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# The effects of music on the negative symptoms of schizophrenia : a project based upon an investigation at Hartford Hospital's Institute of Living, Hartford, Connecticut

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The Effects of Music
on the Negative Symptoms
of Schizophrenia

## ABSTRACT

This study was undertaken in order to examine and present a rationale for the use of music in a Schizophrenia Rehabilitation Program (SRP) for outpatients. It was hypothesized that a positive affective shift can be created in clients participating in group music psychotherapy.

Study participants were enrolled from the SRP at Hartford Hospital's Institute of Living. Sixteen outpatients volunteered to participate in this study. After data collection was complete, effectiveness was determined through direct observation and participants pre and post self-report. In this quasi-experimental design, a paired sample T-test was used to analyze the quantitative results of affective significance. Sessions were examined using thematic analysis to determine qualitative common themes.

According to the study's findings, negative symptoms of schizophrenia, including blunted affect, inability to feel pleasure and lack of interest in engaging or socializing, can be ameliorated with the use of music as a therapeutic intervention. In light of the limited efficacy of current treatments for negative symptoms, there is a significant need for effective psychosocial therapeutic treatment for persons with schizophrenia. Music is an effective tool for social workers to consider when looking at integrating an alternative treatment with this population.

# THE EFFECTS OF MUSIC ON THE NEGATIVE SYMPTOMS OF SCHIZOPHRENIA

A project based upon an investigation at Hartford Hospital's Institute of Living, Hartford, Connecticut, submitted in partial fulfillment of the requirements for the degree of Master of Social Work.

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# CHAPTER I

# INTRODUCTION

The purpose of this project was to identify how music implemented as a therapeutic tool with clients in a schizophrenia rehabilitation program affects the negative symptoms of this often-debilitating disease. This project explored whether some of these symptoms can be ameliorated with the use of music as a therapeutic tool.

Adults living with schizophrenia who require intensive outpatient care frequently demonstrate inhibitions socializing as a result of experiencing "negative symptoms". In addition to socialization difficulties, negative symptoms generally contribute to further deterioration of quality of life.

For many diagnosed with schizophrenia, negative symptoms such as blunted affect, monotone and monosyllabic speech, lack of facial expression, inability to feel pleasure and a disinterest in engaging with people, greatly reduce their quality of life. Music is believed to be an ideal agent for non-verbal expression and for developing social integration and engaging participation (Gaston, 1968). This study examined how music affects these pervasive and persistent symptoms, and improves quality of life.

The majority of literature on effective treatment in schizophrenia is based on pharmacology, psychoeducation, and cognitive/behavioral therapy (Buckley & Stahl, 2007; Granholm et al, 2007; Laughren & Levin, 2006; Marder, 2000). For this

project, I looked at incorporating treatment practices relating to expressive art therapies, and more specifically, music psychotherapy. I looked to the practice and writings of long-term psychiatrist and pioneer music therapist, Ira Maximilian Altshuler. Dr. Altshuler initiated one of the first psychotherapeutic music programs for patients with severe mental illness (Altshuler, 1944). It has been my experience working with this population as a therapist with a baccalaureate in music therapy, that music increases socialization and helps to relieve some of the negative symptoms associated with schizophrenia.

This project identified clinical techniques and methods utilized to facilitate empowerment through the relief of negative symptoms of outpatients undergoing intensive treatment for the disturbances and preoccupations related to schizophrenia. Strategies used in the treatment of schizophrenia will be discussed, and recent advances in psychoneuroimmunology, including music's effects on psychological and neurophysiological processes, will be touched upon.

The following chapters will include a history and review of the literature on schizophrenia and music therapy. Recent studies on the interrelationships among music, the brain, feelings and behavior will be reviewed with a discussion of the theoretical framework of Biomedical Music Therapy, an independent conceptual theory for the definition of music therapy, as well as practice and research. Remaining chapters report the methodology, findings and a discussion of the findings.

# CHAPTER II

# LITERATURE REVIEW

*"Music signifies the principles of liberation in the practice of institutional psychiatry"*
Dr. Ira M. Altshuler, 1944

According to a 1992 National Institute of Mental Health report, it is estimated that one of every five persons in the United States suffers from a mental disorder in any 6-month period, and that one of every three persons suffers a disorder in his or her lifetime. Fewer than 20 percent of those with a recent mental disorder seek help for their problem, according to the report. High rates of comorbid substance abuse and mental disorders were found, particularly among those who had sought treatment for their disorders (Bourdon et al.1992). The lifetime prevalence rate of substance abuse among persons with schizophrenia is 47% (Regier, Farmer, Rae et al., 1990).

Although the illness existed in earlier times under different names, in 1911 Eugene Bleuler, a Swiss psychiatrist, introduced the term "schizophrenia". In German, the term means, "splitting of thought process". Approximately 1 in every 100 people in the United States has this disorder and an estimated 2.5 million Americans are living with schizophrenia today, with over 100,000 new cases diagnosed each year (NIMH, 2009). Schizophrenia ranks among the top 10 causes of disability in developed countries worldwide (Murray & Lopez, 1996).

Men and women are equally affected by schizophrenia. Psychotic symptoms usually emerge in the teens or twenties in men, and in the twenties or early thirties in women. Symptoms may become better or worse at different times in a person's life. The illness occurs at similar rates in various ethnic groups worldwide, regardless of

culture, race, and religion (Mueser & McGurk, 2004). Schizophrenia does run in families. Having a close relative with this disorder increases the risk for developing it. Ten percent of people with a first-degree relative (parent or sibling) who has the illness will develop it. If one identical twin has schizophrenia, there is a 40% to 65% chance that the other twin will as well (Cardino & Gottesman, 2000).

The severity and course of the disorder is determined by three important factors: biological vulnerability (due to an imbalance in brain chemistry caused by genetic factors or early biological risks), stress, and coping skills. There is a wide variation in the manifestation of schizophrenia. Some individuals have psychotic episodes lasting weeks or months with full remission of symptoms between each episode; some experience a more fluctuating course, while others may experience little to no variation in symptoms of the illness over time. At one end of the spectrum, a person has one psychotic episode followed by complete recovery; at the other end of the spectrum, the symptoms are continuous (Schizophrenia, 2009, p. 2).

Several subtypes of schizophrenia exist: Paranoid schizophrenia: delusions and hallucinations, focused on feeling persecuted; Disorganized schizophrenia: disorganized speech (speech that is irrelevant or "off the subject"), disorganized behavior (behavior that is inappropriate or extreme confusion in thinking); and Catatonic schizophrenia: catatonic or unresponsive (What is schizophrenia, 2009, p.3).

Other diagnoses in the schizophrenia spectrum include: Brief psychotic disorder, Schizophreniform disorder, Schizoaffective disorder, and Delusional disorder. Prognosis is difficult to determine, as many factors affect long-term functioning, e.g., medication compliance, premorbid functioning, participation in treatment, and social

support. Consistent with the recovery movement, research is revealing the potential for significant improvement for individuals who receive extensive psychological rehabilitation, including assistance with vocational training, housing, social support and medication management (Corrigan, et al, 2007).

Early intervention and early use of medications lead to better medical outcomes. Antipsychotic medication is typically the recommended initial treatment for schizophrenia. If medication is discontinued, the relapse rate is about 80% within a 2-year period. With continued medication management, only about 40% of recovered individuals will suffer relapses, which can include financial burdens (What is Schizophrenia, 2009, p. 7).

However, the side effects of antipsychotic drugs are an issue that cannot be ignored, and medications require careful monitoring. While some of the side effects are not serious and wear off over time, others are serious and can be permanent, e.g., weight gain, drowsiness, and tardive dyskinesia (TD). Weight gain can lead to hypertension, diabetes and heart problems. TD causes muscle movements usually around the face that a person cannot control or some may tap their feet or rock back and forth. Akathisia is another symptom, which can cause irritability, restlessness and dysphoria. Psychiatrists or pharmacologists should be notified immediately of any adverse effects from medications (What is Schizophrenia, 2009, p. 9).

The need to understand and utilize more effective treatment practices within this population is well warranted as the excess costs to treat this debilitating illness are creating an economic burden (Wu et al 2005). This is detailed in the 2005 report (McEvoy, 2007):

> The overall U.S. 2002 cost of schizophrenia was estimated to be $62.7 billion, with $22.7 billion excess direct health care cost ($7.0 billion outpatient, $5.0 billion drugs, $2.8 billion inpatient, $8.0 billion long-term care). The total direct non-health care excess costs, including living cost offsets, were estimated to be $7.6 billion. The total indirect excess costs were estimated to be $32.4 billion. CONCLUSION: Schizophrenia is a debilitating illness resulting in significant costs. The indirect excess cost due to unemployment is the largest component of overall schizophrenia excess annual costs (p. 1122).

Some diagnosed with schizophrenia have found alternative solutions as in the movie, *A Beautiful Mind*. Nobel prize-winning mathematician John Nash, portrayed by Russell Crowe in the film, has also had a life-long struggle with schizophrenia. Psychologist Gary Fitzgibbon reports a significant rise in patients' well being, "so as opposed to creativity being associated with mental illness it becomes associated with good mental health" (Roberts, 2010, p. 1).

Many persons living with schizophrenia have a certain flair for creativity. Both James Joyce and Vincent van Gogh had schizophrenia-related symptoms in the form of auditory hallucinations. Others included William Blake, August Strinberg, Ludwig Wittgenstein, Albert Einstein, Isaac Newton and Friedrich Nietzsche. The famous ballet dancer Nijinsky and Emily Dickinson reportedly had schizotypal personalities as well as many more creative luminaries (Famous People, 2010 p. 2).

Oscar Levant composed the music for more than 20 movies and steered an astonishingly gifted course through seven manic decades. Levant was a "concert

pianist, film and stage presence, radio and television raconteur, insult wit, and bestselling author" (Kashner & Schoenberger, 1998). During this time he also co-wrote numerous popular songs that made the Hit Parade. Levant was open about his neuroses, was frequently committed to psychiatric hospitals and was considered a genius by many. His favorite line, "I was once thrown out of a mental hospital for depressing other patients", made him the highest paid concert performer of his time. Music, laughter and the arts were Levant's coping mechanisms (Kashner & Schoenberger, 1998). Given the cost and side effects of medication coupled with the tendancy toward radical creativity, music therapy can be an effective choice in treatment for patients with schizophrenia.

*Music Therapy*

The use of music in medicine is not new. As early as 4,000 BC, descriptions of music therapy (MT) appeared in cuneiform writings from Mesopotamia. Studies have shown music's benefits in everything from dentistry to obstetrics (Conrad, 2009). Davis and colleagues (1987) discussed the early writings in Medical Journals & Dissertations including the use of music in the cure of diseases in 1804. "These narratives may have been the initial first hand reports of MT in the USA including depression, schizophrenia and fevers with three personal accounts of the use of music in therapy" (p. 77).

Music as therapy became more recognized as a significant application in the late 1940's when Dr. Ira Altshuler clinically reported on experiments using music with psychotic patients (Podolsky, 1954, pp. 231-240). "Music and Medicine (Schullian & Schoen, 1948) was the first scholarly attempt to address the historical and scientific

aspects of music therapy from Antiquity to the present, and was explicitly intended to promote broader interest in music therapy" (Gouk, 2000, p. 172).

For the past 50 years, studies using music as a psychosocial intervention have revealed cognitive and emotional improvements in participants. Over the last 30 years music's therapeutic and aesthetic applications have been explored with emphasis on the workings of the brain. An area of focus in the past 20 years has been the biological and medical intersections encompassing the neurophysiological effects of music.

Sound waves produced by music travel through the air into the ears and vibrate the eardrums and bones in the middle ear. The brain begins to decode this vibration by transforming the mechanical energy into electrical energy. This signal travels to the cerebral cortex, the center for thought processes, perception and memory. The auditory section forwards the message for emotion, arousal, pleasure and creativity. People with schizophrenia have a lower amount of dopamine receptor genes in the thalamus and this may ignite a creative spark (Boso et al, 2006). Meanwhile, the electrical cue also notifies the hypothalamus that controls heart rate, respiration, stomach and skin nerves. This complex communication occurs faster than a single heartbeat. The signals are then converted to hormones before traveling through the blood stream (Bonny, 1986; 1990).

One of the intricacies of psychiatric music therapy is the clinical objective, which tends to vary considerably. These variants depend on the clients, situation, other psychosocial programming being offered, and diagnosis, presenting problem, duration in the program, functioning level and agency logistics. Traditional goals

noted within the literature include managing positive and negative symptoms, teaching coping skills to facilitate the client's return to the community, exploring community resources, problem solving, effective use of time, dealing with stress, communication and the development and maintenance of work related skills (Wolfe, 2000).

Biomedical Music Therapy is a theory that was first introduced approximately twenty years ago by Dr. Dale B. Taylor (Taylor, 1997). This philosophy uses the neuro processes of the brain to explain why music affects us physically, emotionally and cognitively. Certain changes take place to reach therapeutic goals based on the effects of music on the human brain in the musical experience. The music is causing changes in the neuro impulse patterning in the brain. The neuro patterns are constantly being reestablished and restored in the brain and these processes can be affected by music (Kern, 2006, p. 1).

In 1993, The Institute for Research at the University of Texas opened a Neuro-Musical Research Center to investigate verbal reports and physiological measures of the musical brain. The musical brain consists of an extensive neural system involving widely distributed, but locally specialized regions of the brain. This is a very resilient system including motor, cognitive and affective components. Hodges (1996) discussed the healing effects of music and how recent advances show how different forms of emotions in response to music are consistent across gender, race, culture and time (pp.260-263).

As interdisciplinary projects continued to flourish, the International Society for Music in Medicine was founded for research and the application of the effects of music in medical/clinical settings (Hodges, 1996). Reports on the prevalence of the effectiveness of music as a treatment modality have been noted in hospitals internationally (musictherapy.org; supporting music therapy, 2010, p.1).

Dr. Claudius Conrad (2009) studied how the vibrations of stringed instruments appeared to mesh with the energy of the heart, small intestine, pericardium, thyroid and adrenal glands. His recent study found blood pressure and heart rates are eased with music along with the need for fewer sedatives. The most surprising result was a 50% spike in pituitary growth hormone, which is known to stimulate healing. "Music has been part of medicine since the beginning of cultural history,'' Conrad said. "However, the precise physiological mechanisms by which music might achieve this therapeutic benefit have not been elucidated. The music can be a unifying element that makes people work toward one goal: the optimal outcome for the patient'' (Conrad, 2009, p.2).

Music therapy has been implemented to cue memory recall in Alzheimer's patients (Ochsner Ridder, 2004). Music has been used as an effective communication with singing or active listening techniques to increase expressive language in rehabilitation settings (Pavlicevic et al, 1994). Neurological improvements have been reported using musical stimuli in Parkinson's disease (Pacchetti et al, 2000). Therapists have used music to manipulate biomedical reactions as in immune responses and stress hormones (Pelletier, 2004). Depression improvements for psychiatric inpatients using music (Hsu & Lai, 2004) and depressed women in Taiwan

(Yu-Ming Lai, 1999) have also been reported.

Specifically regarding patients with schizophrenia, music therapy has been shown to improve mental state, negative symptoms and social functioning in the acute care hospital setting (Gold et al, 2005). However, little research exists about the effective interventions used in intensive outpatient programs, and more research needs to be conducted to include therapy relevant to this population. More directly, research is needed to explore and highlight the manner in which clinicians can effectively engage clients who struggle with the negative symptoms of schizophrenia and empower clients to lead more productive lives.

A study conducted in 2002 in China found that music therapy was associated with reductions in general symptoms, such as depression and anxiety, and the negative symptoms of schizophrenia (Zhongguo et al, 2002). Another study of note was executed in Japan in 2002 and examined the relationship between the use of group music therapy and alleviation of symptoms associated with schizophrenia including psychosis. After 34 long-term patients received 15 group music therapy sessions, each was measured for levels of psychotic symptoms, quality of life and subjective musical experiences. Significant changes were measured in the group after receiving music therapy, especially in the area of interpersonal relations (Hayashi et al, 2002). Symptom alleviation was temporary in this as well as other studies, but further research in the area is underway and many are hopeful that music can be combined with other traditional therapies to help ease some of the more chronic symptoms of schizophrenia.

Research conducted in 2006 in London witnessed a positive effect when music therapy was administered along with standard drug therapies. This was an exploratory randomized controlled trial of music therapy for inpatients with schizophrenia (Crawford, 2006). This particular study utilized an active form of music therapy whereby the patients were given access to musical instruments of their choice and allowed to express themselves. The attending therapist accompanied them initially and tracked their emotional expression in musical terms. She then gave the patients an opportunity to express themselves freely and without her interaction. Their emotional states were then observed and noted by hospital staff. Although the positive effects of the treatment were temporary, music therapy did help to alleviate some of the symptoms of decreased socialization that tend to be more resistant to drug therapies.

Ulrich and colleagues reported significant effects of music therapy were found in acute care patient's self-evaluation of their psychosocial orientation and negative symptoms. Thirty-seven patients with psychotic disorders were randomly assigned to an experimental group and a control group. While the control group reported little to no improvement, the group involved in musical activity reported diminished negative symptoms and improved interpersonal contact (Ulrich et al, 2007).

Researchers have attempted to compare different types of music interventions to differentiate effects and gain support for a particular type of intervention (Crawford, 2006; Hayashi et al, 2002; Pavlicevic et al, 1994; Tang & Jheng, 1994). Thus far, results have been inconclusive and do not indicate that one intervention is more effective than another. When individual music therapy interventions are compared, the result is typically that no significant difference is found, although it seems that some

intervention is better than no intervention at all (Hogarty, 2002). Researchers have also compared different types of music therapy interventions within various psychiatric populations. Many interventions have shown positive results with various dependent variables. Specific outcomes have included reduced muscle tension, decreased anxiety, increased motivation, and improved self-image. (Jones, 2005; Maultsby, 1977: Pfeiffer et al, 1987; Silverman, 2007; Thaut, 1989).

### *Background*

For the past decade there has been an increasing interest in developing psychotherapeutic methods for treatment in rehabilitation for individuals with schizophrenia spectrum disorders. The Schizophrenia Initiative at the Institute of Living (IOL) in Hartford offers services for individuals with schizophrenia and related disorders at various levels of need. Throughout a previous internship at the IOL's Family Resource Center, I conducted a song writing music therapy skills group within the Schizophrenia Rehabilitation Program (SRP). The music therapy method used was an improvisational technique, inspired by my undergrad experience at Berklee College of Music as a music therapist working with patients at McLean Hospital in Belmont MA. This present study was developed as a parallel process while working on a Master of Social Work (MSW) degree as an MSW Intern and as a Treatment Manager in Child & Adolescent Inpatient Services at the IOL.

Psychotherapeutic music therapy involves both active and receptive methods. The most frequently used form is the active approach, but some patients with schizophrenia who may be symptomatic find active improvisational music therapy difficult, as they are expected to perform actively and also to reflect upon their actions.

For these reasons, I utilized an open ended and experiential improvisational method as an integrative form of music therapy rather than focusing on a strictly structured active or receptive form.

The National Institute of Mental Health in collaboration with Mt Sinai School of Medicine and National Association of Mental Illness (NAMI-CT) have partnered with the Institute of Living (IOL) in a campaign that encourages outpatients with schizophrenia to participate and utilize multidisciplinary interventions while helping to diminish the stigma and negative feelings they may experience with the label of schizophrenia. This study is in alignment with prior research showing how using music as a diverse and universal intervention can bridge many gaps (Aldridge, 1993).

> *Music therapy is a well-established allied health profession similar to speech, occupational and physical therapy. It consists of using music therapeutically to address physical, psychological, cognitive and/or social functioning. Because music therapy is a powerful and non-threatening medium, unique outcomes are possible. In music therapy, each individual is provided support and encouragement in the acquisition of new skills and abilities. Because music touches each person in so many different ways, participation in music therapy offers opportunities for learning, creativity and expression that may be significantly different from more traditional educational/therapeutic approaches. (Music therapy makes, 2009, ¶ 2).*

Historically, music has been used to engage patients in productive and meaningful activity by ameliorating the symptoms of their illness. Music permeates our society and culture making it a familiar and non-threatening environment for intensive outpatient therapy. The results of the hypothesis that music can create a positive affective shift in patients with schizophrenia will be revealed in the following chapters.

# CHAPTER III

# METHODOLOGY

## *Sample*

The study sample was enrolled from the Hartford Hospital's Schizophrenia Rehab Program that is presently being conducted throughout the Institute of Living. Participants in the study were recruited through their treatment managers or other staff members in the program. All participants were intensive outpatient program members receiving group psychotherapy who were asked to volunteer for this project. During this contact, participants had the opportunity to ask questions before joining the group project. Inclusion criteria were a diagnosis of a mental illness on the schizophrenia spectrum, stabilized on medication, an ability to concentrate for at least an hour, and the likelihood of contributing actively to the group process. Exclusion criteria were a diagnosis of any personality disorder that might prevent appropriate participation, and impaired ability to concentrate. Any intoxicated, unruly, disruptive or violent subject was excluded from the study. Sixteen individuals volunteered for the project with 14 members from the Schizophrenia Rehabilitation Program of Hartford Hospital's Institute of Living participating.

## *Protection of Participants*

Procedures to protect the rights and privacy of participants as well as any potential risks or benefits of participation were outlined, documented and signed by all participants before participation began (See Appendix C). Support systems were already in place with the agency to help reduce any potential risks of harm. A letter of

approval of ethics and confidentiality was obtained in concordance from the Schizophrenia Rehab Program. Ethics approval was obtained according to Federal Regulations from the Institutional Review Board (IRB) of the Hartford Hospital (See Appendix A). All participants gave their informed consent before entering the study (See Appendix B). The final research received approval from the Hartford Hospital Research Committee (See Appendix M).

### *Intervention*

A previous project protocol (Corbin, 2009) "Hope & Unity @ The SRP", conducted by this investigator as MSW Intern was used to devise a program of 4 group sessions consisting of an introductory and concluding session for 6-12 clients within the Schizophrenia Rehab Program at the Institute Of Living. During the therapy sessions, facilitators attempted to elicit active participation from group members using musical instruments and familiar songs. All sessions were held in a group therapy room to which the patients were accustomed. The procedure consisted of a series of interactions with group members and a client-centered, collaborative approach was used to engage the group therapeutically. A hello greeting song was used to engage members beginning the session. Therapy involved activities such as singing, playing instruments and discussing song lyrics.

In the initial activity, group participants discussed song-writing themes of their choice and members expressed feelings surrounding the lyrics of the songs. Improvisation and timing, together with attentive listening, were important components that helped to guide the interventions that were utilized for each session.

Utilizing a client-centered approach yielded positive results such as improved self-image and increased socialization. The Co-Facilitator as Treatment Manager and LCSW reviewed the clinical notes after each session.

### *Assessments*

Objective reports: This Investigator as Music Therapist and the Co-Investigator as Treatment Manager, through direct observation using an event recording system (See Appendix F), determined the effectiveness of the therapy. Observations began as the participants entered the room. The Facilitator and the Co-Facilitator described the behavior and interactions of the subjects in the clinical notes.

*Qualitative data:* Qualitative data were obtained during the sessions through the use of semi-structured group interactions in which facilitators sought information about what it was like to be a part of the project and how social skills were enhanced. The Investigator conducted the structure of the sessions with assistance from the Co-Investigator and questions were shaped by the participants' responses in the group as well as analysis of activities including song lyric themes, favorite artists and program cohesion. Various themes were analyzed for content and commonalities, and participants were asked to clarify statements as necessary. Responses were transcribed verbatim. Audio recordings of sessions were made as this allowed for more accurate data collection and freed the principal investigator to attend completely to the intervention with participants (Patton, 1990). Feedback was solicited from participants to further develop the intervention with guiding questions. This approach was meant to improve the reliability and validity of the data (Patton, 1990).

*Quantitative data:* Ratings of each participant's subjective emotions was obtained immediately before and after each therapy session through a scale that uses a series of line drawings depicting faces to visually represent a spectrum of emotion from happy to sad (with 0 indicating very happy to 5 indicating very sad). Participants were asked to pick out the face that best described the way they were feeling immediately before and after each therapy session (See Appendix D & E).

### *Analysis*

*Quantitative data:* Descriptive statistics were used to describe the demographic characteristics of the sample. In this quasi-experimental design, a paired sample T-test was used to analyze the change in participant's subjective emotional ratings obtained using the line-drawing scale before and after each therapy session (Vassar, 2010, p.1).

*Qualitative data:* Written transcriptions from the music therapy sessions containing significant statements from participants were analyzed and each session was organized into themes. Content analysis was used to identify themes. Data from the groups was analyzed and thematically coded according to patterns that emerged using open coding, the process of examining and categorizing data (Strauss & Corbin, 1998).

Themes emerging from the content analysis are discussed in relation to the clinical notes and observations of clients' behaviors during the therapy sessions in order to arrive at conclusions regarding the effect of the musical sessions upon clients' moods and social interactions.

# CHAPTER IV

## FINDINGS

Sixteen members of the program volunteered with fourteen members in total participating. This number represented approximately 40% of the program membership. The 14 participants included 11 men and 3 women; ages ranged from 20 to 57 (mean = 34), 3 African American Males, 7 Caucasian Males, 2 Caucasian Females and 1 Asian Female. The principal diagnoses were Schizophrenia Paranoid type *(n=8),* Schizophrenia Undifferentiated type (*n=4*), and Schizoaffective Disorder, Bipolar Type (*n=2*). Medications prescribed included Haldol, Thorazine, Clozaril, Geodon, Risperdal, Seroquel and Zyprexa. Four group sessions were held to complete the project; *n=10* members in group one*, n= 6* members in group two, *n=7* members in group three, and *n=10* members in group four.

### *Quantitative Data Analysis*

Paired Sample T tests (See Appendices G-K) were run for each group for the pre and post self report of mood: The effect of the independent variable music on the dependent variable affective state. Participants' mood conditions were recorded before the intervention and after the intervention. Each participant participated in both conditions with each condition separated by 45 minutes. For all four groups, the music intervention significantly improved the affective state of participants (See Table 1).

***TABLE 1***

| Groups | Pre | Post |
|---|---|---|
| Group 1 * t (9)=3.67 | **M=2.20 SD= 1.03** | **M=1.60 SD= 0.69** |
| | | |
| Group 2 * t (5)=5.00 | **M=2.83 SD=1.47** | **M=1.17 SD=0.81** |
| | | |
| Group 3 * t (6)=4.38 | **M=2.14 SD= 1.07** | **M=1.00 SD= 0.48** |
| | | |
| Group 4 * t (9)=4.00 | **M= 2.10 SD= 0.74** | **M=1.30 SD= 0.74** |

***p < .01***

*Group 1*

There was a significant difference in the scores for Independent Variable (IV) level 1 (M= 2.2, SD= 1.03) and Independent Variable (IV) level 2 (M= 1.6, SD= .69) conditions; t (9) = 3.67, p = .003.

*Group 2*

There was a significant difference in the scores for IV level 1 (M= 2.83, SD= 1.47) and IV level 2 (M= 1.17, SD= .81) conditions; t (5) = 5.00, p = .002.

*Group 3*

There was a significant difference in the scores for IV level 1 (M= 2.14, SD= 1.07) and IV level 2 (M= 1.00, SD= .58) conditions; t (6) = 4.38, p = .002.

*Group 4*

There was a significant difference in the scores for IV level 1 (M= 2.10, SD= .74) and IV level 2 (M= 1.30, SD= .48) conditions; t (9) = 4.00, p = .001.

Analysis of the combined participation revealed a significant difference in the scores for affect before music (M=2.27, SD=1.04) and after music (M=1.30, SD=.64) conditions; t(32) = 7.65, p= .0001. These results suggest that the effects of music can improve the negative symptoms of schizophrenia. Specifically, the results suggest that music can create a positive affective shift in patients with schizophrenia.

*Qualitative Data Analysis*

Principal themes with a sample of participant quotes that emerged were:

1. Coping with negative symptoms "The voices are gone."
2. Relaxing with Music "I feel less stressed out."
3. Confidence and Achievement "Wow, I didn't know I could sing."
4. Hope and Unity "We should form a band together."

A list of songs that were requested, discussed and performed included:

1. Stir it Up – Bob Marley
2. La Bamba - Ritchie Valens
3. Twist and Shout- The Beatles
4. One Love - Bob Marley
5. Oye Como Va - Santana
6. People Get Ready- Chambers Brothers
7. Here Comes the Sun- The Beatles
8. Hope & Unity @ The SRP Composed by the SRP Ensemble

Group members chose the direction of each group and it was their choice to embrace the ambiance of each session. Some chose to engage in the music as a listening activity while others tried different percussion instruments of choice. Music making is an activity that often recruits a large number of disparate brain regions causing the same kind of 'high' we experience whenever we do anything that requires a great deal of skill and focus (Levitin, 2007). Neuroscientist and record producer, Daniel Levitin posited that performing music as a group typically causes the release of

the hormone oxytocin which is involved in generating feelings of trust and bonding (Levitin, 2007). As the group process continued in sharing the same chemical bond that the music provided, members appeared to reach a state of heightened awareness and well being.

There did not appear to be an overstimulation for any group members. Music can facilitate regression for those who may have feelings of a false self or ambivalence over intimacy. This did not appear to happen during the sessions and all group members seemed to evolve to a healthy connection and experience in the group therapeutic process.

Providing a structured reality based music experience appeared to help members to divert from neurotic concerns. One acutely psychotic member was able to engage in music although she was unable to participate in other groups. Another symptomatic member with extreme paranoia was able to calm within a few minutes of playing music. Participating in familiar songs appeared to help reduce tension, decrease anxiety and promote positive identity and self esteem.

The results of the group themes reflected how music can provide opportunities for a safe group and creative musical experience. The members were encouraged as evidenced by their interactions and contributions to the group experience. The experience of music helped members to address how to interact with their environment and examine how they affect their environment. The participants were able to cooperate, share and respond to other group members needs.

## *CHAPTER V*

# DISCUSSION

### *Findings*

The evaluation of the group intervention found strong positive effects for improved mood and increased socialization. Why the intervention produced such positive effects in such a limited time frame invited some speculation. One likely factor was the readiness of participants to be involved in music making, as it is not a regular treatment option. Indicators of the readiness to participate were statements like "awesome" and "this is way cool"; participant's self report scores, and the facilitators observations of members eagerness to participate. Support for the intervention effectiveness rather than the self report and subjective observation in providing positive results, was provided by the consistent stability of the mean post scores for individual group members and collectively.

During the group process, participant's involvement with expressing similar choices seemed to help members by removing inhibitions. These similarities in choice helped to provide and establish connections with other members in the program. While 'in the zone', some would say this appears to involve the neurotransmitter dopamine, which is involved in the maintenance of attention and mood regulation. Others would speculate that schizophrenia is related to an overabundance of dopamine or a deficit in a filter for screening out stimuli (Couture et al 2006). In the present study, the

participant's choice whether or not to attend the music therapy group was seen as an important component for fostering independence and empowerment.

One particular and curious phenomenon of note included the experience of one member who attended every session; the first three sessions as an active listener and the last session as active participant, appearing to be playing in his own imagery (Bonny, 1975; Hammer, 1996). At the start of each group, he appeared anxious with resistance by stating, "I don't sing or anything so I am not going to be in the group". With encouragement towards his much-needed participation as an active listener, he chose to stay and partake in each group process. Winnicott (1977) speaks about the healing that takes place once the client learns to play and initiate creativity.

This particular member seemed to discover himself once his source of creativity (closing his eyes and swaying to the music with brightened affect) was revealed. According to the teachings of Jung (1968) this is central and a validating experience as he was able to participate with the group with his own creative input. When the session ended, he appeared relaxed, while smiling and enjoying the experience of 'a stable musical holding environment'.

### *Limitations*

The author acknowledges that the current literature predominantly discusses prolonged music therapy sessions with a follow up study to determine more effective results. Because no follow up had been conducted at the end of this interventional process, it is not possible to provide an informed non-speculative explanation. The author acknowledges that the present study utilized a small sample (*N=14*). As is the

case with many experiments of limited sample size, replication of the study's original design and treatment is essential. Therefore, it is necessary to be cautious regarding generalized findings.

Participants could not be randomly sampled or assigned to different groups because of the setting limitations and the open-door policy of the group. Therefore no control group was utilized. A possible confounding variable in this study was the group members' participation in motivational exercise groups concurrently with the music group. Additionally, no controls were employed for variance in significant measures.

### *Future Research*

Many questions arose for me during the group interventional process. What do the members think about before, during and after each session? Why do they choose certain instruments over others? What is it like for them to be a part of the music making process? Do they need additional guidance? I wanted to spend more time individually and to process as a group, each session. I realized there was so much more to investigate and I needed to reexamine my role and the realities of the limitations of this project.

A question not only with this study but others prior is the extent to which the positive effects of music on negative symptoms of schizophrenia would be maintained (Gold et al, 2005; Silverman, 2003; Tang et al, 1994; Thaut, 1989; Zhongguo, 2002). There have been similar studies with group intervention for patients with schizophrenia (Covington, 2001; Crawford, 2006; Gold et al, 2005; Tang et al, 1994;

Thaut, 1989; Zhongguo, 2002). As Gold and colleagues (2005) noted, research on the efficacy of music therapy with schizophrenia-like illnesses, shows some benefit in regards to negative symptoms and social functioning, if a significant number of music therapy sessions are provided; and music therapy in addition to standard care has benefits to standard care alone. Another prolonged study with a planned six-month follow up study may pose a better understanding of the intervention's durability.

These limitations notwithstanding, this study offers evidence that group music therapy may be an efficacious intervention for addressing significant psychological needs of persons who experience negative symptoms of schizophrenia. This study also suggests that combining expressive modalities such as writing and musical arts with standard treatment may lead to positive treatment outcomes. The present findings offer evidence that an efficacious and cost effective intervention that is non invasive such as music therapy, could serve as a valuable approach to treatment in schizophrenia rehabilitation programs.

Certainly, further research is warranted, including studies of lasting effects of this phenomenon in society and the potential effects to families. Future studies might include more sessions with a control group included in order to do a comparison study for improved results. Future studies need to include measures that look at comparing other interventions such as cognitive rehabilitation for persons with schizophrenia. The present study indicates that further research on the effects of music on the negative symptoms of schizophrenia-like disorders with larger samples is needed in the field of rehabilitation.

*Reflections*

While conducting this study, encouragement was revealed as an essential support mechanism for self-esteem and group cohesion. Negative as well as positive feedback allowed for the gradual connections of each and every member. Once trust was established, the group was able to flow and connect on many levels. Members began to share and interconnect (Yalom, 1983, 1995). The group was supportive in sharing experiences and offering encouragement to each other. The ambiance became spiritual in a sense with the existence of energies that were created within each being and the group as a whole. Broucek (1987) discussed the potential of music therapy in the process of restoring wholeness. If we consider the field of quantum physics, Eagle (1991) posited there is no separation as in the dual identity of matter hence; each member's participatory action affects the group as a whole.

The beginnings of a follow-up study were already in place and I had to accept the limitations of the present process and provide a steady and safe container for the groups creative expressions. Perhaps 'music as a motivator', 'music speaks when words cannot' or 'music is a barrier breaker' will provide non-speculative data in future studies. In any event, the elevation in mood and positive interactions that were the result of this project, points out the need for further investigation and a more diverse study.

Additional studies of this nature will help to develop a variety of affective therapeutic methods used in intervention for clients diagnosed with schizophrenia while sharing knowledge about integrative practices.

*Implications for Social Workers*

Persons living with debilitating psychiatric disabilities face significant challenges in regards to unexpected gaps in their lives. There is an ongoing need for effective management and positive relationships. This study may provide clinicians with an alternative intervention for integration into their work in the agency and community. This study can build upon existing studies of music therapy inpatient treatment and develop a more dynamic sense of group therapy using music in intensive outpatient programs. There have been few studies in Schizophrenia Rehabilitation Programs using music as a therapeutic agent. This research can help to develop the interest and curiosity of clinicians working with schizophrenia and related psychotherapy groups.

The information gathered from this project and the existing literature will hopefully assist social workers in recognizing the factors that can contribute to better serving this population. This in turn may assist other clinicians in how to most effectively work with individuals with disabling psychiatric conditions. Although this study focused on a specific area of psychiatric illness, it is hoped that the information gathered would inspire and assist multidisciplinary teams working with people who suffer from these as well as other related clinical disorders such as anxiety, addiction, cognitive and mood disorders.

Finally, this study can provide social workers with an affective creative intervention and ideas about how to strengthen outpatient programs for participants with psychiatric disabilities.

## *Final Comments*

Psychiatric disorders can often impair social interaction and social skills. Psychotic disorders may cause poor reality orientation. Participating in music creation can offer a creative means to self-reflection and relating the experience of living with schizophrenia to others, while also serving as a normalizing and creative experience for processing feelings universal to patients undergoing intensive outpatient therapy.

*"If thus the comfort of soothing regression in the form of music is provided, a movement toward the recathexis of memories of friendly voices may be initiated and the musical sounds may, in some cases, become the first emotionally significant representatives of a regained reality."*

*Heinz Kohut, 1957*

*"Schizophrenia beats dining alone"*

Oscar Levant

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***"Music, as a structured envelope of sound, is probably the most effective and safe opener to the doors of the psyche. It reaches beyond personal defenses to the realities and beauties of the person. Music gives access to the discovery of inner strength, uncovers the potential for creativity, and manifests ways in which life can be lived from a center of inner security."***

***Helen Bonny, 1921-2010***

HARTFORD HOSPITAL

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**April 14, 2010**

**Joan Corbin**
**IOL Donnely 2N**

**Institutional Review Board (IRB) - (Assurance #FWA00000601)**

Project Title: **The Effects of Music on the Negative Symptoms of Schizophrenia**
Project **CORB003140HU**
Agenda Date: **4 /15/2010**
Approval Date: **4 /15/2010** Type of Review: **Expedited** Expedited Category: **7 , 6**
Approval Valid Through: **4 /14/2011** Form of Consent: **written**
Status: **Approved**

**Progress Reports: (Please note bolded statement below)**

You will be expected to submit the first progress report 2 /15/2011. The report should include the number of subjects enrolled since the previous report or initiation of the study, as well as a copy of any informed consents obtained. If applicable, a copy of the approved consent is attached. You must use the stamped form to enroll participants.

**Please be aware that you will be expected to provide the composition of the patients enrolled by number of males/females and minorities (Hispanic, Black, Other).**

**Protocol and Consent Changes:**
You will be expected to inform the IRB of protocol or informed consent changes. Any such change must be approved by the IRB prior to implementation, except in cases of emergency, when prearranged with the chairman or his designee.

**Adverse Events:**
You must also notify the IRB immediately of any adverse events that occur to participants as a result of their enrollment as subjects in this study, and of any unanticipated or unusual events (e.g. protocol deviations), even if not directly related to the research, which may have an effect on research subjects.

**Policy Documents:**
Enclosed you will find a copy of the Hartford Hospital's HRPP Policies and Procedures and the Belmont Report for your records. Please be aware that before implementation of this study, you must have Research Committee approval.

Sincerely yours,

Robert D. Siegel, M.D., Chairman
Institutional Review Board

PJ

HARTFORD HOSPITAL

APPENDIX B

# Informed Consent Form

6816

(Hartford Hospital) Principal Investigator: Joan E. Corbin
Child & Adolescent Services
860-545-7915

You have been asked to participate in the research study, The Effects of Music on the Negative Symptoms of Schizophrenia. This research study is expected to last for four sessions of regular skills and motivation groups.

## A. The Purpose and procedures of this research

### A.1. What is the purpose of this research?

The purpose of this study is to better understand if music therapy can improve mood and reduce the negative symptoms of schizophrenia. Negative symptoms can include a lack of emotion, a lack of motivation,, inability to experience pleasure or a lack of desire to form social relationships. You are being invited to participate in this study because you have been diagnosed with schizophrenia.

### A.2. What procedures are involved with participation in this research study?

Participating in this study will include using various musical instruments and song in a group music therapy setting. Each group will have approximately 8-12 participants. The group will meet for 4 sessions over a one month span. You will be expected to join the group in listening and playing music. You may be asked to discuss your thoughts and feelings before and after each music group session. Sharing your thoughts is completely voluntary and not considered necessary to join the group. You may just listen if you decide to participate.

Audio taping: If you give us permission we would like to audio tape your music session. The purpose for audio taping is so we can provide you with a tape to take home with you at the end of the session. We think that having a tape you can listen to at home might be therapeutic for you. If you choose to be audio taped but others in your music therapy group do not want to be, we will not audio tape the lesson out of respect for their wishes. If the group chooses to be audio taped, we will provide everyone with a copy of the tape. The original audio tape will be stored in a locked cabinet in Joan Corbin's office. ***Audio taping is optional and you do not need to be taped in order to participate in the study.*** *If you agree to be audio taped but decide later on that you want the audio tape destroyed, please send a written request to Joan Corbin.* You will not be identified by your name on the tape.

### A.3. Which of these procedures is experimental?

The use of music therapy to reduce the negative symptoms of schizophrenia is experimental.

### A.4. Where will participation take place?

The sessions will take place in the sun room of the Schizophrenia Rehab Program (SRP), located in the Hartford Hospital's Institute of Living, 200 Retreat Avenue, Hartford, CT 06106.

| | | |
|---|---|---|
| Page: | - 1 - | *IRB Use Only.* HH IRB - Approved APR 15 2010 |
| PI: | Corbin | |
| Account #: | CORB003140HU | |
| Version: | 4/6/2010 | |

*Participant's Initials:* ____

## A.5. How long will participation last?

You will be asked to volunteer during regularly scheduled groups for approximately 4 sessions. Each session lasts for approximately 1 hour so your total time commitment for all four sessions would be approximately 4 hours.

## B. The possible risks, discomforts and side effects of the procedures are described below, including safeguards to be used for your protection.

There are no known or anticipated risks that might result from taking part in the research. However, you may find the music therapy sessions to be noisy or boring. You may also find answering questions about your mood to be irritating or annoying. As a safeguard, you do not have to play an instrument if you don't want to and you do not have to answer any questions that you don't want to.

## C. There are possible benefits to you or others to be expected from your participation in this research.

You may expect to receive therapeutic benefits from these sessions. However, we do not guarantee that you will benefit from taking part in this study. Your participation could lead to a better understanding of whether music therapy affects negative symptoms. This, in turn, could lead to better ways to treat schizophrenia. So, it may be possible that others might be helped in the future.

## D. There are alternatives to participation in this study that you should consider.

There are other treatment alternatives available if you decide not to participate in the study. These alternatives can include attending a regular "skills" or "motivation" group at the SRP.

## E. Who can you call if you have questions about this study?

You do not have to sign this consent form until all the questions you have at this time are answered. The investigator is willing to answer any questions you may have about the study procedures. Below is a list of contacts if you should have any questions about the study.

| Questions about: | Contact | Phone # |
|---|---|---|
| the research, research-related treatments, or a research related injury | Joan E. Corbin | (860)545-7915 |
| your rights as a research participant | An IRB Representative | (860) 545-2893 |
| the research in general | Dr. Laurine Bow, Vice President, Research | (860) 545-2893 |

| | | |
|---|---|---|
| a confidential issue you would like to discuss with someone not associated with research | Patient Relations | (860) 545-1400 |

## F. Your participation in the research is voluntary.

You may refuse to participate, or withdraw your consent and discontinue participation in the research at any time. You may do so without penalty, or loss of benefits to which you are otherwise entitled. Your decision whether to participate will not affect your future medical care at Hartford Hospital.

## G. You will not receive financial compensation for your participation in this research.

## H. Your confidentiality will be guarded to the greatest extent possible.

Hartford Hospital will protect all the information about you and your part in this study, just as is done for all patients at Hartford Hospital. Your records will be maintained in accordance with applicable state and federal laws. However, private identifiable information about you may be used or disclosed for purposes of this research project as described in the study's authorization form.

To further protect your confidentiality, any data collected about you will be identified with a code number and not your name. Only Joan Corbin will have access to the master list that links which code number belongs to you. In addition, your name will not appear in any papers or publications that result from this research.

## I. What happens if you are injured as a direct result of your participation in this research project?

In the event that you are injured as a direct result of taking part in this research, you will receive help in the following way:

If you have medical insurance, Hartford Hospital will collect fees for medical treatment at Hartford Hospital from your insurance company. If you are not fully covered by insurance or uninsured, the research sponsor of the study or Hartford Hospital will cover these expenses.

There is no plan for Hartford Hospital to pay for your medical expenses at other hospitals or for pain and suffering, travel, lost wages, or other indirect costs of taking part in this research. You do not waive any of your legal rights by signing this informed consent document.

## J. Signatures

You will be given a copy of this informed consent document to keep. By signing below, it means that you have read it, that you voluntarily agree to participate in this research, The Effects of Music on the Negative Symptoms of Schizophrenia, and that you consent to the performance of the procedures listed above.

---

_____

Participant's Signature Date

_____

*Legally Authorized Healthcare Representative* *Date*

_____

Person Obtaining Participant's Signature Date

---

*Witness signature* *Date*

(A witness is the person observing the explanation of the above information to the participant. A witness to the informed consent process is optional unless presented orally.)

Please indicate below if you give us permission to audio tape your interview:

☐ I agree ☐ I do not agree Participant's signature:_____

---

HARTFORD HOSPITAL

6816

**Research Authorization for Use/Disclosure of Protected Health Information**

Participant Name: _____
D.O.B.: _____
Address: _____
_____

In connection with my participation in the research study described below at Hartford Hospital, I, the undersigned participant, understand that private identifiable health information about me will be obtained, used and disclosed for purposes of the research project. Accordingly, I hereby authorize the use or disclosure of my health information, including, if applicable, protected drug and/or alcohol abuse, confidential HIV-related and psychiatric information ("Protected Health Information") in the manner described herein, for purposes related to my participation in the following research study (the "Research Study"):

*[describe study, such as by title and purpose or by reference to an attached description and consent document]*

The purpose of this study is to collect and analyze clinical data in schizophrenia rehab. This will help to better understand effective interventions for the use in treatment of patients with schizophrenia.

Such purposes shall include all activities related to the conduct of the research study, as well as activities that ensure that my rights as a participant in a research study are being protected and that the research is being conducted properly.

**I. Information Covered by Authorization.** The Protected Health Information that may be used or disclosed in connection with this authorization includes the following: *[check applicable items]*

- ☐ Existing medical records or information accessed by researchers as part of Research Study;
- ☒ Information from interviews and questionnaires conducted as part of Research Study, including medical history;
- ☒ All data obtained during any study procedure;
- ☐ All medical records or reports created in connection with Research Study, such as any radiology reports, lab results, psychological test results, consultation reports, results of physical examinations, summary notes and treatment records;
- ☐ Other *[describe]*:

HARTFORD HOSPITAL

APR 15 2010

APPROVED FOR USE

- Hartford Hospital
- The principal investigator,
- The co-investigators,
- Any researchers or Hartford Hospital staff working under the principal investigator's or any co-investigator's direct supervision

The Protected Health Information may be disclosed to the following *[check applicable items]:*

☒ Hartford Hospital Research Administration or IRB;
☒ Any government agency overseeing this research at HH for which authorization would be required by law;
☐ The research sponsor, ;
☐ My physician, Dr. , for purposes of providing information about my health to my regular physician;
☐ Other researchers for data comparison purposes, provided data used for this purpose is stripped of personally identifying information;
☐ Other *[identify by name or category]*:

**III. Authorization to Access Existing Health Information.** *[Check and complete this section if participation in Research Study will require researchers to access participant's health information from other providers (i.e. not generated as part of Research Study)]*

☐ I hereby authorize Hartford Hospital, the principal investigator and any co-investigators identified in the Research Study to obtain my Protected Health Information from the following providers (list by name):

Name/Facility: _____
Address: _____
Phone (if known): _____

Name/Facility: _____
Address: _____
Phone (if known): _____

Other Facility:

The nature and extent of the Protected Health Information to be obtained from the above-named providers shall be: *[describe or indicate "All health information"]*

**IV. Authorization to Continue Research at New Institution.** *[Check this section if Participant gives permission for research data to be taken to and used at another institution]*

☒ In the event the principal investigator of the Research Study identified above moves his/her research work to an institution other than Hartford Hospital (the "Successor Institution"), by checking this Section IV, I authorize the principal investigator to retain records relating to my participation in the Research Study and further authorize the disclosure of my Protected Health Information to the Successor Institution and the continued use and disclosure of such information by the Successor Institution, the principal investigator and other researchers working under the principal investigator at the Successor Institution in connection with the Research Study as otherwise contemplated above. I understand in such event records relating to the Research Study will no longer be maintained at Hartford Hospital.

**V. General Provisions.** I understand that by signing this authorization I agree to the use and disclosure of my Protected Health Information as described above. I understand that I am not required to sign this authorization, but if I do not sign this authorization I may not participate in the Research Study. My decision not to sign this authorization will not affect my ability to obtain future treatment from Hartford Hospital or any other health care provider named in this authorization, except for any research-related treatment.

I understand that I am entitled to a copy of this authorization form. I agree that a copy of this authorization will be as valid as the original. I understand that I may revoke this authorization at any time by notifying in writing, but if I do it won't have any effect on actions taken prior to receipt of the revocation. If I revoke this authorization I understand that I will not be eligible to continue to participate in the Research Study**.** I also understand that once revoked, Hartford Hospital and the investigators named above may continue to use or disclose my Protected Health Information as necessary to maintain the integrity and reliability of the Research Study. I will send any notice of my desire to revoke this authorization to:

This Authorization *[check one]*:

☒ does not have an expiration date. ***[**do not check if PHI involves HIV or drug and alcohol treatment information]***

☐ shall expire at the completion of the research project.

I understand that under applicable law recipients of my Protected Health Information may not be subject to the federal privacy laws. Consequently, information disclosed under this authorization may be subject to further disclosure by the recipient and may no longer be protected by the federal privacy regulations. Such information, however, may continue to be protected for recipients that are subject to the federal privacy regulations or other state or federal confidentiality laws or contractual confidentiality obligations.

I understand that I may obtain a copy of the Hartford Hospital Privacy Notice for a complete description of the Hospital's privacy practices for protected health information, and that I have a right to review such Notice before signing this authorization.

_____ _____

Participant Signature (or authorized representative) Date

Print Name:

****Note**, if you are signing as the legally authorized representative of the participant, please indicate your relationship to the participant here (this should demonstrate your authority to consent to health care for the participant):

_____

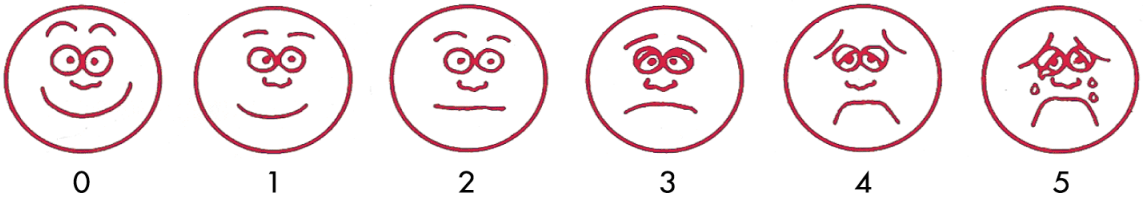
PI:

Account #:

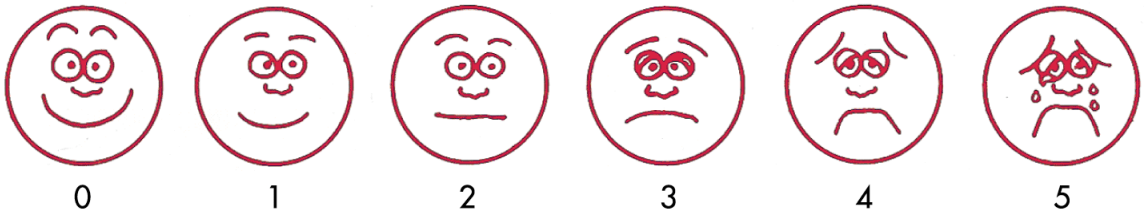
Version:

Appendix D

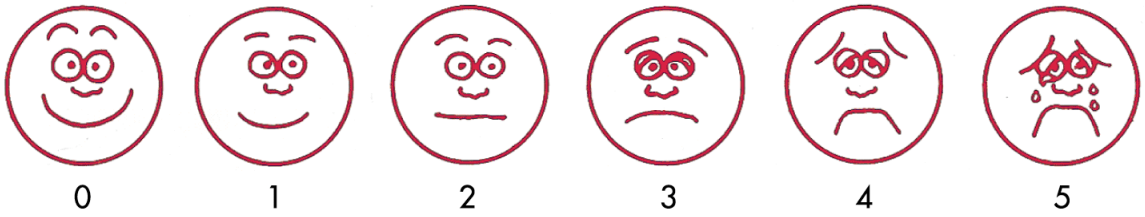
Before Session 1



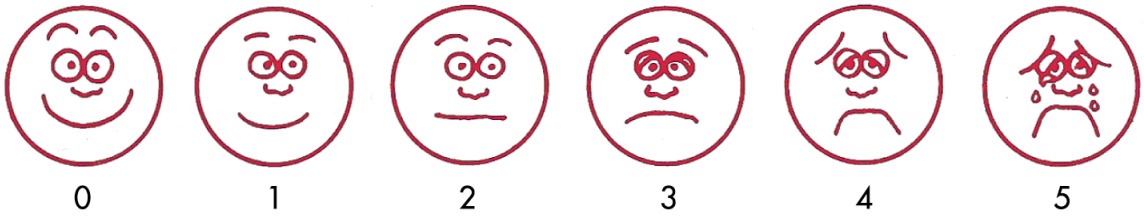

After Session 1



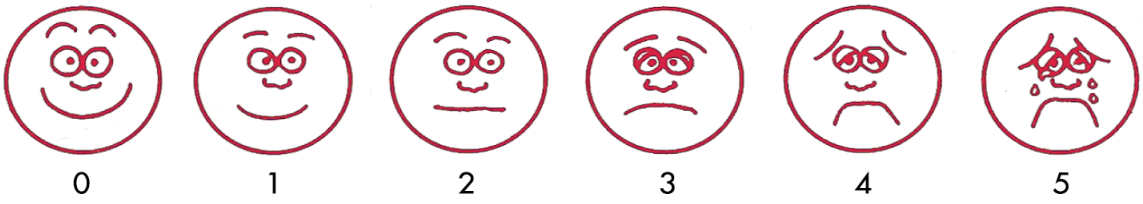

Before Session 2



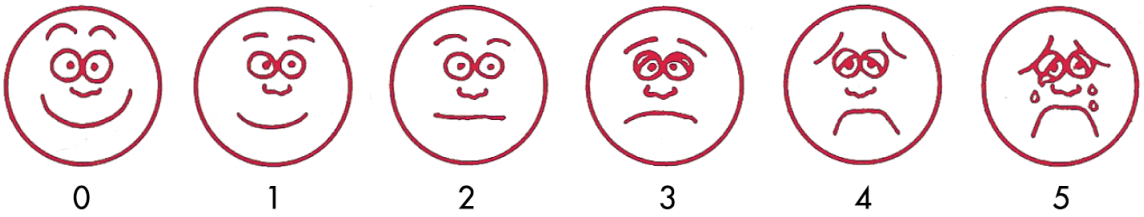

After Session 2



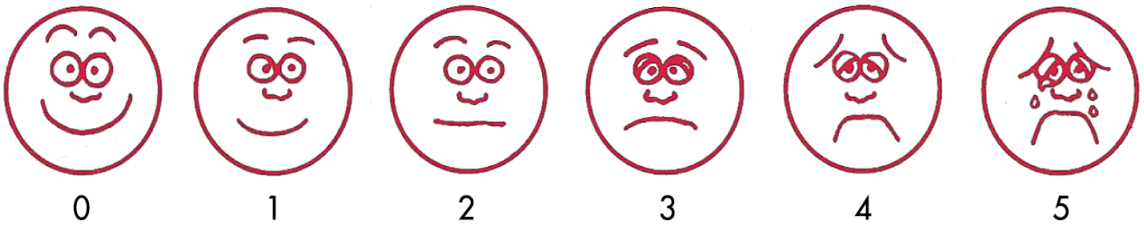
Before Session 3



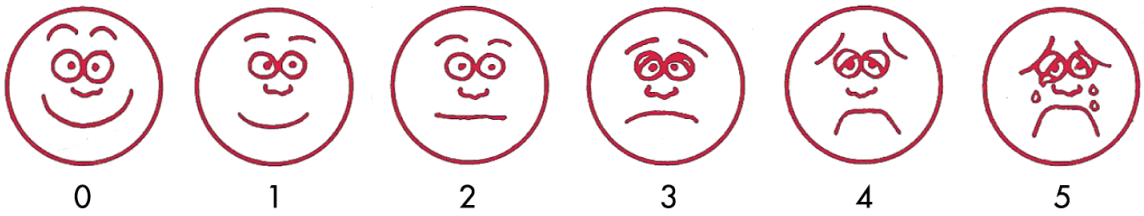

After Session 3




Before Session 4




After Session 4



Appendix F

Participant_____Age__Gender____White__Af/Am*__Latino__Other__

A. Session 1: Start End

| | Affect | Attention | Participation | Affect | Attention | Participation |
|---|---|---|---|---|---|---|
| +5 | | | | | | |
| +4 | | | | | | |
| +3 | | | | | | |
| +2 | | | | | | |
| +1 0- | | | | | | |

B. Session 2: Start End

| | Affect | Attention | Participation | Affect | Attention | Participation |
|---|---|---|---|---|---|---|
| +5 | | | | | | |
| +4 | | | | | | |
| +3 | | | | | | |
| +2 | | | | | | |
| +1 0- | | | | | | |

C. Session 3: Start End

| | Affect | Attention | Participation | Affect | Attention | Participation |
|---|---|---|---|---|---|---|
| +5 | | | | | | |
| +4 | | | | | | |
| +3 | | | | | | |
| +2 | | | | | | |
| +1 0- | | | | | | |

D. Session 4: Start End

| | Affect | Attention | Participation | Affect | Attention | Participation |
|---|---|---|---|---|---|---|
| +5 | | | | | | |
| +4 | | | | | | |
| +3 | | | | | | |
| +2 | | | | | | |
| +1 0- | | | | | | |

Appendix G

HOPE & UNITY @ THE SRP

Going to the SRP ***<u>CHORUS</u> *** **By the SRP Ensemble**

Educational Activities

Stairway to Recovery

With Work Opportunities

We're a Friendly Community

At The SRP

There's Team in the Morning Time
With our Spirit, The Day will Be Fine
We Review What we did Yesterday
And Discuss the Goals we have Today
We Will Grow Each Day You See
At The SRP

With Sports Like Basketball,
Watch out You don't Fall
Layups By the Plenty Fill
Scorin' Points with Lots of Skill
Although we may be Beginners
Don't you Know, We're all Winners
At The SRP ***INSTRUMENTAL***

In Our Day at The SRP
We Work on our Memory
Computers Help Us to Concentrate
As We Focus and Prepare for Work
We're Ready for Vocational Gigs at the SRP *** CHORUS***

Although we May Be Beginners, Don't you Know, We're All Winners, At The SRP
We Will Grow Each Day You See @ The SRP--- We're A Friendly Community At The SRP
There's Hope & Unity At The SRP, Hope & Unity, At The SRP, Hope & Unity, @ the SRP……Fade…

Appendix H

VassarStats Printable Report
t-Test for Correlated Samples
Sun May 09 2010 20:54:55 GMT-0400 (EST)

Values entered:

| count | $X_a$ | $X_b$ | $X_a - X_b$ |
|---|---|---|---|
| 1 | 1 | 1 | 0 |
| 2 | 3 | 2 | 1 |
| 3 | 2 | 2 | 0 |
| 4 | 2 | 1 | 1 |
| 5 | 4 | 3 | 1 |
| 6 | 1 | 1 | 0 |
| 7 | 3 | 2 | 1 |
| 8 | 1 | 1 | 0 |
| 9 | 2 | 1 | 1 |
| 10 | 3 | 2 | 1 |
| 11 | 3 | 1 | 2 |
| 12 | 2 | 1 | 1 |
| 13 | 2 | 1 | 1 |
| 14 | 1 | 0 | 1 |
| 15 | 4 | 2 | 2 |
| 16 | 5 | 2 | 3 |
| 17 | 1 | 1 | 0 |
| 18 | 2 | 1 | 1 |
| 19 | 2 | 1 | 1 |
| 20 | 4 | 2 | 2 |
| 21 | 3 | 1 | 2 |
| 22 | 2 | 1 | 1 |
| 23 | 1 | 0 | 1 |
| 24 | 2 | 1 | 1 |
| 25 | 2 | 1 | 1 |
| 26 | 3 | 2 | 1 |
| 27 | 1 | 1 | 0 |
| 28 | 3 | 1 | 2 |
| 29 | 3 | 2 | 1 |
| 30 | 2 | 2 | 0 |
| 31 | 2 | 1 | 1 |
| 32 | 1 | 1 | 0 |
| 33 | 2 | 1 | 1 |

## Summary Values

| Values | $X_a$ | $X_b$ | $X_a - X_b$ |
|---|---|---|---|
| n | 33 | 33 | 33 |
| sum | 75 | 43 | 32 |
| mean | 2.2727 | 1.303 | 0.9697 |
| sum_sq | 205 | 69 | 48 |
| SS | 34.5455 | 12.9697 | 16.9697 |
| variance | 1.0795 | 0.4053 | 0.5303 |
| st. dev. | 1.039 | 0.6366 | 0.7282 |

Variances and standard deviations are calculated with denominator = n-1.

| $Mean_A - Mean_B$ | t | df |
|---|---|---|
| 0.9697 | 7.65 | 32 |

| | | |
|---|---|---|
| P | one-tailed | <.0001 |
| | two-tailed | <.0001 |

| | |
|---|---|
| Home | Click this link only if you did not arrive here via the VassarStats main page. |

Appendix I

## VassarStats Printable Report
## t-Test for Correlated Samples
Sun May 09 2010 20:20:44 GMT-0400 (EST)

### Values entered:

| count | $X_a$ | $X_b$ | $X_a - X_b$ |
|---|---|---|---|
| 1 | 1 | 1 | 0 |
| 2 | 3 | 2 | 1 |
| 3 | 2 | 2 | 0 |
| 4 | 2 | 1 | 1 |
| 5 | 4 | 3 | 1 |
| 6 | 1 | 1 | 0 |
| 7 | 3 | 2 | 1 |
| 8 | 1 | 1 | 0 |
| 9 | 2 | 1 | 1 |
| 10 | 3 | 2 | 1 |

### Summary Values

| Values | $X_a$ | $X_b$ | $X_a - X_b$ |
|---|---|---|---|
| n | 10 | 10 | 10 |
| sum | 22 | 16 | 6 |
| mean | 2.2 | 1.6 | 0.6 |
| sum_sq | 58 | 30 | 6 |
| SS | 9.6 | 4.4 | 2.4 |
| variance | 1.0667 | 0.4889 | 0.2667 |
| st. dev. | 1.0328 | 0.6992 | 0.5164 |

Variances and standard deviations are calculated with denominator = n-1.

| $Mean_A - Mean_B$ | t | df |
|---|---|---|
| 0.6 | 3.67 | 9 |

| P | one-tailed | 0.0025605 |
|---|---|---|

# Appendix J



VassarStats Printable Report
t-Test for Correlated Samples
Sun May 09 2010 20:32:03 GMT-0400 (EST)

Values entered:

| count | $X_a$ | $X_b$ | $X_a - X_b$ |
|---|---|---|---|
| 1 | 3 | 1 | 2 |
| 2 | 2 | 1 | 1 |
| 3 | 2 | 1 | 1 |
| 4 | 1 | 0 | 1 |
| 5 | 4 | 2 | 2 |
| 6 | 5 | 2 | 3 |

Summary Values

| Values | $X_a$ | $X_b$ | $X_a - X_b$ |
|---|---|---|---|
| n | 6 | 6 | 6 |
| sum | 17 | 7 | 10 |
| mean | 2.8333 | 1.1667 | 1.6667 |
| sum_sq | 59 | 11 | 20 |
| SS | 10.8333 | 2.8333 | 3.3333 |
| variance | 2.1667 | 0.5667 | 0.6667 |
| st. dev. | 1.472 | 0.7528 | 0.8165 |

Variances and standard deviations are calculated with denominator = n-1.

| $Mean_A - Mean_B$ | t | df |
|---|---|---|
| 1.6667 | 5 | 5 |

| P | | |
|---|---|---|
| | one-tailed | 0.002052 |
| | two-tailed | 0.004104 |

| Home | Click this link only if you did not arrive here via the VassarStats main page. |
|---|---|

VassarStats Printable Report
t-Test for Correlated Samples
Sun May 09 2010 20:40:24 GMT-0400 (EST)

Values entered:

| count | $X_a$ | $X_b$ | $X_a - X_b$ |
|---|---|---|---|
| 1 | 1 | 1 | 0 |
| 2 | 2 | 1 | 1 |
| 3 | 2 | 1 | 1 |
| 4 | 4 | 2 | 2 |
| 5 | 3 | 1 | 2 |
| 6 | 2 | 1 | 1 |
| 7 | 1 | 0 | 1 |

Summary Values

| Values | $X_a$ | $X_b$ | $X_a - X_b$ |
|---|---|---|---|
| n | 7 | 7 | 7 |
| sum | 15 | 7 | 8 |
| mean | 2.1429 | 1 | 1.1429 |
| sum_sq | 39 | 9 | 12 |
| SS | 6.8571 | 2 | 2.8571 |
| variance | 1.1429 | 0.3333 | 0.4762 |
| st. dev. | 1.069 | 0.5774 | 0.6901 |

Variances and standard deviations are calculated with denominator = n-1.

| $Mean_A - Mean_B$ | | t | df |
|---|---|---|---|
| 1.1429 | | 4.38 | 6 |
| P | one-tailed | 0.002329 | |
| | two-tailed | 0.004658 | |

# Appendix L



VassarStats Printable Report
t-Test for Correlated Samples
Sun May 09 2010 20:10:28 GMT-0400 (EST)

Values entered:

| count | $X_a$ | $X_b$ | $X_a - X_b$ |
|---|---|---|---|
| 1 | 2 | 1 | 1 |
| 2 | 2 | 1 | 1 |
| 3 | 3 | 2 | 1 |
| 4 | 1 | 1 | 0 |
| 5 | 3 | 1 | 2 |
| 6 | 3 | 2 | 1 |
| 7 | 2 | 2 | 0 |
| 8 | 2 | 1 | 1 |
| 9 | 1 | 1 | 0 |
| 10 | 2 | 1 | 1 |

Summary Values

| Values | $X_a$ | $X_b$ | $X_a - X_b$ |
|---|---|---|---|
| n | 10 | 10 | 10 |
| sum | 21 | 13 | 8 |
| mean | 2.1 | 1.3 | 0.8 |
| sum_sq | 49 | 19 | 10 |
| SS | 4.9 | 2.1 | 3.6 |
| variance | 0.5444 | 0.2333 | 0.4 |
| st. dev. | 0.7379 | 0.483 | 0.6325 |

Variances and standard deviations are calculated with denominator = n-1.

| $Mean_A - Mean_B$ | t | df |
|---|---|---|
| 0.8 | 4 | 9 |

| P | one-tailed | 0.001555 |
|---|---|---|

# Appendix M

HARTFORD HOSPITAL
Research Program
(860)545-2865
80 Seymour Street
(860)545-5112 (FAX)
Hartford, CT. 06102
research@harthosp.org

5/11/2010

Joan Corbin
c/o Joan Corbin

## Research Approval/Award Letter

This letter is your confirmation that the above project has been approved by the Research Committee and has been assigned a research account number. This is the final step in the approval process.

Important: Please read the information below regarding the details of this approval. This section outlines the responsibilities and obligations assumed by the principal investigator upon initiation of this project.

Principal Investigator: **Joan Corbin,**
Study Title: **The Effects of Music on the Negative Symptoms of Schizophrenia**

**Research Account Information:**
Research Account: 336118
Funding Type: Unfunded
Funds Awarded: $0.00

**In-Kind**
This project has an estimated total In-Kind amount of $360.00 for the following projected period:
Start Date: 5/17/2010 End Date: 5/17/2011 .

**Principal Investigator Responsibilities**
The Principal Investigator (PI) is responsible for conducting this research activity in accordance with all applicable hospital policies and procedures, including but not limited to the following:

1. Budget Management Policy, if funded: The PI is responsible for the proper management of the project's finances in accordance with the Budget Management Policy. If project expenses exceed the amount awarded and your project goes into deficit, you will be expected to deposit or transfer sufficient funds to cover the deficit.
2. Patent Policy: The PI is responsible for ensuring that all inventions and potential inventions resulting from research conducted at Hartford Hospital are disclosed to and processed by Research Administration in accordance with the Hartford Hospital Research Program Patent Policy.
3. Timely Renewal: The PI is responsible for ensuring that all required progress reports and supporting materials are submitted to Research Administration for the project's continuing review and renewal. The PI is also responsible for the timely notification of study completion.
4. Abstracts / Publications: It is expected that all abstracts and publications resulting from this project acknowledge support by HH Research Endowment Funds, if applicable. **PI's funded by NIH are required to comply with NIH Public Access Policy, effective April 07, 2008.** Link for more information: http://publicaccess.nih.gov/policy.htm

You may contact our research staff at (860)545-4592 for a copy of the policies.

Sincerely,

Laurine M. Bow, Ph.D.
Vice President for Research

cc: Harold Schwartz, M.D.