Journal of
Research in Psychopathology **2021; Vol. 2, No. 5**
https://dx.doi.org/10.22098/jrp.2021.1396

Original Article

The role of sensory processing sensitivity and emotional processing in predicting psychological disturbances in drug-dependent individuals

Seyfollah Aghajani[1] and Nasrin Rahbari Ghazani[2*]

1. Associate Professor, Department of Psychology, University of Mohaghegh Ardabili, Ardabil, Iran.
2. Ph.D. Student of Psychology, Department of Psychology, University of Mohaghegh Ardabil, Ardabil, Iran.

Abstract

The aim of this study was to examine the role of sensory processing sensitivity and emotional processing in predicting psychological disturbances in drug-dependent individuals. The method was descriptive-correlational where the population included all male drug abusers in Tabriz city. The sample consisted of 290 individuals who were selected by cluster sampling. The data were collected using Highly Sensitive Person Scale (HSPS), Emotional Processing Scale (EPS) and Kesler Psychological Distress Scale (K-10) and were analyzed using Pearson correlation coefficient and multiple regression analysis. The results revealed that sensory processing sensitivity and emotional processing had a positive relationship with psychological disturbances ($p < .01$). Also, the results of multiple regression analysis showed that sensory processing sensitivity and emotional processing can significantly predict 40 percent of psychological disturbances variance ($p < .01$). In accordance with current findings, it seems that sensory processing sensitivity and inefficient emotional processing are the antecedents of psychological disturbances in drug-dependent individuals.

Keywords

Sensory sensitivity
Sensory processing disorder
Emotional processing
Psychological disturbances
Addiction

Received: 2021/05/04
Accepted: 2021/05/30
Available Online: 2021/06/30

Introduction

Substance use and substance dependence, defined in psychiatric classifications as substance-related disorders and the second most common mental disorder (American Psychiatric Association, 2013) is one of the major biological, psychological and social problems that all countries undoubtedly face in some way. Drug addiction is defined as a dense mass of substance use, the consequences of which are intensifying every day and the world has confronted with astonishing statistics on the prevalence of substance abuse in the last decade, especially among adolescents and young people (Sourizaei, Khalatbari, Kikhay Farzaneh & Raisifar, 2011). Addiction and abuse of drugs and psychotropic substances as one of the high-risk behaviors in the global community has more than 240 million illegal users (Sarrami, Ghorbani and Taghavi, 2013). In Iran, according to the report from Anti-Narcotics Headquarters, 2 million people (5.2% of the country's population) are drug users (Farhoudian, Rahimi Moghar, Rad Goodarzi, Younesian & Mohammadi, 2006).

According to the research literature, about 90% of people with substance-related disorders have one or more other mental disorders, the most important of which are mood and anxiety disorders and antisocial personality disorder. In general, they can be defined as psychological disturbance. In other words, psychological disturbance is a description of a short but acute period of specific mental disturbance that first manifests itself with the characteristics of depression and anxiety; Symptoms include decreased concentration, restlessness, sleep disorders, isolation and loneliness, and lethargy (Mirowsky & Ross, 2002).

The pathogenicity of substance abuse, mood disorders and anxiety has been demonstrated in numerous studies (Magidson et al., 2011; Dagher & Green, 2015). Mood disorders and anxiety occur in substance abusers more than 4.7 times more often than the general population (Goldner, Lusted, Roecrke, Rehme & Fisher, 2014), which is a remarkably high rate of association. Because studies show that abusers who suffer from depression and anxiety disorders are more likely to discontinue treatment and return to re-use

Corresponding author: Nasrin Rahbari Ghazani, Ph.D. student of psychology, Department of psychology, university of Mohaghegh Ardabili, Ardabil, Iran. E-mail: NR1362@yahoo.com

(Dagher & Green, 2015). Therefore, paying attention to the related factors and the occurrences of these disorders is one of the main priorities in the psychological pathology of addiction.

Sensitivity of sensory processing seems to be one of the factors that can be associated with the mental disorders and distress of addicts. Researches has shown that each person processes sensory information in different ways and has personal sensory preferences (Engel-Yager& Dunn, 2011). Numerous studies have also shown the involvement of sensory perception and processing in emotional deficits through high-level processing processes (Leitman et al., 2010; Rheenen & Rossell, 2013; quoted in Ingel-Yager, 2016).

Sensory processing refers to the ability of the nervous system to manage received sensory information, including receiving, modulating, triggering, and organizing sensory stimuli (Engel-Yager & Dunn, 2011). Sensory processing sensitivity (SPS) has been defined as an innate or genetic personality trait that is characteristic of some individuals and indicates increased sensitivity of the central nervous system and deeper cognitive processing of physical, social, and emotional stimuli.(Aaron, Aaron & Jagiellowicz, 2012; quoted in Boterberg & Warreyn, 2016).Excessive or severe sensory processing pattern, also known as sensory processing disorder (SPD, involves difficulty sensing and modulating sensory information and organizing sensory input to successfully execute an adaptive response to situational requests. This pattern of sensory processing is mainly activated in more or less hypersensitivity to non-disgusting stimuli (Engel-Yager et al., 2016).

In this regard, studies have shown that sensory processing sensitivity and sensory processing disorder with bipolar and unipolar mood disorders (Siadatian et al.,2016), impairment in social interactions (Matsushima & Kato, 2013), signs and symptoms Post-traumatic stress disorder (Ingel-Yager et al., 2013), low quality of life (Fifer et al., 2014; citing Khodabakhsh et al., 2016; Serafini et al., 2016), depression and anxiety (Ingel-Yager et al., 2013; Khodabakhsh et al., 2016), mood, natural emotion and daily functions (Engel-Yager & Dunn, 2011) and pathological symptoms of adolescents (Atadokht & Majdi, 2020) are related.

Among the variables that have been given special attention in the research literature of mental pathology of mood and anxiety disorders as well as disorders related to stress, they are emotions and related processes and failures, such as emotional processing and emotional regulation. Research shows that people who choose dysfunctional styles when emotionally processing are more vulnerable to emotional problems (Baker et al., 2010; Guo-Ming & Biao, 2012; Raparia et al., 2016).

Emotional processing is the process by which mental and emotional turmoil is absorbed and reduced to such an extent that one can continue other experiences and behaviors without turmoil (Rachman, 2001). Baker, Thomas, Thomas, & Owens Based on this concept, he classifies emotional processing into three levels: recognition and experience, control and expression, and inadequate emotion processing, and believes that emotional processing can be deficient in any of these three levels. These three levels include eight styles. Styles of recognizing and experiencing emotions include lack of alignment, inconsistency, and externalization. Styles of controlling and expressing emotions include repression, disintegration, avoidance, and lack of control, and styles of inadequate level of emotion processing include disturbance. It is important to note that the nature of emotional turmoil manifests itself differently in different disorders. For example, addicted people have been shown to have difficulty identifying their own emotions and those of others, leading to abnormalities in positive, constructive, and guiding emotional communication with others (Thorbergrberg &Lyvers, 2006). On the other hand, other studies have shown the relationship between emotion difficulties and emotional processing in depression (Atadokht & Majdy, 2017) and anxiety disorders (Majdy, Atadokht, Hazrati & Sobhi, 2019).

Therefore, considering the above and the importance of sensory processing and emotion processing sensitivity variables in substance-related disorders and psychopathology, as well as research gaps in this field, the aim of this study was to investigate the role of sensory processing sensitivity and emotional processing in predicting disturbances. People are psychologically dependent on drugs

Method

Participants

The present study was a descriptive and correlational study in which the statistical population consisted of drug addicts in Tabriz in 1998 who had referred to drug addiction treatment centers. The research sample consisted of 300 addicts who were selected and studied by cluster sampling method (finally, due to the distortion of the questionnaire of 10 people, the number of final samples was reduced to 290 people). So that first 10 centers were selected from the existing medical centers and 30 patients were randomly selected from each of the mentioned centers. Exclusion criteria were lack of minimum primary education, age below 18 and above 50 and dissatisfaction.

Instrument

Kessler Psychological Anxiety Scale (K-10)

The Kessler Psychological Anxiety Scale (K-10) is for the diagnosis and screening of psychiatric disorders in the general population. Published (Kessler et al., 2002). The questions on this scale are answered in a 5-point Likert scale (from always=4 to never=0) and the maximum score at K-10 is 40 (Kessler, 2003). In a national study, Furukawa, Kessler, Slade& Andrews

(2003) validated and compared the K-10, K-6, and GHQ-12 questionnaires using CIDI. They concluded that the K-10 form was more effective than the K-6 for identifying mood and anxiety disorders, and that both questionnaires were more effective than the GHQ-12 (Furukawa et al, 2003). Furukawa et al (2003) obtained the validity and reliability of the K-10 by Cronbach's alpha method of 0.83, and reported the validity and reliability of the K-10. In Iran, Yaghoubi reported the validity and reliability of this questionnaire using Cronbach's alpha of 0.93.

High Sensitivity Personality Scale (HSPS)

This scale was conducted by Aaron and Aron in 1997 and consists of 27 self-report questions that measure psychological responsiveness to environmental stimuli (Basharpour, 2015). The test consists of three subscales: ease of stimulation (12 questions), low sensory threshold (7 questions), and aesthetic sensitivity (6 questions). Subjects answer the questions on this 7-point Likert scale questionnaire from Strongly Disagree (1) to Strongly Agree (7). This test has shown good validity and reliability. Cronbach's alpha coefficient of this test has been reported in the study as 0.80 (Stulmaker et al., 2006, quoted by Basharpour, 2015). In factor analysis study of this questionnaire conducted by Smoluska et al. (2006), 2 questions were not uploaded in any of the subscales, so they were removed from the initial questionnaire (Basharpour, 2015).

Emotional Processing Scale (EPS)

The Emotional Processing Scale (Baker et al, 2007) is a 38-item self-report scale used to measure emotional processing styles. The modified version of this scale is a five-factor structure with 25 items created in 2010 by Baker et al. (Baker et al, 2010). The psychometric properties of the revised version are particularly promising in terms of distinguishing between groups. Each item is rated on a 5-point Likert scale (not at all=1 to infinity=5). This scale has 8 components (harassment, repression, lack of awareness, lack of control, separation, avoidance, confusion and external factors). Cronbach's alpha and retest coefficients of this scale were reported to be 0.92 and 0.79, respectively. Lotfi (2010; quoted by Lotfi, Abolghasemi & Narimani, 2017) in a preliminary study of 40 students obtained a correlation coefficient of this scale with the emotion regulation scale -0.54. Also, Fazeli (2016) examined the convergent validity of the emotional processing scale by calculating the correlation coefficient of the total score of the emotional processing scale with the total score of the sensory processing scale and obtained a correlation coefficient of 0.263 which means P <0.008. And expresses the convergent validity of the emotional processing scale.

Procedure

After obtaining the necessary permits, sampling and informed consent of the subjects, data were collected in groups and in substance abuse treatment centers; first, information about the objectives of the research and how to respond to the tools was provided by the researcher to the subjects and then the questionnaires were administered to the sample as a group. Finally, the collected data were analyzed using descriptive statistical indicators, such as mean, variance and standard deviation, and Pearson correlation coefficient and multiple regression, using SPSS-18 software.

Results

In the present study, 290 men with addiction with mean and standard deviation of age were 26.76 ± 9.99.

Table 1. Demographic characteristics of the research sample

Variable		frequency	Percentage
Education	Undergraduate education	90	31
	Diploma	100	51/75
	Masters	50	17/25
History of physical Illness	Positive	5	1/7
	Negative	285	98/3
Job	Unemployed	18	6/2
	Manual worker	55	19
	Free	187	64/5
	Employee	30	10/3
Socio-economic Status	Down	42	14/5
	Medium	239	82/4
	Top	9	3/1

Table 2. Correlation matrix of sensory processing sensitivity and emotional processing with psychological disorders of addicts

Variable	1	2	3	4	5
1. Ease of stimulation	-				
2. Aesthetic sensitivity	0/54**	-			
3. Low sensory threshold	0/62**	0/35**	-		
4. Emotional processing	0/53**	0/37**	0/38**	-	
5. Psychological disturbance	0.55**	0/36**	0/53**	0/49**	-

The results of the correlation table show that there is a significant positive correlation between the sensitivity components of sensory processing and emotional processing with total psychological disturbance and its components.

Table 3. The model of Multiple regression of total psychological disturbance based on sensory processing sensitivity and emotional processing

Model	R	R^2	Modified R^2	standard estimation error	
1	0.639	0.408	0.400	12.29	
Model	**SS**	**DF**	**MS**	**F**	**P**
Regression	29673.24	4	7418.31	49.11	0.001
Left over	43048.15	285	151.04		
Total	79721.39	289			

(Criterion variable: psychological disturbance)

Table 4. Multiple regression of total psychological disturbance based on sensory processing sensitivity and emotional processing

Predictive variable	Non-Standard coefficients		Standard coefficients	T	P
	B	SE	BETA		
Constant	1.99	4.04	-	0.493	0.622
Ease of stimulation	0.261	0.086	0.208	3.046	0.003
Aesthetic sensitivity	0.113	0.108	0.058	1.053	0.293
Low sensory threshold	0.688	0.141	0.284	4.884	0.001
Emotional processing	0.259	0.056	0.251	4.613	0.001

The results of the table show that the model for predicting psychological disturbances in substance addicts is significant from the sensitivity of sensory processing and emotional processing ($P<0.01$). The value of R2 adjusted in the regression table indicates this. The sensitivity of sensory processing and emotional processing successfully predicts and explains 40% of the total variance of total psychological disturbance. Also, according to T values and the level of significance of low sensory threshold ($\beta=0.284$), emotional processing ($\beta=0.251$) and ease of stimulation ($\beta=0.208$), respectively, the highest and lowest contribution is predicting while aesthetic sensitivity does not play a significant role in predicting the psychological disturbance of substance abusers.

Discussion

The aim of the present study was to investigate the role of sensory processing sensitivity and emotional processing in predicting psychological disturbances in drug addicts. In this regard, the first finding of the study showed that the sensitivity of sensory processing has a significant positive relationship with psychological disorders and predicts it. This finding is in line with previous research findings that have shown sensory processing sensitivity and sensory processing disorder with bipolar and unipolar mood disorders (Sarafini et al, 2016), impairment in social interactions (Matsushima & Kato, 2013). Symptoms and symptoms of post-traumatic stress disorder (Ingel-Yager et al, 2013), Depression and anxiety (Ingel-Yager et al, 2013; Khodabakhsh et al, 2016) and Trauma syndromes Adolescents' cognition (Atadokht & Majdy, 2018) is relevant and consistent.

The processing of sensory events, as part of daily life, has a significant impact on human experience and behavior (Khodabakhsh et al, 2016). By definition, sensory processing refers to the ability of the nervous system to manage received sensory information, including receiving, modulating, triggering, and organizing sensory stimuli (Engel-Yager & Dunn, 2011). Sensory processing sensitivity (SPS) is also defined as a personality or genetic trait that is characteristic of some individuals and indicates an increase in the sensitivity of the central nervous system and deeper cognitive processing of physical, social and emotional stimuli (Aron et al, 2012; quoting in Boteberg & Warreyn, 2016). In addition, people with high sensory processing sensitivity believe that they are easily stimulated by external stimuli because they have a lower perceptual threshold and deeper cognitive processing of the stimulus than many others have (Aaron et al., 2012; quoted in Boteberg & Warreyn, 2016). They also state that both introversion (control of social behaviors) and neuroticism (expression of intense negative emotions) can theoretically be attributed to in some cases, the dimensions and aspects of general sensory sensitivity are related to internalization disorders (Boterberg & Warreyn, 2016).

Sensory processing is perhaps the most basic psychological element that underlies how people perceive and respond to environmental stimuli. Research evidence also suggests that people process sensory information in a variety of ways, with some people being more sensitive to sensory information and stimuli than others (Aaron & Aaron, 2002; quoted by Atadakht & Majdi, 2020). Also, the sensitivity of sensory processing independent of specific sensory quality, with a tendency to experience excessive arousal, high negative excitability and low emotional stability (Aron & Aron, 2002; quoted by Atadakht & Majdi, 2020), mood, natural emotion and functions Daily (Engel-Yager & Dan, 2011) is related and in this way can also be a factor for vulnerability to mental and behavioral disorders. Therefore, it can be said that sensory processing sensitivity is an important and unique part of personality that can be potentially inherited pathogenesis for a variety of psychopathological conditions, especially its neurotic forms (Basharpour, 2015).

Another finding of the present study was the positive relationship between emotional processing and its significant role in predicting the psychological disturbances of drug addicts. This finding is also consistent with the findings of previous studies (such as Gay et al., 2017; Moulding et al, 2016; Mehrienjad, Farah Bijari & Norouzi, 2016; Lotfi et al., 2013).

In explaining the results, it can be said that psychological disorders and disorders have an emotional basis and arise from the evaluation of emotional information about the explanatory events. Also, according to research, emotions and stimuli play an important role in learning and memory processes, because of their impact on the mechanisms of attention, regulation and reinforcement of emotions, usually help to learn better and thus help people. Be able to perform better in stressful situations and become more resilient over time as they deal with stress (Barros, Parisi, Weber & Wermter, 2017). It should be noted that in people with psychological disorders and especially in people addicted to drugs, executive functions due to their improper performance prevent the correct processing of information and this, due to the failure to meet the expectations of the individual, has led to an increase and persistence of mental disorders, and these psychological disorders also disrupt the individual's performance more and more (Wallace, 2004).

According to Rachman (2001) theory, people with anxiety assess the environment as threatening and challenging, and their ability to absorb and reduce emotions is impaired, and this causes a relationship between emotional processing and emotional disorders. Establish bilateral.

This means that emotional processing leads to problematic situations, anger, and conversely problematic situations also lead to emotional disorders. Researchers have argued that emotional processing is the process by which emotional disorders are regulated and reduced in such a way that a person can experience and deal with a stressful situation differently (Abolghasemi & Asadi, 2016). In fact, dysfunctional emotional processing causes a person to experience more anxiety and depression. In general, people with more anxiety and depression have less understanding of the nature of their emotions and on the other hand have less ability to overcome negative emotional experiences, which may explain the difficulty of these people in processing emotions (Basharpour, Rahimi & Sedaghat, 2019).

Emotional processing is the process by which emotional turmoil is absorbed and reduced to such an extent that other experiences and behaviors can take place without turmoil (Rochman, 2001).

According to Rachman (2001), there are four categories of factors that may lead to problems in emotional processing, including cognitive avoidance, lack of short-term habituation experience, depression, and given beliefs. In some psychological disorders, one or more of the components of emotional processing are disrupted. These deficiencies occur, for example, in areas such as perception, memory, or the expression of emotions, and as a result, patients' ability to perform one or more adaptive emotional functions is impaired. On the other hand, the use of dysfunctional emotion processing styles leads to vulnerability to emotional problems (Baker, 2010; Guo-Ming et al., 2012; Raparia et al., 2016) and disturbed and inefficient emotion processing also leads to psychological disturbances.

Conclusion

Emotional processing has long been considered as the most basic element in the clinical texts of anxiety and mood disorders (Foa & Kozak, 1985). There is also evidence for the important role of emotional processing in anxiety and mood disorders as well as post-traumatic stress disorder, which suggests that emotional processing plays a major role in coping with anxiety. Thus, defects in emotional processing or the use of maladaptive emotion processing strategies can lead to the development and persistence of pathological symptoms.

Finally, like all scientific researches, the present study also faced limitations, among which we can mention the limited statistical population of the study to men, which makes it difficult to generalize the results to the female community. Also, self-report tools were used to measure the variables, which inadvertently provide the basis for the response bias in the subjects, so it is suggested that in future research, in addition to using women alongside the male sample to use other tools, such as structured interviews, specifically to examine psychological disturbances. In the following, considering the significant relationship between sensory processing sensitivity and emotional processing styles with psychological disorders in drug addicts, it is suggested that for better and faster rehabilitation of this group along with the use of drug and maintenance therapies of the method. Psychotherapy such as sensory integration and emotional regulation should also be used

Disclosure Statement

No potential conflict of interest was reported by the authors.

ORCID

Nasrin Rahbari Ghazani: https://orcid.org/0000-0002-8917-0166

References

Abolghasemi, A., & Asadi, S. (2016). Assessment of the Efficacy of Mindfulness-Based Cognitive Therapy on Emotional Processing in Anxious Nurses, 5(3), 17-24. doi:10.21859/jne-05033

American Psychiatric Association. (2013). Diagnostic and Statistical Manual of Mental Disorders, Fifth ed. American Psychiatric Publishing.

Atadakht, A., & Majdi, H. (2020). The role of sensory processing sensitivity and cognitive functions in predicting student's psychopathological profile. Journal of School Psychology, 9(1), 230-240. http://jsp.uma.ac.ir/article_907.html?lang=en

Atadokht, A., & Majdy, H. (2017). Comparison of Brain/Behavioral Systems, Cognitive Emotion Regulation and Cognitive Failures in Patients with Schizophrenia Disorder, Major Depression Disorder and Normal Individuals. Iranian Journal of Psychiatric Nursing (IJPN), 5(4), 7-17. doi: 10.21859/ijpn-05042

Baker, R., Thomas, S., Thomas, P. W., & Owens, M. (2007). Development of an emotional processing scale. Journal of Psychosomatic Research, 62(2), 167-178. doi: 10.1016/j.jpsychores.2009.07.007

Baker, R., Thomas, S., Thomas, P. W., Gower, P., Santonastaso, M., & Whittlesea, A. (2010). The Emotional Processing Scale: scale refinement and abridgement (EPS-25). Journal of psychosomatic research, 68(1), 83-88. doi: 10.1016/j.jpsychores.2009.07.007

Barros, P., Parisi, G. I., Weber, C., & Wermter, S. (2017). Emotion-modulated attention improves expression recognition: A deep learning model. Neurocomputing, 253, 104-114. doi:10.1016/j.neucom.2017.01.096

Basharpoor, S. (2015). Personality traits (theory and testing).1nded, Tehran, Savalan publications (53-55).

Basharpoor, S., Rahimi, S., Sedaghat, M. (2020). The role of psychological flexibility and emotion

processing in predicting death anxiety in the elderly. Journal of Aging Psychology, 5 (2), 131-141. doi:10.22126/JAP.1970.1177

Boterberg, S., & Warreyn, P. (2016). Making sense of it all: The impact of sensory processing sensitivity on daily functioning of children. Personality and Individual Differences, 92; 80-86. doi:10.1016/j.paid.2015.12.022

Dagher, R. K., & Green, K. M. (2015). Does depression and substance abuse co-morbidity affect socioeconomic status? Evidence from a prospective study of urban African Americans. Psychiatry Research, 225, 115-21. doi: 10.1016/j.psychres.2014.10.026

Dunn, W. (2001). The Sensations of Everyday Life: Empirical, Theoretical, and Pragmatic Considerations. The Journal of Occupational Therapy, 55, 608-620. doi: 10.5014/ajot.55.6.608

Engle-Yager, B., & Dunn, W. (2011). Exploring the relationship between affect and sensory processing patterns in adults. British Journal of Occupational Therapy, 74(10), 456-464. doi: 10.4276/030802211X13182481841868

Engel-Yeger, B., Muzio, C., Rinosi, G., Solano, P., Geoffroy, P.A., Pompili, M., Amore, M., & Serafini, G. (2016). Psychiatry Research, 236, 112–118. doi: 10.1016/j.psychres.2015.12.022

Engle-Yager, B., Palgy-Levin, D., & Lev-Wiesel, R. (2013). The Sensory Profile of People with Post-Traumatic Stress Symptoms. Occupational Therapy in Mental Health, 29 (3), 266–278. doi: 10.1177/0308022614557628

Farhoudian, A., RahimiMoghar, A., Radgoodarzi, R., Younesian, M., & Mohammadi, M. (2007). A study of changes in opioid use and interventions during the first year after the earthquake in Bam. Hakim Journal, 9(1), 52-57.

Fazeli, A. (2016). A comparative study of emotional processing, sensory processing, motor skills and school phobia in dyslexic and normal students. Master Thesis in Educational Psychology. Bushehr Persian Gulf University.

Foa, E. B., & Kozak, M. J. (1985). Treatment of anxiety disorders: Implications for psychopathology. In A. H. Tuma& J. D. Maser (Eds.), Anxiety and the Anxiety disorders.

Gay, M. C., Bungener, C., Thomas, S., Vrignaud, P., Thomas, P. W., Baker, R., & Assouad, R. (2017). Anxiety, emotional processing and depression in people with multiple sclerosis. BMC neurology, 17(1), 43. doi:10.1186/s12883-017-0803-8

Guo-Ming, Y., & Biao, L. (2012). How subjective well-being affectsemotional processing: the role of event-related potentials. And Personality: an international Journal, 40, 1285-1292. doi: 10.2224/sbp.2012.40.8.1285

Goldner, E.M., Lusted, A.L., Roerecke, M., Rehm, J., & Fischer, B. (2014). Prevalence of Axis-1 psychiatric (with focus on depression and anxiety) disorder and symptomatology among non-medical prescription opioid users in substance use treatment: Systematic review and meta-analyses. Addictive Behaviors, 39(3), 520-31. doi: 10.1016/j.addbeh.2013.11.022

Khodabakhsh, S., Cheong, L.S., & Rosli, N.A. (2016). The relationship Between Sensory Processing Patterns and Depression in Adults. Malaysian Online Journal of Counseling, 3(1), 49-56. doi: 10.1080/08990220.2020.1824904

Lotfi, S., Abolghasemi, A., & Narimani, M. (2017). Comparison of emotional processing and fear of positive and negative evaluations in women with social phobia and normal women. Knowledge and research in applied psychology, 14(53), 101-111.

Magidson, J.F., Gorka, S.M., MacPherson, L.M., Hopko, D.R., Blanco, C., Lejuez., C.W., & Daughters, S.B. (2011). Examining the effect of the Life Enhancement Treatment for Substance Use (LETS ACT) on residential substance abuse treatment retention. Addictive Behaviors, 36(6), 615-23. doi: 10.1016/j.addbeh.2011.01.016.

MajdY, H., Atadakht, A., Hazrati, Sh., & Sobhi Gharamaleki, N. (2020). Comparison of brain/behavioral systems and difficulty in emotion regulation in students with and without clinical symptoms of social anxiety disorder. Journal of Clinical Psychology and Personality, 17(1), 165-174. doi:10.22070/CPAP.2020.2894

Matsushima, K., & Kato, T. (2013). Social interaction and atypical sensory processing in children with autism spectrum disorders. Hong Kong Journal of Occupational Therapy, 23(2), 89-96. doi: 10.1016/j.hkjot.2013.11.003

Mehrienjad, S., FarahBijari, A., & Nowruz Nargesi, M. (2016). Comparison of Attention Bias and Emotional Processing Styles in Female Students with Generalized Anxiety Disorder, Disorder and Non-Disorder. Clinical Psychology Studies, 6 (24), 99-114. doi: 10.22054/JCPS.2016.6516

Moulding, R., Mancuso, S.G., Rehm, I., & Nedeljkovic, M. (2016). The self in the obsessive compulsive-related disorders: hoarding disorder, body dysmorphic disorder, and trichotillomania. The Self in Understanding and Treating Psychological Disorders, 16(2), 123-130. doi:10.1017/CBO9781139941297.014

Rachman, S. (2001). Emotional processing, with special reference to post-traumatic stress disorder. International Review of Psychiatry, 13(3), 164-171. doi: 10.1080/09540260120074028

Raparia, E., Coplan, J.D., Abdallah, C.G., Hof, P.R., Mao, X., Mathew, S.J., & et al. (2016). Impact of childhood emotional abuse on neocortical neurometabolites and complex emotional processing in patients with generalized anxiety disorder. Journal of Affective Disorders, 190, 414-423. doi: 10.1016/j.jad.2015.09.019

Synopsis of psychiatry: behavioral sciences/clinical psychiatry, 11th Ed, 2015

Sarrami, H., Ghorbani, M., Taghavi, M. (2013).The Survey Two Decades of Prevalence Studies among Iran University Students. etiadpajohi. 7 (27):9-36

Serafini, G., Gonda, X., Pompili, M., Rihmer, Z., Amore, M., & Engel-Yeger, B. (2016). The relationship between sensory processing patterns, alexithymia, traumatic childhood experiences, and quality of life among patients with unipolar and bipolar disorders. Child Abuse & Neglect, 62, 39–50. doi: 10.1016/j.chiabu.2016.09.013

Sourizaei, M., Khalatbari, J., Keykhay Farzaneh, M.M., & Rayisifard, R. (2011). The prevention of drug abuse, methods¸ challenges and researches. Indian journal of science and technology, 4 (8), 1000-1003. doi:10.17485/ijst/2011/v4i11.31

Wallace, J.C. (2004). Confirmatory factor analysis of the cognitive failures questionnaire: evidence for dimensionality and construct validity. Personality and Individual Differences, 37(2), 307-324. doi: 10.1016/j.paid.2003.09.005

Richards, D., Pillay, J. & Fritz, E. (2012). The use of sand tray techniques by school counselors to assist children with emotional and behavioral problems. The Arts in Psychotherapy, 39 (5), 367-373. doi: 10.1016/j.aip.2012.06.006

Siadatian, S.H., Abedi, A., & Sadeghian, A.R. (2013). The effectiveness of play therapy on improving visual attention in students with learning disabilities spelling. Disability studies, 3 (3). http://dorl.net/dor/20.1001.1.23222840.1392.3.3.2.8

Stulmaker, H.L., & Ray, D.C. (2015). Child-centered play therapy with young anxious children: A controlled trial. Children youth serv Rev, 127-133. doi: 10.1016/j.childyouth.2015.08.005

Zare, M. & Ahmadi, S. (2007). The effectiveness of cognitive-behavioral play therapy in reducing children's behavioral problems. Thought and Behavior (Applied Psychology). Spring. 1, (3), 28-18. https://www.sid.ir/fa/journal/ViewPaper.aspx?id=127924