Structural Equation Modelling of Primary and Secondary Vulnerability of Psychopathic Disorder based on Behavioral Brain Systems in Medical Students

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Abstract

Background. The level of activity of behavioral brain systems is one of the effective factors in the occurrence or persistence psychopathic behaviors. Therefore, the aim of this study was to structurally model primary and secondary psychopathic disorder based on behavioral brain systems.

Methods. This research is applied in terms of purpose and descriptive in terms of correlational research method. The statistical population of this study includes all medical students of Tabriz University of Medical Sciences. A total of 284 subjects were selected as a sample by convenience sampling method and they performed Lonson, Kiel and Fetispatrick Psychopathy Scale and the Carver and White Brain-Behavioral Systems Scale. Data were analyzed using Pearson correlation coefficient and structural equation modelling with SPSS software version 24 and LISREL version 8.80.

Results. The results showed that the behavioral activation system has a positive and significant relationship with primary and secondary psychopathy and the behavioral inhibition system has a negative and significant relationship with primary and secondary psychopathy (P <0.01). The results of structural equation model showed that behavioral activator system and behavioral inhibition system have an effective role on primary and secondary psychopathy (P <0.01). Also, the results of structural equation model showed acceptable model ($\chi2/df$= 2.50, RMSEA= 0.075, CFI= 0.96, NFI= 0.94, GFI= 0.94).

Conclusion. According to the function of activating systems and behavioral inhibition, pathological personality traits can be oriented or corrected before the formation and stabilization of these traits.

Extended Abstract

Background

Cleckley introduced psychopathy as a type of personality disorder in his book "The mask of sanity".

Psychopathy includes chronic behavioral disorders, emotional, and interpersonal defects and some positive and adaptive characteristics. In this regard, Karpman

also identified phenotypic similarities such as self-centeredness, cruelty, and anti-socialism. Karpman coined the term "idiotapic psychopathy," which specifically refers to people with inherited emotional deficits that prevent the formation of a conscience and thus lead to a predatory and fearless personality. In contrast, he used the term "symptomatic psychopathy" to refer to who become psychopathic due to peripheral acquired emotional disorder, which distorts the formation of conscience and thus leads to deeper neurotic conflicts.

In an experimental study on the Karpman hypothesis, Ronald Blackburn identified two subgroups of psychopaths that resembled idiopathic and symptomatic groups. He called the psychopathic group with low levels of neuroticism "primary psychopathy" and the other group with high levels of anxiety and depression "secondary psychopathy".

Fowles, whose insights are based on Gary's biopsychological theory of personality, described the concepts of primary and secondary psychopathy. This theory proved that humans have two opposite motivational effects. One is the effect of an inhibition system which refers to a behavior that acts to increase arousal against signs of punishment, inhibition, non-rewarding behavior or the occurrence of such conditions (e.g., passive avoidance). Another system is called the Behavioral Activator System, which works to increase arousal against anticipated rewards.

Therefore, the present study tries to highlight the relationship between personality traits in predicting psychopathy in normal people. For this reason, the present study seeks to answer the question "what is the role of behavioral brain systems in psychopathic disorder?" in accordance with the Structural Equation Modelling,

Methods

This correlational research study is based on structural equation modelling. The statistical population of the study included all medical students of Tabriz University of Medical Sciences in the academic year 2018-2019. The research sample consists of 284 people who were selected through convenience sampling method according to the year of entering the university and the number of participants was determined based on Krejcie and Morgan table. To test the hypotheses, the structural equation modelling by the use of LISREL software was used. For data collection, two scales of Levenson Self-Report Psychopathy Scale and Carver and White scale-behavioral systems scale were used.

Results

In testing the research hypotheses, structural equation modelling showed that behavior activation system and behavior inhibition system play a major role in primary and secondary psychopathy. Based on the descriptive statistical analysis, primary psychopathy was found to be below average in the study sample with mean score of 11.63 ± 34.33 and so was secondary psychopathy with mean score of 23.3 ± 7.36. Behavior inhibition system as well as behavior activation system were both found to be below average in the study sample with mean of 17.36 ± 4.46 and 31.18 ± 6.36, respectively.

In examining the relationships between variables, the results of Pearson correlation test showed that there is a significant negative relationship between behavioral inhibition systems with a coefficient of -0.39 and primary psychopathy (P <0.01). There is also a significant direct relationship between behavior activation systems with a coefficient of 0.55 and primary psychopathy (P <0.01). There is a significant negative relationship between behavioral inhibition systems with a coefficient of -0.47 and secondary psychopathy (P <0.01). There is also a significant direct relationship between behavior activation systems with a coefficient of 0.52 and secondary psychopathy (P <0.01).

Conclusion

The level of activity of behavioral brain systems was one of the effective factors in the occurrence or persistence of these psychopathic behaviors. Studying the biological characteristics of personality in normal people will help researchers and clinicians to reach community-based protective and preventive factors to prevent the occurrence of psychopathic behaviors.