Austin, 2004; Useda, Duberstein, Conner and Conwell, 2004). To justify the relationship between significance of high scores in neuroticism subscale and suicide attempt among drug addicts, O'Boyle and Brandon (1998) asserted that neuroticism based on theories of personality is specified by anxiety, depression, feeling guilty, being capricious and restlessness, and emotional instability (Eysenck & Eysenck, 1985). Index N shows the amount of tendency to neuroticism and emotional responses. Hypersensitivity, changes of emotional states, feelings of shame, remorse, anxiety, depression, being capricious, irrational behaviors, nervous and apprehensive, feeling guilty, low self-esteem, daydreaming and complaints of physical pain are of the signs of high score in this index (Pervin & John, 1999).

In this regard, different theoretical patterns were presented in order to explain the relationships between personality traits and susceptibility to mental disorders. Gray (1994) revealed his point of view using literature review of animal research which consisted of three brain-behavioral systems: Behavioral Inhibition System (BIS), Behavioral Activation System (BAS) and Fight-or-Flight System (FFS). It should be noted that the second system has been changed to FFFS in the last edition of the theory and the component of "Freezing" has been added to it (Corr, 2006). However, some of the researches assumed there are two brain-behavioral systems referring to the two BA and BI systems (Corr, 2001;

Slobodskaya et al., 2003). According to Gray (1994), psychological disorders result from lack of proper functioning of one the three systems or interaction between them. Moreover, he asserted that neurotic anxiety and depression and psychotic depression are as a result of high activity of BIS and low activity of BAS, respectively. There have been also studies on the relationship between brain-behavioral systems and anxiety among clinical and normal populations. The results declared that symptoms of anxiety are generally related to high activity of BIS system but it is not related to BAS or the relationship is weak (Campbell-Sills, Liverant and Brown, 2004; Segarra, Ross, Pastor, Montañés, Poy and Molto, 2007). Generally, intensive activity of BIS could be a factor for a variety of emotional problems (such as anxiety and depression) while activities of BAS is only dedicated to depression. Therefore, considering the inevitable impact of brain-behavioral systems on incidence and lack incidence of emotional problems, it can be concluded that brain-behavioral systems could be deemed as one of the factors influencing suicide process which has not been studied in any researches. Thus the present research aims to study the impact of brain-behavioral process on suicide process.

In this regard, Rastagrus (1999) indicated that individual differences in modulating emotion are seen at each stage of production of emotions. For instance, during the stage of position selection of extraverts, most of them might select positions in which there is the chance of social engagements. According to Kaspi (1999), extroversion describes an area in which individuals are actively involved in the world instead of avoiding serious social experiences while neuroticism predicts an area in which individuals experience the world threatening or disturbing. On other words, it can be noted that personality traits in extrovert and neurotic individuals can facilitate employment of normal strategies and abnormal cognitive emotion regulation strategies in those people. It can be also mentioned that cognitive emotion regulation strategies refer to the way

of thinking of individuals after incidence of a negative experience or devastating event for them (Garnefski, Reef, Jelisma, Truget and Kraaij, 2007; Thompson, 1991). In this regard, some of the researches declared the strong relationship between emotional problems and cognitive emotion regulation strategies (Garnefski, Boon and Kraaij, 2003; Garnefski et al., 2003, 2002, 2001; Garnefski, Teerds, Kraaij, Legerstee and Van Den Kommer, 2004). Generally, the results indicated that individuals who utilize poor cognitive styles such as rumination, catastrophizing and blaming oneself are more vulnerable to emotional problems than other individuals while there is less vulnerability for individuals who use other desirable styles such as positive reappraisal (Garnefski & Kraaij, 2006).

One of the reasons neurotic and introverted people are prone to psychological disorders (especially anxiety and emotional disorders) is the use of undesirable emotion regulation strategies. Accordingly, it can be expressed that personality traits could affect individuals' public health to a large extent but individuals employ different emotion regulation strategies according to their personality traits which the type of the used strategy influence their psychological health to a great extent. Therefore, based on what have been noted, existence of relationship between emotion regulation strategies, especially emotion regulation through knowledge (cognitive emotion regulation) and suicidal behaviors, seems to be rational. Since suicide among women might lead to deep individual, familial, social and economic consequences, the present research aims to determine the individual characteristics of women attempt to suicide. In addition, according to the conducted studies in this regard, study of individual and personality variables of suicide attempters and its comparison with normal individuals seems to be necessary. Therefore, the present research aims to study and compare big five personality traits, brain-behavioral systems and cognitive emotion regulation strategies in women who

committed suicide by poisoning and normal women.

METHODOLOGY

The present study was causal-comparative in terms of plan. The subjects consisted of 100 individuals. The experimental group was chosen using convenience sampling method among women who committed suicide with medication, drug, bleach or pesticides and hospitalized in the poisoning section of Imam Khomeini Hospital in Kermanshah in October, November and December 2014. Sampling method was that any person attempted suicide was entered into the study population since the beginning of the research in order to obtain a sample size. It should be mentioned that only 66 of 78 women who had suitable consciousness status for questioning and were willing to cooperate were entered into the study population. Elimination of 16 flawed questionnaires; data of 50 questionnaires were analyzed. In addition, 50 individuals of the control group were chosen using random sampling method from women who were as visitors in women's section of Imam Khomeini Hospital of Kermanshah and never had suicidal ideation. This selection was performed in compliance with homogenization in terms of gender and age. The researcher spoke to the director of the hospital about the importance of the research in order to collect data from women who had attempted suicide. Afterwards, data collection was performed in the experimental group after the stabilization of their condition.

INSTRUMENT

Cognitive Emotion Regulation Questionnaire (CERQ): it was developed in 1999 based on theoretical and experimental principles. Moreover, it was the first questionnaire which evaluated cognitive coping strategies of individuals in response to stressful and threatening life experiences (Garnefski, Kraaij and Spinhoven, 2002). Unlike other coping questionnaires which do not make differences between real thoughts and activities of

individuals apparently, this questionnaire evaluates one's thoughts after facing a negative and unpleasant experience. Short form cognitive emotion regulation questionnaire was used in the present research. This questionnaire is a self-report tool and consisted of 18 items which is performed on individuals who have 12 years and older (Garnefski & Kraaij, 2006). CERQ has nine different subscales including self-blame, acceptance, rumination, positive refocusing, refocusing on planning, positive reappraisal, putting into perspective, catastrophizing and blaming others. The range of scores is from 1 (almost never) to 5 (almost always). The results of Cronbach's alpha in Iranian culture indicated that the nine subscales have desirable validity. Analysis of the main component approved the pattern of nine main factors in the cognitive emotion regulation questionnaire in addition to explanation of almost 75% of variance. Moreover, there was a relatively high correlation between the subscales (cited in Hasani, 2011).

Iranian Big Five personality traits questionnaire: this questionnaire was developed by Farahani et al. (2009) considering Iranian population using lexical study of personality in Persian language. The questionnaire evaluates big five personality traits. Study of personality in Persian language was conducted by Farahani et al. (2009). The researchers initially investigated four Persian cultures and about forty stories from famous and stylish writers and collected about 12000 words related to traits, moods and activities. After a limited numbers of stages, a list of 76 words was provided. Expressions were written in first-person singular (self-report) for each of the words and the final scale were primarily studied on students in University of Tehran. For further investigation and for the sake of more precise concentration, researchers reviewed the list of 1037 words related to personality and developed a 126-item scale based on previous studies in other cultures for personality studies. Eventually, five factors were obtained according to the Iranian language and culture through factor analysis to assess personality. In

the Iranian form, the first, second, third and fourth factors are similar to English-speaking and non-English-speaking studies. The fifth factor is also similar to other studies in the dimension of deontology but it is accompanied by both deontology and religiosity features in features such as religiosity, God-fearing, keeping promises and secrecy. Cronbach's alpha was used to investigate validity. The Cronbach's alpha coefficients were between 0.73 and 0.88 for male subjects and 0.64 and 0.86 for female subjects, which shows desirable values for them (Farahani, 2009). The short form of the questionnaire consisted of 50 questions which every 10 questions evaluates a factor. The questionnaire is graded using 5-point Likert scale. The maximum and minimum score for the questionnaire are 50 and 10, respectively. The Cronbach's alpha coefficients obtained for mental openness, neuroticism, extraversion, conscientiousness and agreements were equal to 0.868, 0.864, 0.782, 0.692 and 0.703, respectively.

Behavioral Inhibition System and Behavioral Activation System (BIS/BAS) scale: this scale consisted of 30 items and developed by Jackson in 2009 in order to measure r-RST

appropriately. This scale consisted of five subscales of behavioral activation system, behavioral inhibition system, fight, flight and freeze. Six items are considered for each of the subscales of r-RST. Jackson utilized exploratory and confirmatory factor analysis in order to develop and measure new scales which the results indicated desirable internal reliability and construct validity. Participants answers to the questions based on a 5-point Likert scale from 1 (always) to 5 (never). The validity of this test obtained using Cronbach's alpha coefficient were in the range of 0.72 to 0.88 and reliability coefficients were between 0.64 and 0.78. Moreover, internal correlation were desirable. The findings were in line with the results of Jackson (2009) in which the validity were between 0.74 and 0.83 (Hasani, Salehi, Rasouli Azad, 2012). The questionnaire was translated to Farsi by researchers and a specialist in English in order to provide the Persian version of the five-factor personality questionnaire of Jackson. Afterwards, it was performed on a convenient sample (50 of students) and existing problems were resolved (cited in Hasani, Salehi and Rasouli Azad, 2012).

Table 1: average and standard deviation of big five personality traits, cognitive emotion regulation strategies and brain-behavioral systems

Dimension	Component	Group	No.	Average	Standard deviation
Big five personality traits	Openness	Patient women	50	29.32	7.79
		Normal women	50	38.16	4.96
	Neuroticism	Patient women	50	35.22	7.80
		Normal women	50	27.70	7
	Extraversion	Patient women	50	37.76	6.30
		Normal women	50	41.38	3.82
	Consciousness	Patient women	50	26.10	5.44
		Normal women	50	36.40	3.61
	Acceptance	Patient women	50	32	6.47
		Normal women	50	36.12	5.56
Cognitive emotion regulation	Abnormal strategies	Patient women	50	27.06	3.71
		Normal women	50	20.16	5.03
	Normal strategies	Patient women	50	20	5.13
		Normal women	50	32.96	5.26
Brain-behavioral systems	Behavioral activation system	Patient women	50	28.9	3.9
		Normal women	50	42.3	4.3
	Behavioral inhibition system	Patient women	50	42.1	2.8
		Normal women	50	29.1	4.1
	Fight-or-flight system	Patient women	50	35.3	3.8
		Normal women	50	32.8	3.4

Based on the above table, the group of women attempted suicide is higher than normal women in the average of variables of neuroticism, abnormal strategies and behavioral inhibition system while the group of abnormal women are absolutely different in other variables and has a higher average compared to the group of women attempted suicide.

Table 2: results of multivariate variance analysis of the difference between the two groups studied variables

Dependent variable	Wilks' lambda	DOF1	DOF2	F	Sig.
Openness	0.682	1	98	45.720	0.001
Extraversion	0.890	1	98	12.057	0.001
Neuroticism	0.792	1	98	25.728	0.001
Consciousness	0.441	1	98	124.215	0.001
Acceptance	0.894	1	98	11.651	0.001
Normal strategies	0.387	1	98	155.525	0.001
Abnormal strategies	0.617	1	98	60.830	0.001
Behavioral activation	0.419	1	98	135.701	0.001
Behavioral inhibition	0.433	1	98	128.345	0.001
Fight-or-flight	0.445	1	98	215.120	0.005

According to the significance of the difference of the two groups in all components, each variable was entered in to the equation of discrimination function. The results of analysis demonstrated that all of the sample group (100% of them) participated in the discriminant analysis.

Table 3:

Discrimination function	Eigenvalue	Variance percentage	Fundamental correlation	Wilks' lambda	Chi square	Significance
1	3.258	100	0.87	0.235	135.467	0.0001

Based on the information mentioned above, a discrimination function was emerged. Eigenvalue of the function, which make difference between the two groups of suicide attempters and normal women, is equal to 3.258. In addition, fundamental correlation is equal to 0.87 which explains 100% of the variance. Moreover, the value of chi square is 135.467 which is significant at 0.001 level. This means that this function make a distinction between the two groups appropriately.

CONCLUSION

The results of analysis declared that big five personality traits had relationship with the incidence of suicide in women. On other words, discriminant analysis showed that the variables of neuroticism, extraversion, consciousness, openness and acceptance had relationship with suicide attempts in women to the extent of 0.7%, -0.65%, -0.60%, -0.28% and -0.194%, respectively. The findings are in line with other

studies such as Fergusson et al. (2003), Gladstone et al. (2004), Useda et al. (2004), O'Boyle and Brandon (1998) and Pervin and John (2001) which declared that there is a significant relationship between personality traits and suicide attempt.

In explaining the findings of this study, it can be stated that since neuroticism encompasses procedures of anxiety, aggression, depression, shame, impulsivity and vulnerability (Schoenberg, 1995; cited in Gohari, 2014), it is expected to affect suicide in variety of ways. On the other hand, extraversion is a personality trait which is specified by socialization and being cheerful. On other words, extraversion refers to one's tendency toward positive emotions and socializes with others which have a negative relationship with depression and frustration. Therefore, it seems rational that extraversion has a significant and negative relationship with suicidal ideation and suicide attempts (Miler, 2001). Consciousness also

leads to reduction of suicide attempts (-0.6) considerably. Consciousness is specified by procedures such as feeling responsible and accountability, self-control, discipline, competence, willingness to progress and being cautious (McCrae and Costa, 1997; cited in Cook et al., 2005). Therefore, it seems that women who have high level of consciousness are less likely to choose suicide as a solution. Openness to experience is also related to the desire to experience new emotions and activities. According to Hasani and Mir Aghaie (2012), there is a negative relationship between openness to experience and disappointment which declares a negative relationship between openness and suicide attempts. Acceptance is also a predictor for suicide attempts (-0.194). It refers to interpersonal relationships and strategies. Individuals with high levels of acceptance are reliable, honest and sympathetic while low levels of acceptance are accompanied by arrogance, exploitation and disregard for the wishes of others (Miler et al., 2001).

The results of discriminant analysis demonstrated that abnormal cognitive emotion regulation strategies (0.43) and normal cognitive emotion regulation strategies (-0.37) can predict suicide attempts in women. The results are in line with Hasani and Mir Aghaie (2012) in which there were a direct relationship between abnormal cognitive emotion regulation strategies and suicidal ideation and an inverse relationship between normal cognitive emotion regulation strategies and suicidal ideation. On other words, it can be noted that due to the significant role of cognitive emotion regulation on life challenge management and its correlation with psychological pathology (see for instance: Garnefski et al., 2002; Garnefski & Kraaij, 2006; Kraaij, 2003) and the best form of interaction of cognitive and emotional processes in cognitive emotion regulation strategies, study of the strategies in etiology, description, psychological intervention and suicide prevention results in elimination of theoretical ambiguities in this area. In addition, unlike abnormal cognitive emotion regulation

strategies such as self-blame which are the essential core of emotional problems, adaptive strategies such as reappraisal and acceptance are introduced as therapeutic techniques in today's psychology (Hasani & Mir Aghaie, 2012).

Moreover, the results of the research indicated that there is significant relationship between brain-behavioral systems including behavioral activation system, behavioral inhibition system and fight-or-flight system and suicide attempts among women. It can be states in explaining the results that the significant relationship between brain-behavioral systems and suicide attempts is in line with the findings of other studies which studied the relationship between brain-behavioral systems and psychopathology and emotional distress (Campbell-Sills et al., 2004; Morris et al., 2005; Segarra et al., 2007). It was shown in different studies that suicide attempters have mood disorders such as major depression and anxiety and it was concluded by Gray that anxiety and neurotic depression are the result of high activity of BIS. According to Gray, psychotic depression is as a result of low activity of BIS and drug abuse comes from high activity of BIS (Gray, 1991; 1994). In this regard, Rothenberg et al. (2005) concluded that depressed patients have high levels of BIS activity and low level of BAS activity compare to normal individuals. Therefore, it seems that we can predict suicide attempts in individuals, especially in women as the most vulnerable part of society, through considering brain-behavior systems and their activity and predominance of any one of them on other systems.

Limitations in terms of place and time are of limitations of the present study. Moreover, long time questioning was not possible due to the physical and psychological conditions of the patient and necessity to show considerations. On the other hand, since the study was conducted on suicide attempters by poisoning, implementation of a research on suicide attempters used other methods would be beneficial. Therefore, according to the preventable nature of suicide, conducting

further studies on risk factors and presenting strategies in this regard seem to be mandatory.

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