Comparing the Effect of Positive Psychotherapy and Dialectical Behavior Therapy on Memory and Attention in Multiple Sclerosis Patients

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Abstract

Objective: The purpose of the present study is to investigate the efficacy of positive psychothorapy and dialectical behavior therapy on memory and attention in multiple sclerosis patients.
Methods: The research design was pretest-posttest with the control group. The statistical population in this study included multiple sclerosis patients who sought advice from the Rasht multiple sclerosis Association in 2018 (Rasht is a city in northern Iran). The sample comprised 45 multiple sclerosis patients who were assigned to three groups (two experimental and one control group) through random sampling. To gather data, Wechsler memory scale and computerized complex Stroop test were used. The experiment groups received eight sessions of positive psychotherapy and dialectical behavior therapy and no intervention was applied to the control group. Results showed that positive psychotherapy and dialectical Behavior therapy increases memory and attention in multiple sclerosis patients. In terms of attention, dialectical behavior therapy was more effective than positive psychotherapy. Based on these results, it can be concluded that positive psychotherapy and especially dialectical behavior therapy can be employed toimprove memory and attention in the multiple sclerosis patients.

Key Words: Positive Psychotherapy, Dialectical Behavior Therapy, Memory, Attention.
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Background

Multiple sclerosis or MS is a neurological disease that causes demialination from central neurvos system and leads to the destruction of axon. Symptoms related to neural tissuse injury in this disease are visual problems, imbalance, alteration in emotions, motor disorders, bladder and intestine problems, depression and cognitive disorders (1). The course of multiple sclerosis is variable, the prognosis is uncertain (2), its etiology is unknown and its therapy has turned out to be amajor challenge(3).

MS is more prevalent in women than men and begins to appearin early to middle adulthood (3). In England,approximatly one in every 800 people and in Scotland one in every 500 peopleare affected by MS(4). The region with the highest prevalence rate is North America and the lowest rate of prevalence is in East Asia and the south of African desert (5).

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In the Middle East and Asia, Iran has the highest MS prevalence rate (6). The prevalence rate of this disease from 1991 to 2004 in Iranian women and men was 12.8% and 12.5% respectively. This is while the prevalence rate of MS has been reported to be 101.39 per 100,000 people in Iran in 2014 (7). The prevalence rateof this disease has been 72.1 per 100,000 people (116.5 per 100,000 women and 28.3 per 100,000 men) in theFars province (8).

MS ischaracterized with motor, neuropsychological (9) and cognitive problems (10and it's reported that neuropsychologyical changes happen in 40 to 65 percent of MS patients (11) About 30% to 50% of these patients have mild cognitive deficits and 20% to 30% were affected by severe cognitive deficits (12). Deficit in memory and attention are some of the cognitive dificits found in MS patients.

Memory is the ability to save information and experiences and use them insubsequent interactions with the environment, and is considered to be one of the core abilities of human cognitive system (13). MSis characterized with disorder in the semantic and short-term memory (14) working memory (15, 16) and episodic memory(15).

Another cognitive problemfound in MS patients is attention. Attention is a complex and ambiguous structure attributed to various components including 1- concentration 2- maintanence of attention or vigilance 3- response inhibition to irrelevant stimuli or selective attention,and 4- changing attention (17). It is one of the important higher cognitive activities that plays a significant role in the structure of intelligence, memory and perception (18, 19). Several studies have suggested that theprobable cognitive problems in MS patients include aphasia, learning deficit, attention, concentration (20), the speed of information processing (21,29) and deficit in selective attention (22).

Other studies have pointed to the attention problems (23), direction of attention, speed of processing, sustainable attention, planning, abstract reasoning and response prevention (24) in these patients. In a different study, the attention problems of these patients including spatial attention deficit, maintenance of attention, retreival and motor-visual reprocessing (16).

Pharmaceutherapy is usually used to reduce the symptoms of MS patients or improving the disease. However,the conventional pharmacotherapy methods aren't effective in allMS patients and drugs have many side effects.Considering the impact of psychological elements on the emergence and intensification of this disease, non-drug treatments are of vital importance.

Cognitive behavioral therapy is one of the efficient ways in curing psychological problems the traditional version of which is completely influenced by diagnosis and treatment model whereby the deficiencies and weaknesses of the patients are mostly underlined and there's little focus on the positive aspects and their strenghts.

By focusing on the abilities of the patients and accepting their weaknesses instead of changing them, and also by emphasizing the process of thoughts instead of focusing on their content, the new cognitive behavioral approaches aim to address the shortcomings of the traditional cognitie behavioral therapy (25). Therefore, in the present research,the modern cognitive behavioral approaches (positive psychotherapy, dialectical behavior therapy) have been employed.

Positive psychotherapy is a modern approach to psychology that focuses on understading and explicating the wellbeing and is predicated on the precise prediction of the factors that influence this understanding. From apositivist viewpoint, this approachdeals withthe enhancement of wellbeing instead of treatment of deficits and diseases; so this therapy encourages psychologists to accept a more perceptible and flexible viewpoint concerningpotential abilities, motivations and human capabilities (26). The final purpose of this therapy is to identify constructs and ways that bring about happiness and wellbeing in human's life, because positive emotions can lead to more active and passionate emotions and be of relevance to psychological health (27). In different studies,the impact of positive therapy on reducing anxiety and depression and increasing strength, happines, and life satisfaction have been emphasized(28,). No research has been done on the effectiveness of positive psychotherapy on the memory and attention of MS patients. Some studies haveunderlinedtherelationship between memory (29,30), attention and positive mood (31). Moreover, Yang et al suggested that people who are positively affectionateperform better in working memory, wherease Figueira et al concluded that negative emotions decrease thecapacity of short-term memory(32).

Dialectical behavior therapy is a cognitive behavioral approach that was initially devised to cure borderline personality disorder. This model integrated interventions of cognitive behavioral and supportive therapies, which is based on the change principle with instructions and techniquesof eastern Zen philosophy that is predicated on the principle of acceptance. The four major componentsof this approach are mindfulness, distress tolerance, emotional regulation and interpersonal effectiveness (33). Dialectical behavior therapy is one approach that combines acceptance and patient-centered empathy with cognitive behavioral problem-solving and training of social skills (34)

The purpose of the present research is to compare the efficacy of positive psychotherapy and the effects of dialectical behavior therapy on increasing memory and attention of MS patients. Memory and attention are cognitive problems in MS patients and there are references in different studies to the deficiency of these two cognitive functions in MS patients(35, 23). As a result, building on psychological treatments such as dialectical behavior therapy and positive psychotherapy can be effective in decreasing the memory problems. Moreover these therapies are more cost-effective than pharmacotherapy and can play an impactful role in reducing the symptoms of MS.

Accordingly, the results of this study can draw the attention of therapists and researchers who are engaged withthe psychological problems of MS patients. Since no research has been carried out on the comparison of the effects of dialectical behavior therapy and positive psychotherapy on reducing memory and attention problem of MS patients, the results of the present research will help strengthen the available literature and can be useful in adding to the knowledge accessible surrounding this issuse.

Method

The research design was pretest-posttest with the control group. The statistical population in this study comprised 257 multiple sclerosis patients who sought advice from theRasht MSAssociation. The statistical sample included 78 MS patients who were diagnosed to have memory and attention problems based on the instrument of the research. Considering the inclusion and exclusion criteria, 45 patientswere selected and divided into two experiment groups and one control group through random sampling. In positive psychotherapy group, two subjects and in dialectical behavior therapy, three subjects were removed from the therapy process as a result of being absent in more than two sessions.

Instruments

Wechsler memory scale: this test was designed by David Wechsler in 1945 for examining the rate of memory disorder in different aspects and is suitable for people aged 20-75 years. The test has seven subscales that offer expansive information about memory. In Iran,the Wechsler memory scale has been standardized by Barahani and has acceptable validity and reliability. The validity of the scale with test-retest for Iranian women and men has been reported to be 0.90 and 0.92 respectively. Moreover, convergent validity of this test with Andre – Rey and Bender Gestalt memory tests has been reported to be 0.78 (36). In the present study,Chronbach's Alpha for the test was 0.96 and more than 0.78 for all the subscales.

Stroop attention scale: Stroop test is a famous test that assesses selective attention (37). This test was invented by RidleyStroop in 1935 for assessing selective attention and cognitive flexibility. This test, which has acceptable reliability and validity according to neuropsychological studies, is also used for assessing selective attention using visual method. A Persian version software of Stroop has been developed by the Sina Institute (Ravan Tajhiz) based on Stroop cart test. Toexamine the reliability of this software, pretest-post test correlation coefficient with control group was assessed, reporting 0.768 in correct consistent answer and 0.904 in correct inconsistent answer (38).

Ethical Aspect of the Study

The researcher ecplained the purpose of study to the participants and assured to the confidentiality of information. Also the written informed consent form was obtaind from participants. Permissions were received from the research Ethics committee of guilan university of medical sciences (No IR. GUMS.REC.1397.500).

The methods of intervention are shown in Table 1:

Procedure intervention: once the number of samples was identified, they were assigned to two experiment groups and one control group.

Subsequently, the purpose of the research was explained and a letter of consent was obtained from the subjects and they were asked to participate in the research. Primarily, all the three groups entered pretest phase and the subjects were asked to complete Wechsler memory scale and Stroop attention test carefully. Every therapy methodcomprisedeight sessions, each lasting 50 to 60 minutes that was performed weekly and individually by a psychologist in Andisheh Nike and Ariana psychological and counseling services centers in Rasht (north of Iran). At the conclusion of the therapy sessions, two experiment groups and control group were assessed with posttest and then the gathered data were analysed by multivariate analysis of variance.

Table 1: Summary of intervention sessions

sessions	Seligman, Rashid and Park positive psychotherapy (70)	Dialectical behavior therapy Maccay, Wood, Brantely (71)
1	Introduction to positive psychotherapy orientation and objectives, teaching happiness Objective: patients should pay attention to positive charateristics with a focus on happiness	Introduction to dialectical behavior therapy orientation and objectives, acquaited with mindfulness and three states of mind (wise mind, emotional mind and reasonable mind) Objective: Introducing mindfulness and its different states
2	Cultivating higher strengths and positive emotions and the role of good and bad memories in emotions Objective: strengthening abilities and positive emotions	Teaching two kinds of skills for attaining mindfulness: “what” skills “how” skills Objective: teaching mindfulness skills
3	Forgiveness for neutralization of anger, resentment and other negative emotions Objective: deleting negative emotions through forgiveness	Self-soothing and self quieting skills with the use of the five senses Objective: strengthening mindfulness skills
4	Regular disscussion about the role of good and bad memories and the impact of gratitude on these memories Objective: strengthening positive emotions	Teaching the identification of emotions and labeling them leading to a growth in emotional control Objective: emotional management
5	Recording gratitude memories and practical use of strenghs that were reviewed in the second session Objective: repeating positive emotions	Teaching short-term positive emotional experiences Objective: emotional management
6	Teaching subjects to be satisfied as opposed to being maximalist Objective: satisfaction with belongings	Teaching communication skills such as defining situation skills, emotional expressiveness, requesting, assertiveness and negotiation techniques Objective: interpersonal capabilities
7	Examining optimism and hopefulness, love and attachment, relationships and connection with others Objective: teaching hopefulness and connectivity	Teaching distraction, presenting the task of listening to music contradicting the subjects’ emotions Objective: teaching distress tolerance
8	Increasing meaning, the concept of pleasure, complete life and post-test performance Objective: meaning seeking	Explaining the functional role of emotion in life Objective: distress tolerance

Results

Descriptive data showed 75% of subjects in the positive psychotherapy group were married and 25% were single. In dialectical behavior therapy group, 83% were married and 17% were single and in the control group 58% were married and 42% were single. Education level of positive psychotherapy group was as follows: 17% under diploma, 15% diploma, 17% associate degree, 43% bachelor’s degree and 8% master’s degree. In dialectical behavior therapy group,18% were under diploma,15% diploma, 17% associate degree, 40% bachelor’s and 10% master’s degree. Also in control group 10% were under diploma,18% diploma, 18% associate degree, 37% bachelor’s, 17% master’s degree. The mean and standard deviation of the age of positive psychotherapy, dialectical behavior therapy and control group subjects were 36.58 ± 11, 31, 35.17 ±7.54, 34.75 ±7.75 respectively. The mean and standard deviation of variables in three groups as well as the normality test of data distribution are presented in Tables 2 and 3.

Before performing covariance analysis on the memory and its components and attention, the

assumptions of this analysis were investigated. According to the Box test, the condition of homogeneity of variance – covariance was accurately met (Box= 1.22, F= 0.707, p= 0.82). According to the results of Levene test, the condition of equality between group variances was met and Shapiro-Wilk test of normality was considered as shown in Tables 2 and 3. Table 4 shows that the level of signifcance of the tests has permitted the use of multivariate analysis of variance. The result shows that in the groups of this study,there is a significant difference atleast in one of dependent variables. (Wilks, Lambada= 0.17, F = 5.22, p < 0/001).

Table 2: Mean and standard deviation of memory and its components

memory		PP group	Dbt group	Control group		
		M± SD	M ± SD	M±SD	s-w	p
Personal information	pretest	4.75±1.21	5.5±00.1	0.5±1.12	0.36	0.08
	posttest	5.7±0.62	0.6±0	4.83±0.83	1.09	0.41
Orientation	pretest	4.58 ± 0.66	4.66 ± 0.49	4.75 ± 0.45	1.10	0.11
	posttest	0.5 ± 0.0	0.5 ± 0.0	4.75 ± 0.45	0.9	0.14
Mental control	pretest	3.91 ± 1.24	3.16 ± 1.02	4.08 ± 1.24	0.15	0.08
	posttest	6.41 ± 1.56	5.16 ± 102	5.16 ± 1.52	0.84	0.09
Logical memory	pretest	5.08 ± 1.57	4.66 ± 1.82	6.66 ± 1.87	0.61	0.44
	posttest	9.16 ± 1.85	10.91± 3.5	6.91 ± 1.5	0.54	0.08
Digital memory	pretest	7.87 ± 1.75	8.25 ± 1.48	8.16 ± 2.12	0.47	0.06
	posttest	9.91 ± 1.16	10.5 ± 0.9	9.16 ± 2.08	0.97	0.09
Visual memory	pretest	6.58 ± 2.02	7.83 ± 2.87	6.75 ± 2.17	0.87	0.08
	posttest	8.5 ± 1.62	10.83± 1.94	6.58 ± 1.16	0.76	0.14
Paired associates	pretest	12.33 ± 3.00	12.41 ± 3.28	14.16 ± 1.58	0.91	0.13
	posttest	16.08 ± 3.7	18.66 ± 1.87	14.66 ± 1.3	0.54	0.15
Total	pretest	75.41 ± 12.47	84.41 ± 8.08	83.41 ± 11.52	0.41	0.9
	posttest	100.41 ± 7.05	108.33 ± 10.73	84.33 ± 6.08	0.32	0.21

Table 3: Descriptive indicators of attention in experiment and control groups

Variable		PP group	DBT group	Control group		
		M± SD	M ± SD	M±SD	Sh-w	P
Duration	pretest	220.66±27.36	197.33 ± 20.15	205.33±30.31	0.79	0/55
	posttest	209.66±12.8	209.75±13.28	198.83±16.751	0.53	0.93
Number of error	pretest	8.5 ± 6.48	12.16 ± 7.25	0.9 ± 11.63	0.95	0.32
	posttest	7.91 ± 4.77	13.75 ± 7.86	6.33 ± 6.18	0.82	0.501
No-response number	pretest	13.66 ± 17.54	3.75 ± 4.11	6.5 ± 8.76	0.72	0.67
	posttest	0.3 ± 2.66	2.91 ± 1.92	1.5 ± 1.67	1.16	0.132
Number of correct responses	pretest	217.83 ± 0.23	224.08 ± 6.09	224.5 ± 18.74	0.98	0.28
	posttest	229.08 ± 6.58	223.33± 8.37	232.16 ± 5.68	0.81	0.52
Total	pretest	928.08± 125.25	822.25 ± 85.84	860.66 ± 130.87	0.72	0.67
	posttest	871.25 ± 51.01	870.83 ± 54.68	827.58 ± 70.82	0.49	0.96

Table 4: Univariate analysis of covariance in the context of MANCOVA on posttest scores with pretest control of dependent variables in experimental and control groups

	Dependent variable	SS	DF	MS	F	P	ETA
Pretest	memory	71116.93	1	71116.93	1004.95	0.0	0.97
	attention	63339.32	1	63339.32	2056.03	0.0	0.98
Group	memory	918.47	2	459.23	6.48	0.005	0.30
	attention	7333.71	2	3666.85	1.19	0.31	0.074

Eta square suggests that the difference between the three groups is significant on the whole considering the dependent variables, and the value of this difference based on Wilk's Lamabada test is 0.17, which means 58% of the variance is related to the discrepancy between the three groups resulting from the interactive effect of dependent variables.

Table 5 suggests that thereare significant differences in memory aspect between experimental and control groups (f= 6.48 , p < 0.05), but there isn't significant difference in attention scope. Post hoc Bonferroni test was used for the precise and careful investigation of the means,the results of which are shown in Table 5.

As was presented in Table 5, the results of Bonferroni post hoc test show that positive psychotherapy has increased memory and so did dialectical behavior therapy (p< 0.001). This is whilethere was no significant change between the two therapy methods.

Table 5: Results of Bonferoni post hoc test for comparing the post test mean of memory and attention in experiment and control groups

Variable	Group	DBT		Control group	
		I-J	P	I-J	P
Memory	PP	4.7	1	17.84	0.0005
	DBT	-	-	22.54	0.000
Attention	PP	63.63	0.513	-1.9	1
	DBT	-	-	61.73	0.314

Discussion and Conclusion

The purpose of this study was to investigate the effectiveness of positive psychotherapy and dialectical behavior therapy in increasing memory and attention of MS patients. The results showed that positive psychotherapy is effective in increasing the attention of MS patients. Based onpreviously done studies, the variables of positive psychotherapy include increase in strength,(39) flexibility of thought, problem solving and cognitive flexibility (40). In different studies,the impact of positive psychotherapy on increasing strengths, happines and life satisfaction have been underlined(28, 39), and it has been demonstrated that increase in positive strengths produced positive mood, so its relationship with memory and attention has been verified (31,41). Therefore, it can be said that positive therapy can have a positive impact on the MS patients' memory and attention by increasing positive mood.

To explain the impact of positive psychotherapy on increasing memory and attention inMS patients, it can be said that in positive psychotherapy, the patients are assisted to reinforce their abilites while identifying them. In this way,they learn the methods of reinforcing their strenghts and employ them in their life.When the patients believe that building on strengths can positivey affect their life, their motivation increases and they experience a feeling of power, which can result inthe increase of memory and attention. When individuals have a good feeling, this positive affection and its role inretrieving and recallingthings will be prominent. Mood and information processing system are related to each other and positive emotions can influence attention, learning and memory (42). Moreover, it has been shown that positive emotionsexpand action and thought and lead to cognitive flexibility that can be effective in increasing the attention (43). In addition, it can be said that one of the important theories in positive psychology, which explains and sheds a light on the importance of positive emotions in life, is one of the essential theories of positive psychotherapy (44).When people have negative experiences and affections, they experience tunnel vision, leading to pessimistic thoughts. On the contrary, positive emotions remove limitations and permit people to perceive more resources and facilities and think more optimistically(45). These resources and facilities can include physical resources (such as body coordination), social resources (such as freindship, social skills and supportive instances) and mental resources such as resilience. The patients can use these resources under severe circumstances.

The results of this research showed that dialectical behavior therapy is effective in increasing memory and attention inMS patients. Although no research particularly showing this effect was found, the results of the present research are consistent with the studies that show the techniques of dialectical behavior therapy reduce attention problems (46, 47, 48). In addition,since mindfulness is a principle of dialectical behavior therapy whoseimpact on attention and memory have been verified,it can be said this result is in line with previous findings.

In explaining this finding, it can be said that by combining mindfulness techniques and emotional management with behavior therapy principles, dialectical behavior therapy teachesMS patients who suffer from different cognitive problems to observe the mental consequences and their own behavior in a non-judgmental way. According to this technique, it is being instructed to individuals to experience their thoughts, emotions and bodily sensations and don't judge and evaluate them, only concentrate on one stimulus at one time and pay attention to the same stimulus when figuring out their distraction. As a result, in mindfulness, people adjust their attention by doing some exercises. Moreover, mindfulness increases the thickness of cortex, which plays a role in learning, memory and emotional management.Thus it can be said that the use of these techniques can lead to an increasein the memory and attention of MS patients.

The results showed that there is no significant difference between positive psychotherapy and dialectical behavior therapy in terms of memory. This lack of difference can be explained by saying that in positive approach,the focus is set on strenghts and positive emotions and in dialectical behavior therapy attention is paid to the techniques of emotional management and mindfulness in a

non-judgmental and aware manner. In other words,putting emphasis on the strenghts and the formation of positive emotions in positive psychotherapy and focusing on mindfulness and emotional menagement in dialectical behavior therapy increase the memory of MS patients.

The results showed there is significant difference in the attention component between positive psychotherapy and dialectical behavior therapy and that dialectical behavior therapy was more effective than positive psychotherapy.

This difference can be explainedby saying that positive psychotherapy putsthe emphasis on happiness and positive emotions and the strenghts of patient whereas dialectical behavior therapy builds on mindfulness technique, mind practice, being in the moment, aware attention to the moment in the internal and external states of the patient and maintaining attention and the impact they have on physical and psychological conditions to increase attention. In mindfulness, in addition to emotional mind and reasonable mind, wise mind was also instructed to the patients. In fact wise mind integrates emotions and logic. Therefore, as a kind of dialectic, wise mind can be considered as containing emotion and rationalism that has accommodated all ways of recognition and knowledge in itselfTherefore, it's very likely that dialectical behavior therapy as a form of treatment is more effective than positive psychotherapy in increasing attention.

The lack of follow up phase and lack of drug control is one of the limitations of the present research. Therefore, it is suggestedthata follow-up phase is foreseen in order to investigate the continuation of the effectiveness of these therapies in the future research. Also, it's recommended that the groups are controlled for drug consumption. Also with regard to the results of this research, based upon the impact of positive psychotherapy and dialectical behavior therapy on increasing the attention and memory inMS patients, it is recommended that MS associations use these therapies for increasing memory and attention. Carrying out these therapies would be possible through employing therapists familiar with positive psychotherapy and dialectical behavior therapy in these centers.

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Conflicts of Interest

There are no conflicts of interest.

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