Comparative Study of Historical Memory, Self-Compassion, and Cognitive Flexibility in Depressed and Healthy Individuals

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ARTICLEINFO	ABSTRACT
Article type: Original Article **Article History:** **Received:** 10 Jul 2024 **Accepted:** 29 Sep 2024 **Keywords:** Cognitive Flexibility, Depression, Historical Memory, Self-Compassion	***Introduction:*** Depression is one of the most common debilitating disorders. In the present study, we aimed to investigate the effects of depression on self-compassion, cognitive flexibility, and historical memory in comparison with normal people. ***Materials and Methods:*** In a descriptive study, 43 depressed patients and 43 healthy subjects were enrolled. The scale of depression, self-compassion, cognitive flexibility, and historical memory were examined in these subjects. The data were analyzed using SPSS software version 22. ***Results:*** This study showed that self-compassion, cognitive flexibility, and historical memory have a statistically significant reduction in depressed patients compared to healthy subjects (p<0.05). ***Conclusion:*** Our study demonstrates that depression can significantly impact historical memory, personality traits (like self-compassion), and cognitive capabilities (like cognitive flexibility). These findings have important implications for understanding and treating depression in real-world settings.

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Introduction

The American Psychiatric Association for a set of disorders first used the term depression in 1680 (1). Depression is known as one of the major psychological disorders. Considering its prevalence of 5% in the last two decades, it has been considered a major clinical problem (2).

9-26% of women and 5-12% of men experience depression once in their lifetime. Therefore, the prevalence of this disease in women is almost twice that of men (3). Every person may experience temporary and short-term depression during life. However, if depression is long-term and deep, it is called a disorder (4).

Some of the causes of depression include stressful events in life, dissatisfaction with society, personality traits such as low self-esteem, strong dependence, obsessive personality, perfectionism, genetic factors, alcohol and nicotine addiction, long-term use of drugs such as blood pressure, pills sleep, and birth control pills, and various diseases, including heart and brain attacks, diabetes, and Alzheimer's (5-7).

Symptoms of depression include intense loneliness, obsessive ruminations, decreased energy and interest in normal daily activities, guilt, decreased concentration, memory impairment, sometimes-impaired abstract thinking, anorexia, digestive disorders, hopelessness, sleep disturbances, and thoughts of death and suicide (8). People suffering from depression are different from normal people in terms of various mental health variables, including self-compassion, psychological flexibility, and historical memory (9).

Self-compassion is a healthy form of self-acceptance that expresses the degree of acceptance and acceptance of the undesirable aspects of life. It also includes feeling caring and kind toward oneself in adversity (10). Self-compassion has three main components: self-kindness, common humanity, and mindfulness. Self-compassion is a powerful predictor of mental health, which is associated with life satisfaction (11), altruism, kindness, happiness (12), and increased flexibility (13). People who have high mental health have a high level of self-compassion.

There is a negative correlation between self-compassion and depression, in such a way that in people suffering from depression, the possibility of self-compassion is very low (11). Cognitive flexibility is defined as a positive ability to choose the best option in dealing with stressful situations for the occurrence of minimal mental disorders (14). This component is related to several factors, including the support of family and friends (15). These people have a positive frame of mind in challenging situations (16), and their focus is on current events and finding the best option and solution for them (5). Cognitive flexibility is inversely related to oral preoccupation with past and future issues and historical memory (17) and is one of the most important variables related to mental health (18). Due to the lack of cognitive flexibility, depressed people turn to multiple ruminations when faced with sadness and stress, causing them to strengthen their depression (19).

Depression affects historical memory in people. This type of memory is related to the renewal of memories, experiences, subjects, and events of a person in the past, and it is important in consolidating an individual identity and mental health (11). With the help of this memory, a person has a direction in life, uses her past teachings, and focuses on her goals (20). Traumatic experiences are associated with defects in this type of memory. Disturbance in this memory in traumatic events reduces the burden of damage caused by trauma (21). Historical memory is divided into two types: more quantitative and more general. In depressed people, overgeneralization is higher than in normal people. Also, depressed people have a time delay in retrieving memories (21).

Depression causes negative changes in self-compassion, cognitive flexibility, and historical memory in sufferers (10, 11, 22). So far, there is no comprehensive study about the effects of depression on the mentioned parameters. Therefore, the present study will examine and compare the effects of depression on parameters such as self-compassion, cognitive flexibility, and historical memory in depressed people compared to normal people.

Materials and Methods:

Research design

This research is a descriptive research design of comparative causal type, which compares the factors of self-compassion, cognitive flexibility, and historical memory in depressed and normal people. The statistical population participating in the project includes 43 depressed people who were referred to psychological clinics and 43 healthy people in Mashhad in 2015. These people were selected using the available sampling method. Data collection was done after the necessary coordination with health centers. Then, after obtaining informed consent and permission from the patients, the research method was presented to them. Depressed people participated in 8 weekly training sessions for 1 hour. The normal group did not participate in these meetings. The exclusion criterion was two absent sessions. The data obtained from this study were used at the descriptive level of the frequency and percentage of central tendency index (Mean) and dispersion (SD), and at the inferential level, one-way analysis of variance and independent sample t-test were used.

Research tools

To check the studied parameters, questionnaires on depression, self-compassion, cognitive flexibility, and historical memory were checked after completion by the statistical community. The depression questionnaire was designed by Beck in 1961 and is one of the most well-known depression tests. This test includes 21 items, including four sentences, with a grade of 0-3. This questionnaire measures the severity of depression based on self-reporting, attitudes, and symptoms of depression (23). The historical memory test developed by Williams and Broadbent in 1986 was taken from the participants. This test is done with 15*20 cards designed with sign words. The cards included five positive words of spring, love, flower, happiness, and success, and five negative words of surgery, gland, tumor, death, injection, and

disappointment. These cards are presented in a shuffle, and the subject is asked to respond within 30 seconds to each word with a specific memory or event recalled by that word. Self-compassion was examined using the NEF self-compassion questionnaire, a 26-item survey, including six two-faceted factors of self-kindness versus self-judgment, sense of human commonality versus isolation, and mindfulness versus increased identification. The answer to this questionnaire is on a 5-point Likert scale (24). The cognitive flexibility questionnaire, a short self-report scale with 20 items, has been prepared to investigate three aspects of cognitive flexibility. These three aspects include the tendency to perceive difficult situations, the ability to perceive different justifications for people's life and behavioral outcomes, and the ability to create different solutions for difficult situations, are used.

Procedure

In the present study, the indicators of self-compassion, cognitive flexibility, and historical memory were examined in depressed and healthy individuals. The study subjects were selected through accessible sampling. Data collection was performed after necessary coordination with health centers.

The research method was presented to the patients, and permission and informed consent were obtained. Depressed people received the necessary training for 1 hour in 8 sessions, while the normal group did not receive training. Then, the people were asked to fill in the questionnaires. The exclusion criterion was two absent sessions.

Results

The recent study enrolled 43 depressed and 43 normal people. Before examining and analyzing the data related to the study, according to the descriptive statistics, the

basic assumption of covariance analysis (normality, homogeneity of variances, and homogeneity of the covariance matrix) was checked. The normal distribution was assessed using the Shapiro-Wilks test in the pre-test and post-test variables of the research ($p>0.05$) (Table 1).

Table 1. Descriptive indexes of the research variables and the results of checking the normality of the distribution of the difrrent variables.

Variable	Group	Number	Mean±SD	K-SZ	*p-value*
Kindness itself	Depressed	43	8.97±1.64	0.86	0.44
	Normal	43	16.06±2.25	0.85	0.45
self-judgment	Depressed	43	8.30±1.83	1.18	0.12
	Normal	43	15.95±2.74	0.81	0.52
Common human characteristic	Depressed	43	6.30±1.33	0.96	0.30
	Normal	43	13.32±3.35	0.90	0.38
Isolation	Depressed	43	6.27±1.33	1.32	0.06
	Normal	43	12.88±3.42	0.78	0.57
Mindfulness	Depressed	43	6.13±1.33	1.32	0.06
	Normal	43	12.86±2.77	0.66	0.76
More replication	Depressed	43	6.34±1.36	1.35	0.06
	Normal	43	13.88±2.47	0.99	0.27
Self pity	Depressed	43	42.16±3.13	0.94	0.33
	Normal	43	83.97±9.59	0.60	0.86
Cognitive flexibility	Depressed	43	62.76±4.35	0.65	0.79
	Normal	43	80.72±5.45	0.43	0.99
Historical memory	Depressed	43	10.86±1.98	0.87	0.43
	Normal	43	18.43±2.18	1.04	0.23

To determine the normal distribution of the data, the normality test was used in the SPSS software. P value is considerd p>0.05 .

The assumption of homogeneity of the variance-covariance matrices in different components of self-compassion was checked with the Mbox test, and the results showed that this assumption was established ($p<0.05$) (M Box= 138.86, F=6.10). According to the results of Bartlett's chi-square test and the one-way variance analysis test, there is a significant difference between self-compassion components ($p<0.001$).

Comparing the average of different components of self-compassion between two healthy and depressed groups has a significant difference. According to the results of the independent sample t-test, the mean of self-kindness ($p<0.001$), common human trait ($p<0.001$), self-judgment ($p<0.001$), isolation ($p<0.001$), mindfulness ($p<0.001$), and more similar ($p<0.001$) is higher in normal people than in depressed people (Table 2).

Table 2. The group differences in the components of self-compassion.

Component	SS Group	SS Error	MS Group	MS Erorr	F	*p*
Kindness itself	1139.17	325/90	1139.17	3.88	293.61	0.001
Self-judgment	1258.61	456/97	1258.61	5.44	231.35	0.001
Common human characteristic	1060.51	546/51	1060.51	6.50	163.01	0.001
Isolation	937.86	321/07	937.86	3.82	245.36	0.001
Mindfulness	971.17	398/3	971.17	4.74	204.80	0.001
More replication	918.15	334/18	918.15	3.97	230.78	0.001

The difference between the components of self-compassion was analyzed with one-way ANOVA analysis test. P value is considerd $p<0.05$

The results of Levine's test the established homogeneity of variances in cognitive flexibility and historical memory variables ($p>0.05$).

Based on the assumption of homogeneity of variances, an independent sample t-test is used to check the mean of variables of cognitive flexibility and historical memory.

According to the results of this study, the average cognitive flexibility in normal people was higher than in depressed people ($p<0.001$). Also, the results of this study showed that the average historical memory of normal people was significantly higher than the historical memory of depressed people ($p<0.001$) (Table 3).

Table 3. Investigating the characteristics of cognitive flexibility, and historical memory in depressed people with healthy people.

Variable	Group	Number	Mean±SD	Mean difference	p
Cognitive flexibility	Depressed	43	62.76±4.35	-17.95	0.001
	Normal	43	80.72±5.45		
Historical memory	Depressed	43	10.86±1.98	-7.56	0.001
	Normal	43	18.43±2.18		
The difference between the cognitive flexibility and historical memory in depressed compared to the normal people were analyzed with independent sample t-test. P value is considerd $p<0.05$					

Discussion

The present study investigated different variables of self-compassion, cognitive flexibility, and historical memory among depressed and normal people. The results showed that the average of various components of self-compassion, cognitive flexibility, and historical memory in normal people is significantly higher than in depressed people. The results of the recent research have shown that the level of different components of self-compassion, including self-kindness, self-judgment, common human characteristics, isolation, mindfulness, and over-identification, are higher in normal people than in depressed people. Our results were confirmed by a significant and positive relationship between mindfulness, self-compassion, self-efficacy, and internal locus of control reported in previous studies (11,25-27).

Depressed people do not have the energy to take care of themselves, so they are not kind to themselves and do not take care of themselves. Also, the depressive disorder causes the mind to ruminate on past events constantly, and mindfulness is low in these people. Therefore, the overall level of self-compassion and its components are reduced in this group (28,29).The results of the cognitive flexibility study showed that the average cognitive flexibility in depressed people is lower than in normal people. In this regard, various studies have shown that the cognitive abilities of healthy and depressed people are different (17,30). Depression interferes in most areas and activities of a person. A depressed person avoids going to new places, eating unusual foods, and having many new activities. This person is not flexible to new conditions and always tends to remain in a fixed position. Therefore, in addition to helping to treat depression, they need to provide strategies and psychological solutions to reduce stress and increase their resilience (22,31,32).

The results of the recent study showed that historical memory in normal people is significantly higher than in depressed people. Various studies confirm the results of the present study (33-35). Personality factors are influential in the recovery of historical memory. In depressed people, the degree of overgeneralization in historical memory is higher than in normal people. Also, the time delay in retrieving memories is greater in depressed people than in normal people. Depressed people remember more negative memories and less positive memories (36). The limitations of this research include the use of questionnaires as the main tool for investigating dependent variables, the difficulty in coordinating and obtaining the consent of depressed people to

fill out questionnaires, and the lack of motivation of patients to fill out questionnaires.

Ethical Considerations:

This article is taken from the master's thesis of Ms. Maryam Akhreti in the field of general psychology at the Islamic Azad University, Shahrood branch. The information was collected after obtaining consent to maintain ethical principles. Also, the participants were assured of confidentiality in maintaining personal information and providing results without specifying the names and ID details of individuals.

Conflict of Interest:

There is no conflict of interest.

The role of each Author:

This article is extracted from the master's thesis of Ms. Maryam Akhreti, under the guidance of Dr. Mahbobeh Taher and the advice of Dr. Hakimeh Aghaei.

Conflict of Interest:

The authors also declare that there is no conflict of interest.

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References

1. Kaplan M, Maddux JE. Goals and marital satisfaction: Perceived support for personal goals and collective efficacy for collective goals. Journal of Social and clinical Psychology. 2002;21(2):157-64.

2. Pitsillou E, Bresnehan SM, Kagarakis EA, Wijoyo SJ, Liang J, Hung A, et al. The cellular and molecular basis of major depressive disorder: towards a unified model for understanding clinical depression. Molecular biology reports. 2020;47:753-70.

3. Kuehner C. Why is depression more common among women than among men? The Lancet Psychiatry. 2017;4(2):146-58.

4. Karami J, Zaki A, Mohammadi O, Haghshenas Sh. The role of psychological and social factors in predicting attitudes towards extramarital relationships in married women and presenting a model based on related factors. Social psychological studies of women. Women's Studies Sociological and Psychological. 2015; 13(3): 129-152.

5. Bembnowska M, Jośko-Ochojska J. What causes depression in adults? Polish Journal of Public Health. 2015;125(2):116-20.

6. Kumar KS, Srivastava S, Paswan S, Dutta AS. Depression-symptoms, causes, medications and therapies. The Pharma Innovation. 2012;1(3, Part A):37.

7. McQueen D. Depression in adults: Some basic facts. Psychoanalytic Psychotherapy. 2009;23(3):225-35.

8. Kaplan HI. Synopsis of psychiatry behavioral sciences. Clinical psychiatry. 1998.

9. Hamdipour A, Ommi M, Zavaraqi R. Citation and Content Analysis of the Journal of Modern Psychological Research From 2006 to 2015. Jornal of Modern Psychological Research.2015; 14(53): 107-129

10. Birnie K, Speca M, Carlson LE. Exploring self-compassion and empathy in the context of mindfulness-based stress reduction (MBSR). Stress and Health. 2010;26(5):359-71.

11. Basharpoor S, Issazadegan A. Role of self-compassion and forgiveness in prediction of depression

severity among university students. Journal Of Research in Behavioral Sceinces. 2013; 10(6): 452-461.

12. Kaplan TA. sadock s synopsis of psychiatry 11th edition. SAT (Schweiz Arch Tierheilkd). 2018;8(28):00.

13. Svendsen JL, Osnes B, Binder P-E, Dundas I, Visted E, Nordby H, et al. Trait self-compassion reflects emotional flexibility through an association with high vagally mediated heart rate variability. Mindfulness. 2016;7:1103-13.

14. Hashemi M, Frozandeh E, Heydrapour M. Efficacy of Acceptance and Commitment Therapy on the Emotional Distress and Commitment to Treatment in Diabetic Patients with Depression. Health Pschcology. 2013; 12(46): 111-130.

15. Garbarino J, Dow-Burger K, Ratner NB. Implementation of the program for the education and enrichment of relational skills (PEERS®) social skills intervention in a university-based communication sciences and disorders clinic. Perspectives of the ASHA Special Interest Groups. 2020;5(3):637-45.

16. Burton NW, Pakenham KI, Brown WJ. Feasibility and effectiveness of psychosocial resilience training: a pilot study of the READY program. Psychology, health & medicine. 2010;15(3):266-77.

17. McCracken LM, Morley S. The psychological flexibility model: a basis for integration and progress in psychological approaches to chronic pain management. The Journal of Pain. 2014;15(3):221-34.

18. Watkins DC, Goodwill JR, Johnson NC, Casanova A, Wei T, Allen JO, et al. An online behavioral health intervention promoting mental health, manhood, and social support for young black men: the YBMen project. American journal

of men's health. 2020;14(4):1557988320937215.

19. Zong J-G, Cao X-Y, Cao Y, Shi Y-F, Wang Y-N, Yan C, et al. Coping flexibility in college students with depressive symptoms. Health and quality of life outcomes. 2010;8:1-6.

20. Staroscik A, Nelson D. The influence of salmon surface mucus on the growth of Flavobacterium columnare. Journal of fish diseases. 2008;31(1):59-69.

21. Moradi A, Abdi A, Akramian F. Function of Autobiographical Memory (Specificity of Episodic and Semantic Aspects) in Persons with PTSD. 2010; 5(17): 121-149.

22. McCracken LM, Gutiérrez-Martínez O. Processes of change in psychological flexibility in an interdisciplinary group-based treatment for chronic pain based on Acceptance and Commitment Therapy. Behaviour research and therapy. 2011;49(4):267-74.

23. Farinde A. The Beck depression inventory. The Pharma Innovation. 2013;2(1).

24. de Raaf PJ, Sleijfer S, Lamers CH, Jager A, Gratama JW, van der Rijt CC. Inflammation and fatigue dimensions in advanced cancer patients and cancer survivors: an explorative study. Cancer. 2012;118(23):6005-11.

25. Maeda S. Trait and state self-compassion interactively predict cortisol recovery following an acute stressor in healthy males. Psychoneuroendocrinology. 2022;144:105864.

26. Tarber DN, Cohn TJ, Casazza S, Hastings SL, Steele J. The role of self-compassion in psychological well-being for male survivors of childhood maltreatment. Mindfulness. 2016;7:1193-202.

27. Terry ML, Leary MR, Mehta S. Self-compassion as a buffer against homesickness, depression, and dissatisfaction in the transition to college. Self and Identity. 2013;12(3):278-90.

28. Akin A, Akin U. Examining the predictive role of self-compassion on flourishing in Turkish university students. Anales De Psicología/Annals of Psychology. 2015;31(3):802-7.

29. Leland DS, Moe SM, LeBouton GM, Dubiel SW, Reimer SW, Dortch SD, et al. Electrophysiology of error processing: associations with depression, anxiety, fear of failure, and clinical perfectionism. 2018.

30. Karyotaki E, Efthimiou O, Miguel C, genannt Bermpohl FM, Furukawa TA, Cuijpers P, et al. Internet-based cognitive behavioral therapy for depression: a systematic review and individual patient data network meta-analysis. JAMA psychiatry. 2021;78(4):361-71.

31. Mutis JA, Rodríguez JH, Nava-Mesa MO. Rapidly progressive cognitive impairment with neuropsychiatric symptoms as the initial manifestation of status epilepticus. Epilepsy & behavior case reports. 2017;7:20-3.

32. Preiss DD. Metacognition, mind wandering, and cognitive flexibility: Understanding creativity. Journal of Intelligence. 2022;10(3):69.

33. Ahmad-Molaei L, Hassanian-Moghaddam H, Farnaghi F, Tomaz C, Haghparast A. Delay-dependent impairments in memory and motor functions after acute methadone overdose in rats. Frontiers in pharmacology. 2018;9:356052.

34. Hertel P. Memory for emotional and nonemotional events in depression. Memory and emotion. 2004:186-216.

35. Urban EJ, Charles ST, Levine LJ, Almeida DM. Depression history and memory bias for specific daily emotions. PloS one. 2018;13(9):e0203574.

36. Moshki M, Zarae H. The effect of personality factors on retrieval of autobiographical memory. Scientific Journal of Ilam University of Medical Sciences. 2014;' 22(4): 65-73.