

Music therapy and Schizophrenia

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Abstract: Schizophrenia is a psychological disorder in which spread spectrum of recognition functions especially memory, attention, movement skills, performance functions and intelligence will be damaged. Chiho and Chun (2003) believed that systematic and regular music training is influencing on memory processing. The major goal of this research is to study and investigate the effect of active music on memory and attention of schizophrenic patients in the treatment center of Dezful: The research sample including 30 men were selected through random simple sampling; and they were categorized in two groups consist of experimental group (15 men) and the control group (15 men). The research design was the type of pre-test, post-test with control group. The experimental group participated in 12 sessions of two – hour music therapy. The measurement tools consisted of Kim Karad memory test and the accuracy comet square test. The method of multivariable covariance analysis (MANCOVA) was used to analyze data. The results indicated that the active music training has positive effect on memory and attention of schizophrenic patients. The results of this research were matched with the findings of (Sullivan, 1998) who indicated the effect of music on attention also musical games in order to help schizophrenic patients to change attention from one subject to another. Moreover this research was matched with the findings of (Wolfgram, 1978) who indicated that music therapy for retarded adults with mental disorder develops occupational skills, academic skills and social skills.

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1.Introduction

Schizophrenia is a psychological disorder in which spread spectrum of recognition functions especially memory, attention, movement skills, performance functions and intelligence will be damaged. This failure is seen in more than %75 of cases (O' Carrol, 2000) and in affected adults, this is represented in the scales of attention and memory (Kenny, Friedman & Finding, 1997). On the other hand, there is relationship between recognition and music (Lipe, 1995; Cash, 1997), Corkerton, Morros & Norman (1997). Chiho and Chun (2003) believed that systematic and regular music training is influencing on memory processing. Collier and Logan (2000) pointed out that the function of short – time memory by applying alternative auditory rhythmic stimulations is better than when visual stimulations are used.

Moreover, Boso, Emanuele and Mineazze (2007) indicated that music training program in active and passive music therapy sessions can elevate behavior curve and music skills in adults who have been affected by acute autism. Silverman (2003) concluded that music is considerably effective to overcome and fight with signs of acute mental disorder. Ceccato, Caneva and Lamonaca (2006) studied and evaluated the possible effects of especial music therapy protocol on the especial performance

of attention and memory in schizophrenic patients and concluded that the performance of those people who were faced to especial music therapy protocol was considerably recovered concerning Kesler and memory marks and life skills. Hayashi, Tanabe and Nakagawi (2009), in their research studied and evaluated the efficiency of group music therapy for those in – patient affected by schizophrenia. The group's comparison showed that considerable advantages in group members of music therapy have been discovered in some evaluations related to personal mediator and intangible concept of participation in the activity of group singing. Accordingly, Moonfai, Angela and Esther et al., (2009) studied the effect of music on the levels of depression and physiological reactions in old adults. They concluded that music listening can facilitate not pronounced expression of feeling and allows that person's internal feelings will be expressed without fear. The research performed by Baker, Nigram and Stott (2008) entitled the study of making tune therapy in music therapy indicated that frequently making poetry causes gaining experience in developing self-confidence, elevating self-respect, selection and making decision, expanding self-feeling, telling remedy-seeking story, finding recognition or illuminating thoughts and feelings. Clift, Honcox & Morrison et al., (2010) studied the effect of group

music therapy techniques in the skills of individual's compatibility with twofold recognition of mental diseases and matters dependence. Their findings indicated that in the situation of music selection, the consequences of matters dependence that were explained for them were considerably higher than that group for whom consequences of matters dependence was explained with text selection and reading. Hitchen, Magee & Soeterik (2010) investigated music therapy in treatment of patients affected by nervous behavioral disorders due to brain damage and showed that music therapy can be influencing in decreasing anxiety and worry and defeating problems and promoting positive behaviors in the groups with nervous and behavioral disorders. In another research, Tang, Yao Zheng (1994) studied the effect of music therapy in schizophrenic patients and the findings indicated that those patients who received active or passive (music listening) music therapy (in addition to standard treatment) decreased the positive sign of disease generally, and their capability to make relationship with others have been increased and their level of interest to the external events have been expanded. Thout (1989) evaluated the effect of music therapy interference on self – recognition changes in the situation of relaxation, behavior, feeling, thought and insight in imprisoned schizophrenic patients. Findings showed that considerable changing can be observed in self recognition evaluations in all treatment scales in comparison with previous situation. Leardi, Pietrolett and Angeloni et al., (2007) in the way of studying the effect of music therapy on stress reaction in the operation day, concluded that music therapy can decrease stress. Moreover, it can decrease cortisol level and cause decrease of natural fatal lymphocytes during operation in the group who were affected by music therapy.

Pellitier (2004) concluded that music alone and music with relaxation technique decrease stress considerably. Silverman (2006) studied the understanding of mental patients about music therapy and other mental training programs. The results showed that participants have constantly evaluated music therapy as the most effective factor in comparison with plans to show the scores of especial mental defect. Moreover, in another research, he concluded that treatment by music in fighting with the signs of mental diseases is very effective (Silverman, 2003). Jeanyung, Phillip, Holzman (1997) indicated that while incapability of compatibility power in suitable motivation and incapability in filtering the unsuitable motivations are the characteristics of schizophrenic patients. Using music in order to attract their attention is a very useful and clear matter. In a research performed by Johan and

Grohol (2010) findings indicated that exercise procedure related to music recovers skills like language learning and nervous links will be made during musical relations. During research by Johan and Sons (2005) findings indicated that standard treatment with music therapy helps schizophrenic patients to recover their general behavior, mental mood and social role and function. Burleson et al., (1989) concluded in their investigation that music hides the stressful stimulations that affect on work precision and increases attention. Cassidy and Michael (1976) showed that groups who have received group guitar trainings compared to control group without music, had better mutual relations with each other. Reshef et al., (2010) showed progress in sleep concealment and sleep competency after relaxation through music in schizophrenic patients. Nakayama and coworkers indicated that music therapy in the situation of rest house decreases patient's stress level; therefore, it plays positive role in recovering the life quality of patients. Silverman (2010) during research showed that those participants who remembered numbers rhythmically in comparison with participants who remembered numbers by intonation method were more precise. Choi (2010) indicated the considerable effect of music relaxation on anxiety, tiredness and life quality in those who take care of rest house patient's families. Sullivan (1998) showed the role of music in attention and musical plays to help schizophrenic patients in order to change attention from one subject to another. Wolfgram (1978) showed during a research that music therapy for retarded adults with mental disorder expands work skills, academic skills and social skills. In this research, research problems were as follows:

1. Is active music influencing on the memory of schizophrenic patients?
2. Is active music influencing on the attention of schizophrenic patients?

The purpose of this study is to investigate the effect of active music including guitar training on memory and attention of schizophrenic patients. Research hypotheses were as: (1) Active music is influencing on the memory of schizophrenic patients, and (2) Active music is influencing on the attention of schizophrenic patients.

2. Material and Methods

The research method in this study is the type of pre – test, post – test with control group.

Statistical population consists of all male schizophrenic patients in Dezfoul treatment center. Research sample consists of 30 men affected by schizophrenia, 15 men as experimental group and 15 men as control group who were selected by simple random method.

The patients were examined individually during six sessions concerning long-term and active and sensory memory by using Kim Karad memory test and concerning attention by using accuracy comet square test in the pre-test stage. In the Kim Karad test, a page consisting 16 squares, in each square there was a geometric form and it was designed with especial direction and they were shown to the participants for one minute. Then another page with 16 empty squares was given him and he should know their space and especial direction and put them in their place. This work has been performed in three stages and each stage was slightly different from the previous stage. Each stage measured and evaluated on a kind of memory. In the accuracy comet square test, a page full of continues squares was given to the participants so that each of them had especial direction and the participants should mark squares that were similar to two above patterns and the total of correct marks divided to those forgotten and then multiply 100.

The reliability of Kim Karad memory test by using Cronbach Alpha test was 89% and by using split half reliability test was 92% and its validity by using concurrent performance with Kesler and test retest method on this sample was 85%. Moreover, reliability of Toloz- Pearen accuracy comet square test by using Cronbach Alpha test was 75% and by using split half reliability test was 81% and its validity by using concurrent performance of Kesler and memory test on this sample was 81% that was meaningful.

Teaching method

For the participants of experimental group, 12 sessions of music training in the type of guitar was performed. Each session time was two hours, one hour was allocated to guitar training to the patients and during the next one hour, their requested music was played by guitar. In the first session, firstly the guitar parts and components were explained for patients. In the second session that was held after one day, music alphabet was taught to them. In the third session, the names of right and left hand fingers were taught to them with music language. The fourth session was allocated to introduce the names of guitar wires.

In the fifth session, the sitting position and the way of holding guitar in hand were taught to them. In the sixth and seventh sessions, major and minor accords were introduced to them. The eight sessions was related to put left hand fingers on the guitar handle wires. In the ninth session, plying major and minor accords that were introduced to them were taught. In the tenth session, concordance between left and right hands and playing guitar were taught to them. The eleventh and twelfth sessions were

allocated to exercise playing the requested music by patients. Meanwhile, at the end of each session, the paper related to that session was given to them and they were asked in the next session. After ending the twelfth session, the participants of both experimental and control groups were evaluated in the stage after test again by Kim Karsd memory test and Toloz-Pearon square test. In order to analyze data, multivariable covariance analysis method (MANCOVA) was used.

3. Results

As the results of Table 1 show, the mean of control group and experimental group in pre-test of male sensory memory (1.26 in comparison with 3.23) is not very different, but in average scores of post-test in this group (1.40 in comparison with 5.56) obvious difference is seen and this difference is in favor of experimental group concerning active memory, the mean the control and experimental groups in pre-test (1.80 in comparison with 4.66) there is not considerable difference and this difference is in favor of experimental group. Moreover, in long-term memory, the mean of control and experimental group in pre-test (2.46 in comparison with 4.9) there is not considerable difference, but in the average scores of post-test in this group (2.53 in comparison with 10) there is considerable difference and this difference is in favor of experimental group. Concerning attention, the mean of control and experimental groups in pre-test (9.68 in comparison with 9.80), there is not considerable difference, but in the average scores in post-test of this group (14.96 in comparison with 30.86) there is considerable difference that is in favor of experimental group.

As it is seen in Table 2, the meaningful levels in all tests indicate that between tests mean concerning two groups of post-test control and experimental between long-term active sensory memory and attention of schizophrenic men, there is meaningful difference, and it should be noted that wilk's lambda test with amount equal to 0.317 and $F=13.45$ indicates meaningful difference between long-term active sensory memory and attention of schizophrenic men concerning two groups of post-test control and experimental in the meaningful level of 0.05. As the results of the above table shows, the amount of F in sensory memory is equal to ($p=0.001$ and $F=27.20$), active memory is equal to ($p=0.001$ and $F=32.56$), long-term memory is equal to ($p=0.001$ and $F=47.93$). Attention and precision is equal to ($p=0.008$ and $F=27.20$) indicates that the difference between two control and experimental groups on the music effect in the level of ($p=0.05$) is meaningful.

Table 1 Description of memory and attention findings in male schizophrenic patients

Post-test		Pre-test		Number	Group	Sensory memory of male patients
Standard deviation	Mean	Standard deviation	Mean			
1.1	1.40	1.08	1.26	15	Control	
2.85	5.56	2.4	3.23	15	Test	
2.1	1.80	1.4	1.80	15	Control	Active memory of male patients
3.1	7.44	3.4	4.66	15	Test	
3	2.53	2.7	2.46	15	Control	Long – term memory of male patients
2.8	10	3.8	4.9	15	Test	
13.9	14.96	11.3	9.68	15	Control	Attention of male patients
16.6	30.86	7.7	9.80	15	Test	

Table 2 the results of Multi – Variable Covariance Analysis (MANCOVA) on the scores of long – term active sensory memory and attention of schizophrenic men

Meaningful level	Freedom degree error	Freedom degree hypothesis	Test F	Amount	Variables
0.001	25	4	13.459	0.683	Pillais Trace
0.001	25	4	13.459	0.317	Wilks Lambda
0.001	25	4	13.459	2.153	Hotellings Trace
0.001	25	4	13.459	2.153	Roy's Largest Root

Table 3 The results of One- way Covariance Analysis (MANCOVA) on the scores of long – term active sensory memory and attention of schizophrenic men.

Meaningful levels	Test F	Squares mean	Freedom degree	Total squares	Variables	
0.001	27.201	130.208	1	130.208	Sensory memory	Scores
0.001	32.552	239.136	1	239.136	Active memory	
0.001	47.937	418.133	1	418.133	Long – term memory	
0.008	8.061	1896.075	1	1896.075	Long – term memory	
		4.787	28	134.033	Sensory memory	Error
		7.346	28	205.697	Active memory	
		8.723	28	244.233	Long – term memory	
		235.213	28	6585.967	Long – term memory	
			29	264.242	Sensory memory	Total
			29	444.834	Active memory	
			29	662.367	Long – term memory	
			29	8482.042	Long – term memory	

4. Discussions

As it was said in the results, both mentioned hypotheses were approved. The research findings approve the theory of (Lipe, 1995; Cash, 1997; Corkerton, Morros & Norman, 1997) who believed that a song melody is sometimes facilitating learning and remembrance and subjects can be remembered when they are heard rhythmic. Moreover, research findings approve the theory of (Chiho & Chun, 2003) who believed that music teaching with regular and systematic method concerning memory processing is effective. Moreover, these findings approve the theory of (Collier, and Logan, 2000) who believed that the performance of short – time memory by applying auditory rhythmic stimulations is better than when visual stimulations are used. Moreover, these findings were matched with the research of (Boso, Emanuele, Mineazze, 2007) who showed that music teaching program in active and passive music therapy sessions can increase the music skills in adults who have been affected by acute autism. The present research is matched with the findings of (Silverman, 2003) who concluded that music is considerably effective in order to overcome and fight with the signs of actual mental disorder.

This research approve the findings of (Ceccato, Caneva & Lamonaca, 2006) who investigated and examined the evaluation of possible effects of especial music therapy protocol on especial performance of attention and memory in schizophrenic patients and concluded that the performance of those people who were exposed to especial music therapy protocol was considerably recovered concerning memory scores and kesler and life skills. The present research approve the findings of (Hayashi, Tanabe, Nakagawai, 2009) who investigated and examined the evaluation of music therapy efficiency for in – patient schizophrenia and comparison of groups indicated that considerable advantages have been discovered in those patients who participated in music therapy sessions in some evaluations concerning personal mediator and intangible concept of participation in group signing activity. This research approved the findings of (Moonfai, Angela, & Esther et al., 2009) who studied the effect of music on the depression levels and physiological reactions in old adults and concluded that music listening can facilitate not expressed feeling and allows that persons' internal feelings will be expressed without fear. Moreover this research was matched with the researches of (Baker, Wigram, Stott, 2008) that were performed concerning study of tone making therapy in music therapy and indicated that making poetry frequently cause dominancy experience, increase of self – confidence, elevation of self-respect, selection and making decision, self-

feeling development, remedy-seeking story telling, recognition gaining or illumination of thoughts and feelings. The present research was matched with findings results of (Hitchen, Magee, & Soeterik, 2010) who studied and examined music therapy in order to cure patients with behavioral nervous disorders due to brain damage and indicated that music therapy may be effective in decrease of anxiety and stress and overcoming the problems and developing positive behaviors in the groups with behavioral and nervous disorders.

The research was matched with the research of (Tang, Yao, & Zheng, 1994) who studied the effect of music therapy in schizophrenic patients and indicated that patients who have received active or passive (listening to the music) music therapy in addition to standard care have decreased the negative signs of disease considerably and have increased their ability to make relations with others and have increased their level of interest to the external events. This research approved the findings of (Thout, 1989) who studied the effect of music therapy interferences on self recognition changes in relaxation situation, behavior and mood, feeling and thought, recognition in mental imprisoned patients and indicated that there is considerable change in self – recognition evaluations in all scales after music therapy in comparison with before it. This research, also, is matched with the research of (Pellitier, 2004) who showed that music alone and music with the technique of relaxation decreases stimulation considerably, because decrease of stimulation causes more concentration and attention. These findings were also matched with the research of (Silverman, 2006) that studied and examined the recognition and understanding of mental patients about music therapy and other mental teaching programs and indicated that participants have evaluated music therapy constantly as more effective method in comparison with planning in order to show especial mental defect fields. These results were matched with the research of (Jeanyung, Phillip, & Holzman, 1997) who indicated that while inability of compatibility power in suitable motivation and inability in filtering unsuitable motivation are the characteristics of schizophrenia, using music in order to attract their attention to a distinguished subject is very useful. This research was matched with findings of (John & Grohol, 2010) who indicated that exercise performance related to music recovers skills like language learning and nervous links are made during music relations. This research was matched with findings of (John & Sons, 2005) that showed that standard care with music therapy help schizophrenic patients to recover their total mood, mental mood and social function and performance. Moreover, this

research was matched with the work of (Burlison & coworkers, 1989) who concluded that music has concealed stressful stimulations that are interfered with precision and cause more precision. The present research was matched with the work of (Cassidy & Michael, 1976) who indicated that the participants who have received group guitar trainings in comparison with control group without music had better mutual relations with each other. The findings of this research were matched with the study of (Reshef and coworkers, 2010) who indicated progress in sleep concealment and sleep proficiency after relaxation by music in schizophrenic patients. The results of this research is matched with the study of (Nakayama et al., 2009) who indicated that music therapy in rest house situation decreases stress level in patients. Moreover, this research is matched with findings of Silverman, 2010 who showed that the participants who remembered the numbers rhythmically in comparison with the participants who remembered numbers through intonation were precise. The findings of this research is matched with the study of (Choi, 2010) that indicated the considerable effect of music relaxation on anxiety, tiredness and life quality in the family members of rest house patients who looked after them. The results of this research were matched with the findings of (Sullivan, 1998) who indicated the effect of music on attention also musical games in order to help schizophrenic patients to change attention from one subject to another. Moreover this research was matched with the findings of (Wolfgram, 1978) who indicated that music therapy for retarded adults with mental disorder develops occupational skills, academic skills and social skills. In the present research, the efforts were allocated to recover the memory and attention of schizophrenic patients through music training. In this research, schizophrenic patients were taught to learn music in groups and cooperate with each other. The type of music training was guitar and they were given a paper daily and they should memorize it for the next day; therefore, they were forced to pay attention and concentrate on the especial subjects and their effort to memorize training papers which were written in very simple language activated their memory and they learned papers eagerly. The precise exercises that were performed with fingers coordination developed their precision. They learned to play guitar although in the elementary level. Their fingers were trembled while playing guitar, while they made their best to control and coordinate their fingers, some of them could not distinguish their left and right hands, each hand fingers training, with especial name for each finger, caused distinguishing left and right hands and learning the name of each finger with musical

language. The patients were careless about all external stimulations while training. The schizophrenic patients in this center want to continue participation in music class. Music training recovered their memory and attention considerably. Even music training increased and recovered their patience and tolerance, so that they participated in post – test stage with unbelievable patience. Their eagerness to take part in music training class is unbelievable.

Now, schizophrenic patients in this center (Dezful Treatment Center) are learning keyboard we hope music therapy with drug therapy can decrease patient's imagination and lack of concentration.

References

- 1 .Baker Felicity;Wigram Ton ; stott David; mcferram Katrina(2008) . Therapeutic songwriting in music Therapy. Nordic journal of music Therapy. 105-123
- 2 .BoSo ,Marianna;Emanuel Eh Zo; Minazzi Vera; Abbamonte Marta ;Polite Pierluigi.(2007). Effect of long-Term Interactive Music Therapy on Behavior profile and musical skills in Young Adults With Server Autism. Journal of Alter active and Complementary Medicine.
- 3 .Burelson, Sharon J Pavid B. Center and haroy n reeves.(1989).the effect of background music on task performance in psychiatric children journal of music therapy.198-205
- 4 .Cash, A.h (1997) Structure in music may influence on cognition. Perceptual and Motor Skills 84.66
- 5 .Cassidy, Michael David (1976).the influence of a music therapy activity upon peer acceptance, group cohesiveness, and interpersonal relation ships of adult psychiatric patient's journal of music therapy.66-76
- 6.Ceccato Enrico, Caneva Paolo , Lamonaca Dario (2006) Music Therapy and cognitive Rehabilitation in schizophrenic patients . Journal of music Therapy vol.15 (2)
- 7.Chi Ho,Y., Chun,M.(2003).Training improves verbal but not visual memory: Cross-sectional and longitudinal explorations in children. Cheung Neuropsychology, 17,439-450
- 8.Choi YK.(2010).the effect of music and progressive mascle relaxation on ahxiety, fatigue, and quality of life in family cavegivers of hospice patiants journal music therapy.47(1);53-69
- 9.Clift Stephen , Hanox Grenville , Morrison I an , Barb Hess , Guntar krewtz , Don stewart. (2010). choral singing and psychological wellbeing ; Quantitative and qualitative Findings From English choirs in a crossrational survey .Jornal of Applied Arts and Health .
- 10.Cockerton, T., Morros , s.,& Norman, D(1997). Cognitive test performance and background

music. perceptual and Motor Skills 85.1435-1438
Music Therapy and cognitive Rehabilitation in
schizophrenic patients . Journal of music Therapy
vol. 15(2)

11. Collier, G., & Logan, G. (2000). Modality
differences in short-term memory for rhythms.
Memory and Cognition, 28, 529-538.

12. Hayashi Naoki, MD PHD ; Tanabe Yoko ;
Nokagawa seishu ; MD , Nogushi Maki ; Lwata
Chikako, Koubuchi, Yumiko ; Watanabe , Michiyo ;
Okui Miho ; Takagi Keiko ; Sugita
Kuniko ; 13. Horiuchi RN Keiko (2009) .
Effect of group musical Therapy on inpatients with
chronic psychoses. Journal Compilation Japanese
society of Psychiatry and Neurology.

14. Hitchen Holly; Magee Wendy L.; Soeterik
Sonja (2010). music therapy in the treatment of
patients with neuro – behavioral disorders
stemming From acquired brain injury. Nordic
journal of music Therapy.

15. Jeonyung Chey , ; and Phillip; Holzman
(1997) . “ perceptual organization in shizo phrenia
: utilization of the Gestalt principles “ Journal of
Abnormal psychology . Vol . 106. No. 4: 530 – 538.

16. John M Grohol, PSY .D (2010) Long-term
Benefits From music therapy. [http:// psychcentral.com](http://psychcentral.com)

17. John Wiley & Sons. ChC (2005). music therapy
can help people with schizophrenia
<http://www.interscience.wiley.com>

18. Kenny, J.T., Freidman, L., & Findling, R.L. (1997).
Cognitive impairment in adolescents with
schizophrenia American journal of psychiatry.
154.1613-1615

19. Leardi , S . , Pietroletti , R. Anyel Ioni , G.
Necozone , S . , Ranalletta, G., & Del Gusto B.
(2007). Randomized clinical trial examining the
effect of music therapy in stress response to
day surgery . British Journal of surgery .94 (8):
943 -7.

20. Lim HA (2010) effect of developmental.
Speech and language training through music on
speech production in children with autism spectrum
disorders. Journal music therapy; 47(1) 2-26

21. Lipe, A (1995). The use of music
performance tasks in the assessment of cognitive
functioning among older adults with dementia journal
of music therapy, 32.137-151

22. Moon Fai; Chan. Engle Ange; Esther Mok ;
Kwah tse . Fionca Ywk (2009) . Effect of music on

depression Levels and physiological responses in
community based older adults. International journal
of mental health nursing volume 18 , number 4 ,
August 2009 , pp. 285-294(10)

23. Nakayama H, Kikuta F, Takeda
H. (2009) effectiveness of music therapy in hospice in
Japan. Journal of music therapy; 46(2) 160-72

24. O'Carroll, R (2000). Cognitive impairment
in schizophrenia. Advances in psychiatric treatment
6, 161-168

25. Pellitier, C.L (2004). The effect of music
on decreasing arousal due to stress : A meta
analysis . Journal of music therapy, 42, 192-214

26. Reshef, Alon; Vadas, Limor; Haliba, Yamit; Ziv, Nao
mi; Kremer, Lana Hainov (2010) The effects of music
relaxation on sleep quality and emotional measures in
people living with schizophrenia. Journal of music
therapy

27. Silverman, M .H. (2006). psychiatric
patient's perception of music therapy and other
psycho educational programming Journal of music
therapy , 43 (2) : 111-22.

28. Silverman, M. J. (2003). the influence of
music on the symptoms of psychosis ; A meta-
analysis . Journal of music Therapy, 40(1), 27-40

29. Silverman MJ. (2010) the effect of pitch
rhythm and familiarity on working memory and
anxiety as measured by digit recall performance.
Journal article music therapy; 47(1); 70-83

30. Silverman, M. J. the influence of music
Symptoms of psychosis : A Meta – Analysis.
Journal of music therapy (2003); XL (1) 27-40

31. Sullivan (1998). Farther for a deficit in
switching attention in schizophrenia; journal of
abnormal psychology. vol. 107:390-398

32. Tang, W. Yao, X., & Z (1994).
Rehabilitative effect of music therapy for residual
schizophrenia. British journal of psychiatry, 165
(supp 1. 24) 28-44.

33. Thaut, M . H. (1989). The influence of
music therapy Interventions on self-rated changes
in relaxation , affect , and thought in psychiatric
prisoner patients , journal of music Therapy , 26 ,
155-166 .

34. Wolfgram, Bonnie J. (1978). Music therapy
for retarded adults with psychotic overlay: Approach;
journal of music therapy: 199-207