

Music Therapy in Schizophrenia

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Abstract

With the increasingly important role of psychosocial interventions in the treatment of schizophrenia, many such interventions have been adequately researched and standardized so that they meet the criteria for evidence-based practice. Music therapy is one such modality. However, there remains no resource to guide music therapists in the implementation of appropriate evidence-based techniques. This thesis develops such a resource, which matches psychosocial goals with appropriate music therapy interventions across domains of functioning. The resource has the potential to provide immediate and long-term support to clinicians. It may also serve as a template to guide music therapy research, by identifying applications which have yet to be empirically studied.

Music Therapy in Schizophrenia: A Guide for Clinicians

Schizophrenia is a serious mental illness that affects one person in a hundred at some stage in life (Scottish Intercollegiate Guidelines Network [SIGN], 1998). Initial onset is usually in the teens or twenties and the subsequent course is variable. Unless the initial episode is brief, incomplete recovery and further relapses are the most likely outcome (SIGN, 1998). A recent meta-analysis by the Cochrane Collaboration concludes music therapy is an effective intervention for people with schizophrenia to improve their global state, mental state and level of functioning (Gold, Haldal, Dahle & Wigram, 2005). Despite the evidence indicating its effectiveness, there remains no concise resource to guide music therapists in the application of the most effective interventions or session content. This study will utilize relevant research findings to develop a resource for guiding music therapists in developing an appropriate treatment plan for use with people with schizophrenia and schizophrenia-like illnesses.

The resource starts by examining the economic impact, etiology, symptoms and treatment of schizophrenia. This will be followed by a description of music therapy and the specific role it can play as an effective psychosocial treatment modality for individuals with schizophrenia.

Schizophrenia

Cost

The cost of mental health care for schizophrenia was estimated by Knapp (1997) to be 2-3% of a nation's total health expenditure (as cited in Carr, Lewin, Neil, Halpin, & Holmes, 2004, p. 517). In the United States in 1990, the annual direct and indirect costs of schizophrenia were estimated at \$32.5 billion (Rice, 1999). In 2005, Luchins et al. reported an estimated \$8.8 billion would be spent on second-generation antipsychotic medication in the United States in that year.

As Lenroot, Bustillo, Lauriello and Keith (2003) indicated, these figures do not include the additional costs due to the high rate of comorbidity of schizophrenia with general medical conditions and substance use disorders, and the substantial time-loss costs (Carr et al., 2004). Many studies have found lower levels of functioning to be associated with higher treatment costs (Carr et al., 2004). This finding is particularly true of individuals with treatment-resistant schizophrenia (TRS); a condition that affects 30% of people with schizophrenia, and is characterized by non-responsiveness to conventional psychopharmacological treatment (Buchain, Vizzotto, Neto & Elkis, 2003).

Etiology

Currently, the most widely accepted model of the etiology of schizophrenia is the stress diathesis model (see Walker, 2004). This model postulates that constitutional vulnerability to schizophrenia (i.e., the diathesis) can result from both inherited and acquired constitutional factors. The inherited factors are genetically determined characteristics of the brain that influence its structure and function. Acquired vulnerabilities can arise from prenatal events that alter fetal neurodevelopment and

postnatal stressors, broadly defined to include brain trauma. Both are assumed to compromise brain structure and function. Stress and/or substance abuse do not cause schizophrenia, although they can often exacerbate the course of schizophrenia, triggering or worsening symptoms that are already present (Walker, Kestler, Bollini, & Hochman, 2004).

Schizophrenia can have a gradual or rapid onset (Walker et al., 2004). With a gradual onset, the disorder may remain virtually undetected for many years until the symptoms build and can result in an acute episode, marked by hallucinations, delusions and thought disorders. With rapid onset, very dramatic changes in behaviour occur over a few days or weeks, usually resulting in an acute episode as described above.

Symptom Dimensions

Symptoms of schizophrenia are divided into three dimensions, generally known as positive, negative and disorganized (Peralta & Cuesta, 2001). These dimensions are described in greater detail below.

Positive symptoms. Positive symptoms reflect an excess or distortion of normal functioning. These behaviours include hallucinations, delusions, disorganized speech, and disorders of movement (APA, 1994). A hallucination is something a person sees, hears, smells, or feels that no one else can see, hear, smell, or feel. "Voices" are the most common type of hallucination in schizophrenia. Many people with the disorder hear voices that may comment on their behaviour, order them to do things, warn them of impending danger, or talk to each other (usually about the client). They may hear these voices for a long time before family and friends notice that something is wrong. Other types of hallucinations include seeing people or objects that are not there, smelling

odours that no one else detects (although this can also be a symptom of certain brain tumours), and feeling things like invisible fingers touching their bodies when no one is near.

Delusions are false personal beliefs that are not part of the person's culture and do not change, even when other people present proof that the beliefs are not true or logical. People with schizophrenia can have delusions that are quite bizarre, such as believing that neighbours can control their behaviour with magnetic waves, people on television are directing special messages to them, or radio stations are broadcasting their thoughts aloud to others. They may also have delusions of grandeur and think they are famous historical figures. People with paranoid schizophrenia can experience delusions of persecution, in which they believe that others are deliberately cheating, harassing, poisoning, spying upon, or plotting against them or the people they care about.

Scales that are often used to measure positive symptoms include the Brief Psychiatric Rating Scale (BPRS) (Ventura, Green, Shaner, & Liberman, 2003), the Positive and Negative Syndrome Scale (PANSS) (Kay, Fiszbein, & Opler, 1987), and the Scale for the Assessment of Positive Symptoms (SAPS) (Burlingame et al., 2005; Lader, 2000).

Negative symptoms. Negative symptoms are those that involve reductions in normal emotional and behavioural states. Domains of negative symptoms include blunted affect, alogia (poverty of speech), asociality (inability to form close relationships), anhedonia (inability to experience pleasure) and avolition (Kirkpatrick, Fenton, Carpenter, & Marder, 2006).

Recent research has indicated patients who exhibit significant negative symptoms are inclined to have a poorer outcome overall, with particularly poor global functioning and quality of life (Eack & Newhill, 2007; Kirkpatrick et al., 2006; Milev, Ho, Arndt, & Andreasen, 2005). Milev and colleagues (2005) examined the predictive quality of negative symptoms by administering a comprehensive cognitive battery and clinical assessments to 99 participants who were in the first episode of their illness, then analyzed those results with community outcome after a period of seven years. Specifically, they looked at the outcome measures of global psychosocial functioning, relationship impairment, recreational impairment and work impairment. The researchers found the negative symptom dimension was significantly correlated with each of the outcome measures. They also found significant relationships between the severity of negative symptoms and performance on cognitive tests. In contrast, they found no significant relationships between the severity of psychotic (positive) symptoms and either of the outcome measures or the cognitive test score. This underscores the unique and powerful impact of negative symptoms, as well as the interaction between the negative symptom dimension and cognition in schizophrenia. This interaction will be discussed in greater detail later in this paper.

Clinical tools used to measure the severity of negative symptoms include the Positive and Negative Syndrome Scale (PANSS) for schizophrenia, the Scale for Assessment of Negative Symptoms (Andreasen, 1983), the Apathy Evaluation Scale (Marin, Biedrzycki, & Firinciogullari, 1991), the Positive and Negative Symptom Scale (Kay and Opler, 1987), and the Negative Symptom Scale (Lewine, Fogg, & Meltzer, 1983).

Disorganized symptoms. The disorganized dimension consists of symptoms that affect thought processes and concentration, and include poor concentration and thought disorder (Walker et al., 2004). One dramatic form is disorganized thinking, in which the person has difficulty organizing his or her thoughts or connecting them logically. Speech may be garbled or hard to understand (Heinrichs, 2005). Another form is "thought blocking," in which the person stops abruptly in the middle of a thought. When asked why, the person may say that it felt as if the thought had been taken out of his or her head. Finally, the individual might make up unintelligible words, or "neologisms." This set of symptoms can also significantly impair the person's ability to maintain meaningful interpersonal relationships, which can lead to compromised social functioning (Walker et al., 2004). These effects can be measured using the Social Disability Schedule for Inpatients.

Emotional effects. Emotional symptoms are those that affect the person's feelings or affect, such as depression and blunted emotion. Depression is a common comorbid condition with schizophrenia (e.g. Addington et al., 1996; Kontaxakis et al., 2000; see also Walker, 2004). Approximately 10 – 13% of individuals with schizophrenia commit suicide, making suicide the leading cause of death in this population (Pompili, Ruberto, Girardi & Tatarelli, 2004). The risk factors for suicide in schizophrenia are numerous, including awareness of having the illness. This insight can lead to fear of further deterioration and hopelessness, which can eventually result in depression and suicide. The severity of depression can be measured using the Calgary Depression Scale for Schizophrenia (Addington, Addington, & Schissel, 1990), the Hamilton Depression

Rating Scale (Hamilton, 1960), and the Beck Depression Inventory (Beck, Ward, & Mendelson, 1961).

Cognitive Impact

The use of cognitive tasks and concepts in schizophrenia has grown significantly in recent years, and has revealed cognition as being of utmost importance in the study, treatment and long-term management of the disease (Heinrichs, 2005). Cognitive test scores are now considered more accurate than symptomatology measures as predictors of community functioning (Green, 1996; Velligan et al., 1996). Further, recent meta-analyses have shown specific measures of cognition (particularly tests of set-shifting, verbal fluency, and sustained attention) are more sensitive to differences between schizophrenia and healthy participants than brain imaging or post-mortem examinations (Heinrichs, 2005). Finally, impaired cognition precedes, accompanies and outlasts a patient's symptoms and medical regimen (Heinrichs, 2005), so its influence cannot be underestimated.

Specifically, social cognition has been associated with poorer community social functioning (Hooker & Park, 2002; Poole, Tobias, & Vinogradov, 2000), poorer nonsocial cognitive functioning (Bryson, Bell, & Lysaker, 1997; Kee, Kern, Green, et al., 1998) and poorer social functioning across multiple domains in schizophrenia patients (Ihnen, Penn, Corrigan, et al., 1998). As reported by Cohen, Forbes, Mann and Blanchard (2006), different types of cognitive processes are associated with different domains of social functioning. For example, they found immediate and delayed verbal memory and, to a lesser extent, executive functions are highly related to impaired community social functioning (Cohen et al., 2006, p. 236). Further, as explained by

Green, Olivier, Crawley, Penn and Silverstein (2005), not only do social cognitive deficits appear to be key determinates of functional outcome in schizophrenia, they can lead to social misperceptions, unexpected reactions to and from the individual, and eventually, social withdrawal. Not surprisingly, the effects of social functioning impairments contribute to the rate of relapse (Pinkam, Penn, Perkins, & Lieberman, 2003).

Cognitive science has also helped to illuminate the complexity and significance of the relationship between cognition and emotion in schizophrenia. For example, Kerr, Walsh, & Marshall (2001) suggest emotion and moods constrain a number of cognitive processes such as memory, learning and perception, all of which can influence therapeutic outcomes.

Medication

There is currently no known cure for schizophrenia, however, with early diagnosis, and appropriate pharmacological and psychosocial interventions, the impact of the disorder can be minimized. As reported by West and colleagues (2005), the treatment of schizophrenia has changed drastically in recent years. There are now six second-generation antipsychotic drugs available. As well, antidepressants, anxiolytic medications and mood stabilizers are commonly used (West et al., 2005). Antipsychotic medications such as clozapine and olanzapine are considered essential to recovery, and most people with schizophrenia will be required to take medication indefinitely in order to remain stable and prevent relapse and hospitalization. Over time, the dosage of medication is typically lowered until the individual is on a maintenance dosage: the lowest dosage at which the person's condition is stable.

Non-compliance with medication is an ongoing challenge. McCombs and colleagues reported that only 11.6 percent of patients with schizophrenia in the California Medicaid program continued to purchase antipsychotic medications consistently for one year (as cited in Nasrallah, Targum, Tandon, McCombs & Ross, 2005). In a similar study using Medicaid data of four additional states, Lyu and colleagues estimated the one-year medication adherence rate to be 20 percent (as cited in Nasrallah, et al., 2005). Non-compliance is sometimes linked to a lack of insight into the illness, but is usually a result of uncomfortable side effects (e.g. Janssen, Gaebel, Haerter, Komaharadi, Lindel, & Weinmann, 2006). Although the side effects vary from person to person, the most common are acute dystonia, drowsiness, faintness, drooling, sedation, dry mouth, blurred vision, sensitivity to sunlight, weight gain, sexual dysfunction and constipation (Kulkarni & Inglis, 2006). Some of these problems can be solved with a change of medication or dosage, or the addition of another medication to control the side effects, but ultimately, such side effects can create additional health risks and have an adverse impact on the individual's quality of life. Suggested strategies for the therapist to help the client manage pharmacological side-effects can be found later in this resource.

Another potentially dangerous effect of medication is the sudden increased awareness a patient may experience once the regimen is administered. Turkington, Kingdon & Turner (2002) found sudden increases in insight of more than 25% may lead to increased suicidality in patients with schizophrenia (as cited in Pompili et al., 2004, p. 468). This underscores the importance of incorporating therapeutic relationships, within which to manage and evaluate the effects of the pharmacological interventions.

Psychosocial Interventions

A recent study reported the impact of pharmacological treatments for schizophrenia is modest at 25 percent improvement over no treatment (World Health Organization, 2005). However, the addition of psychosocial treatment increased the rate of improvement to 45%. Many recent studies encourage an integration of pharmacological and psychosocial interventions in the treatment of schizophrenia. For example, Kopelowicz and Liberman (2003), state the use of drugs to manage symptoms requires concurrent psychosocial interventions to improve involvement and compliance in treatment, and obtain optimal long-term therapeutic outcomes. Foulds (2006) suggests the use of psychosocial interventions should be considered consistently alongside medication in order to manage symptoms and encourage reality testing.

The Clinical Resource and Audit Group (CRAG) identified the following as goals for psychosocial therapies for individuals with schizophrenia: assessment, support, education, increasing concentration, reality reinforcement, improved communication and relationship skills, anxiety and mood management, daily living skills, and time management (as cited in SIGN, 1998). The accumulation of evidence for effective psychosocial interventions such as social skills training, family therapy and vocational rehabilitation, has helped to raise awareness of the need for such services, thus broadening the treatment options for people with schizophrenia (West et al, 2005).

Bustillo, Lauriello, Horan and Keith (2001) reviewed randomized controlled trials, with particular emphasis on those published since 1996. They identified 18 new studies: five for cognitive behaviour therapy, five for social skills training, three for supported employment programs, two for family therapy, two for case management, and

one for individual therapy. They found the interventions have been largely successful for the primary outcome measure they were intended to address. As a result of their review, Bustillo and colleagues (2001) recommend psychoeducational family interventions for those patients who live with family members, assertive community treatment programs for patients with high service utilization, a systemic psychosocial rehabilitation and social skills education plan for those living in the community, vocational rehabilitation for those patients who wish to work, and cognitive behavioural interventions to assist with ongoing delusions and hallucinations.

Practice guidelines, algorithms and treatment manuals promoting integrated therapy for schizophrenia have been published by several leading mental health organizations; however, evidence suggests that most clinicians are not following these guidelines (Lieberman & Glick, 2004). It has been argued there is little training for psychiatrists in integrating treatments, leaving the focus of treatment on the pharmacologic aspect, and neglecting the importance of psychosocial rehabilitation in recovery. Lieberman & Glick (2004) suggest an even darker reason:

Competencies [of new psychiatrists] include checking of the criterion symptoms for establishing a DSM-IV diagnosis and prescribing medications that have been compellingly promoted by drug companies. Many academics who teach in continuing education programs that are sponsored by the pharmaceutical industry, while ostensibly providing scientific and evidence-based information, are inevitably biased by their handsome consulting honoraria (p.1217).

While this paper is not the medium through which to debate the long arm of the pharmaceutical industry, it is important to acknowledge the unmet need for psychosocial services among individuals with schizophrenia. A 1998 study found as few as 10% of mental health patients received psychosocial interventions (Lehman & Steinwachs, 1998). This situation was echoed in a later U.S. study by West and colleagues (2005),

which assessed national conformance with practice guideline treatment recommendations of the Schizophrenia Patient Outcomes Research Team and the American Psychiatric Association. They found rates of conformance for psychopharmacologic recommendations were relatively high (30 – 100%) whereas rates for psychosocial recommendations were significantly lower (0-43%) (p. 287).

Dhillon and Dollieslager (2000), as well as Torrey and colleagues (2001) identified barriers to implementing evidence-based psychosocial rehabilitation programs, such as a history of emphasis on biological treatment; the belief of staff that acutely ill patients cannot participate in psychosocial rehabilitation; a lack of accountability for providing psychosocial interventions; the wide range of symptoms and levels of functioning presented by patients; and clinicians' resistance to change. However, these obstacles were overcome through the use of well-designed training tools such as workbooks, clinical observation and supervision, and consultation materials; and accountability was ensured through the use of fidelity measures and feedback mechanisms (Torrey et al., 2001). Consequently, two significant outcomes were achieved. First, highly structured and effective evidence-based psychosocial treatment plans were successfully implemented in the respective clinical settings. Secondly, implementation plans and best practice guidelines were developed, which can assist other psychosocial rehabilitation clinicians to provide evidence-based best practice interventions.

Music Therapy

Music Therapy as a Distinct Practice

The World Federation of Music Therapy defines the practice as:

...the use of music and/or musical elements by a certified Music Therapist with a client or group, in a process designed to facilitate and promote communication, relationships, learning, mobilization, expression, organization and other relevant therapeutic objectives, in order to meet physical, emotional, mental, social and cognitive needs. Music Therapy aims to develop potentials and/or restore functions of the individual so that he or she can achieve better intra and/or interpersonal integration and, consequently, a better quality of life, through prevention, rehabilitation or treatment (WFMT, 1996).

As indicated in this definition, music therapy is a diverse and flexible practice that is capable of assisting in a myriad of therapeutic goals. Music therapy is a unique and valuable intervention because it: 1. provides structure through the use of harmony, rhythm, and repetition; 2. it is adaptable so individuals at all levels of functioning can benefit; 3. it is non-verbal, and physiologically separate from speech; 4. it is non-threatening and provides an enjoyable, pleasurable experience; and 5. it offers familiarity and can evoke memories. Music therapists utilize many different techniques such as songwriting, lyric analysis, instrumental improvisation, vocal improvisation, singing and playing of pre-composed music, receptive listening, drumming, compiling resources and relaxation exercises. Each intervention is customized for the client and is implemented as part of a treatment plan. The treatment plan is also individualized to address the goals of the client, as determined by an assessment. Treatment is provided in individual, peer dyad and group formats.

In Canada, music therapy started in the mid-1950s with a small group of individuals who were working independently in Ontario and Quebec hospitals. In 1975 the Canadian Association for Music Therapy (CAMT) was developed, and in 1976 the first music therapy training program started at Capilano College in Vancouver, British Columbia. Since that program began, music therapy training has grown to include 5 universities offering undergraduate degrees in music therapy, 2 universities offering

graduate programs, and a research centre, which strives to bridge research and clinical practice.

In addition to the academic requirements, music therapists must complete a 1000-hour internship before applying for accreditation. If the internship and application processes are successful, the individual is granted music therapist accredited (MTA) status, which is the required status for employment as a music therapist in Canada. Currently, there are over 300 Canadian accredited music therapists.

Music therapists work with many different populations, such as the visually impaired, terminally ill, physically disabled, developmentally delayed, mentally ill, brain injured, learning disabled, hearing impaired, geriatric, autistic, behaviour disorders, Alzheimer's/dementia, chronic pain, cancer, pre-natal, AIDS, trauma, eating disorders, sexually abused and addictions. In a recent survey of Canadian music therapists, approximately 39% indicated they were employees of institutions, facilities or service providers; 41.07% indicated they were in private practice, and 19.64% stated they were both (CAMT, 2005).

Music Therapy in Schizophrenia Research – General Functioning and Symptomatology

The ultimate aim of psychosocial treatment modalities in schizophrenia is to restore the individual to the best level of functioning socially, vocationally, recreationally and personally, while minimizing clinical dependence (Kopelowicz & Liberman, 2003). Music therapy can play a significant role in these psychosocial goal areas, as demonstrated in the large amount of research in symptom management, stress and anxiety management, communication, expression, socialization and interpersonal relationships (Gold, Heldal, Dahle & Wigram, 2005; Grocke, 2004; Metzner, 2003;

Silverman, 2003a; Hayashi et al., 2002; Odell-Miller, Westacott, Hughes, Mortlock & Binks, 2001; Jensen, 1999).

Most recently, Talwar, Crawford, Maratos, Nur, McDermott and Proctor (2006) conducted an exploratory randomized trial of music therapy for inpatients with schizophrenia, in order to examine impact of the music therapy interventions on mental health, global functioning and client satisfaction. The format of the study was a multi-centre, parallel-arm, randomized control trial with baseline and follow-up measures assessed at 12 weeks. The participants (N = 81) were randomly assigned to the experimental or control group, with those in the experimental group participating in 12 music therapy sessions. Changes in total Positive and Negative Syndrome Scale (PANSS) (Kay et al., 1987) scores in the experimental group were significantly greater ($p = .02$) than those in the control group. In addition, the experimental group reported greater satisfaction with their care than the control group.

Gold and colleagues (2005), on behalf of the Cochrane Collaboration, set out to determine if the body of research on music therapy in schizophrenia qualifies the intervention as evidence-based. They began with a search of the Cochrane Schizophrenia Group's Register, and supplemented the results by hand searching music therapy journals and reference lists and by contacting appropriate authors (Gold et al., 2005). Thirty-four potentially relevant studies were identified, however, twenty were excluded because they were not randomized, and another two were excluded due to a lack of adequate outcome data. Another six were not suitable because of the way music was used in the studies. Ultimately, four randomized controlled trials were included in a meta-analysis: Maratos (2004), Tang, Yao and Zheng (1994), Yang, Li, Weng, Zhang and Ma (1998) and Ulrich

(2004). All four studies compared music therapy added to standard care, with standard care alone, and involved inpatients exclusively. Three studies were of similar size (Maratos, 2004, n=81, Tang et al., 1994, n=76, Yang et al., 1998, n=72) and one had considerably fewer participants (Ulrich, 2004, n=37). The duration of the studies ranged from one to three months, and measured short and medium term effects of music therapy. The number of sessions per week varied from one to six, with the total number of sessions per participant ranging from 7.5 to 78. In accordance with the priori criteria for the review, the studies with fewer than 20 sessions are classified as low dosage, and the one with more than 20 is classified as high dosage.

In all the studies, the content of music therapy included music listening, active music making (pre-composed songs or improvisation) and discussion relating to the musical process. The level of structuring varied across the sessions, according to the functioning level of the participant. The review found that participating in many sessions of music therapy had a strong positive effect on the participants' global state. Mental state was measured using three different scales: Positive and Negative Symptoms Scale (Kay, Fiszbein, & Opler, 1987), Brief Psychiatric Rating Scale (Overall & Gorham, 1988) and Scale for the Assessment of Negative Symptoms (Andreasen, 1983). Significant results were found on two of the three scales, and the reviewers believe the results reflected the difference in the number of music therapy sessions the participants received: "Music therapy with 20 or more sessions always had a significant effect no matter which particular measure of mental state was used. In contrast, the overall effects of music therapy with less than 20 sessions remained somewhat unclear" (Gold et al., 2005, p.8).

These results were repeated in the general functioning assessment, where significant effects were found for 'high dose' music therapy, but not for 'low dose'. Gold and colleagues (2005) concluded the studies served as evidence of music therapy's ability to improve the global state, mental state and level of functioning in people with schizophrenia and schizophrenia-like illnesses. They further state music therapy may be particularly well suited to the treatment of negative symptoms such as poor social interaction, blunted affect, and lack of interest, as the interventions can specifically address issues of emotion and interaction.

Ultimately, the review of the results of the studies established music therapy in schizophrenia as an evidence-based intervention, but with room to "...improve the quality of reporting of trials in this area..." (p. 9). To this end, Gold and colleagues (2005) suggest the use of Moher's (2001) CONSORT statement guidelines in future research. Recommended subject areas for future research include long-term effects extending 6 months or more – an area that has not been investigated in previous trials, but is particularly relevant when one considers schizophrenia is often a chronic condition. Another proposed topic is the dose-effect relationship in music therapy, which would require considerably larger sample sizes than those observed in the reviewed studies, in order to randomize high versus low dosage of music therapy. Finally, Gold and colleagues (2005) recommend trials examining the effects of music therapy in outpatient settings – another relevant area of study, particularly for Ontario, given the current momentum of establishing Assertive Community Treatment (ACT) services for people with psychiatric disorders.

While Gold and colleagues (2005) focused on only four studies in their review, other reviews have utilized wider parameters for their selection criteria, and thus were able to measure and report a variety of results. Consequently, these other studies provide a wealth of information about the applicability of various music therapy interventions for a variety of goal areas. For example, Silverman (2003) conducted a similar meta-analysis using 19 studies that were published between 1952 and 2003. The dependent variables for the studies were catatonic behaviour, cognitive symptoms and general symptoms; the independent variables were music listening, contingent music, music to aid in learning, guitar lessons, active music making, and music therapy. The statistical value for each dependent variable of each study was isolated and determination of between or within group comparisons was established. Silverman (2003) found music was effective in suppressing and combating the symptoms of psychosis ($d = +0.71$; the confidence interval did not include zero, so this effect size is significant). He found all functions of music achieved significant and consistent results, and mixed gender groups reported less effect than all female or all male groups.

De l'Etoile (2002) measured changes in schizophrenia symptomatology across 9 symptom areas, in adults who received one music therapy session per week for six weeks. She found a decrease in six of the nine symptom dimensions, with significant decreases observed in hostility ($p=.055$) and paranoid ideation ($p=.003$). In addition, she observed an increase in group cohesion, which was also found in studies by Cassity (1976), Henderson (1983), Bednarz and Nikkel (1992), and as mentioned above, Talwar and colleagues (2006).

Similarly, Silverman and Marcionetti (2004) used pre- and post-tests to measure immediate changes of common psychiatric deficit areas in patients with severe mental illness during a single music therapy intervention, and compared them against the effectiveness of five music therapy interventions in the common psychiatric deficit areas of self-esteem, self-expression, coping skills, anger management and mood/symptoms. The participants rated facilitated group drumming, music games, songwriting, and music listening as immediately improving aspects of the identified deficit areas (Silverman & Marcionetti, 2004). They found music therapy consistently influenced participants positively; the participants rated music therapy as immediately improving aspects of all five psychiatric deficit areas in 39 out of 40 or 97.5% of trials (Silverman & Marcionetti, 2004).

Similar results can be found in earlier research by Margo, Hemsley and Slade (1981), Gallagher, Dinan and Baker (1994) and McInnis and Marks (1990). These studies found listening to music significantly reduced the duration of auditory hallucinations in the research participants.

Music Therapy in Schizophrenia Research – Affective and Cognitive Functioning

Music therapy's influence on the affective and cognitive domains in psychosis is an expanding field of study. An early study by Morton, Kershner and Siegel (1990) explored music therapy in memory and attention deficits within an arousal framework, and found prior exposure to music increased memory capacity and reduced distractibility in the participants. They postulated such exposure to music may increase bilateral cerebral arousal levels.

Hodges (1996) completed extensive surveys of the literature documenting affect/mood responses to music. The results indicate the following: 1. Music evokes emotional and mood reactions; 2. Music can alter a listener's mood; 3. Emotional and mood responses to music are accompanied by physiological changes in the individual, and; 4. Existing mood, musical preference, cultural expectations and arousal needs also play a role in determining affective responses to a given music stimulus.

More recently, Glickson and Cohen (2000) investigated interactions between mood, attention and arousal in schizophrenia. They hypothesized music could reduce the level of arousal in subjects who are tense, thereby improving their performance on attention-demanding tasks. The subjects were 16 inpatients with schizophrenia, all of whom were characterized as suffering from hyperarousal, which theoretically mediates attentional deficits. All participants were repeatedly tested on the colour-word naming subtest of the Stroop task. This task involves naming the colour in which colour words were printed, while ignoring the word itself. For example, if the word *blue* is printed in red ink, the correct response would be *red*. The participants named 30 such colours as quickly as possible, and were then asked to estimate in seconds, the time spent on the task. The colour-word task was completed four times: twice while listening to music, and twice in silence. Results indicated a significant improvement in cognitive function on the attention-demanding task.

Finally, Kerr, Walsh, and Marshall (2001) examined the use of music to increase affective modification and emotional restructuring in a cognitive reframing intervention. Forty participants were assigned to either a typical reframing intervention or a music-assisted reframing intervention. Using four standardized measures, the groups were

compared on a basis of anxiety-reduction, affective modification and imagery vividness. Results revealed significant differences in favour of the experimental group on anxiety measures, mood change, affective reactions, cognitive reactions, and physiological reactions. In this study, music was found to positively influence affective and cognitive processes by undoing or canceling the experience of anxiety. While this study did not involve psychiatric populations, the results nonetheless pertain to the focus of this manual, in that they are directly related to the psychosocial rehabilitation and recovery goals of people with schizophrenia. As stated by Kerr and colleagues, “Investigators studying the therapy process have repeatedly found that primary emotional change is correlated to therapeutic outcome” (p. 194).

As the above studies indicate, music can reflect, influence and alter emotional responses, making it a particularly effective component of treatment processes that include identification, awareness, reflection or expression of feelings and relevant issues.

Music Therapy in Schizophrenia Research – Social and Communicative Functioning

Silverman (2003) developed a scale to rate behaviours displayed by an inpatient with schizophrenia. The scale was as follows: 0: combative, behaviour totally inappropriate, required “time-out”; 1: threatening, very sarcastic, very irritable, very intrusive; 2: sarcastic, irritable, intrusive; 3: quiet, mild sarcasm; 4: quiet, calm, appropriate conversation; 5: pleasant, friendly, cooperative (Silverman, 2003). The client’s behaviour on the unit was rated separately from that in music therapy group sessions, using the same scale. The two sets of behaviours were analyzed using The Wilcoxon Matched-Pairs Signed-Ranks Test, and the results demonstrated the client’s behaviour was significantly better in music therapy than on the unit, throughout his 40

days in treatment. The music therapy sessions were process-oriented and utilized songwriting, music relaxation, music-inspired art, music games, movement to music, and singing. It was found that a positive rapport with the music therapist, positive reinforcement of appropriate behaviours and an emphasis on generalizing new behaviours outside of the music therapy session helped the client facilitate positive relationships with the rest of the staff on the unit and demonstrate more appropriate social interactions, thus allowing for additional treatment options.

Yang and colleagues' (1998) study utilized the Social Disability Schedule for Inpatients to measure the effects of music therapy on social functioning. The music therapy interventions involved music listening, improvisation and discussion, and were held in both group and individual formats. Yang reported a significant effect favouring music therapy over the standard care control group.

Pavlicevic, Trevarthen and Duncan (1994) examined the role of improvisational music therapy in addressing social withdrawal and emotional flattening in schizophrenia. They sought to elicit communicative capacities, thus increasing interactions, through musical improvisation. Significant improvements were observed in the clinical state and responsiveness to the therapist.

Music has also been found effective in creating a safe and structured setting where emotional reactions can be revealed and processed (Shultis, 1999; Goldberg, 1988; Dvorkin, 1982). Henderson (1983) measured the effects of music therapy on awareness of mood in music, group cohesion, and self-esteem among adolescent inpatients. Participants engaged in group discussion concerning moods and emotions in music, expression and identification of body language, story composition to music and drawing

to music. Pre- and post-tests were administered and the results compared against those of a control group. Significant differences in favour of the experimental group were found in their agreement on mood or emotional expression in music, and agreement on group feelings. As well, the group cohesion measure approached significance. Similarly, Dvorkin (1982) observed increased musical and verbal communication and emotional expression, as well as increased reality-oriented problem-solving, suggesting an additional cognitive shift.

Music Therapy in Schizophrenia Research – Clients' Perceptions

Client satisfaction is important for demonstrating demand for services, developing effective and efficient services, and encouraging client adherence to treatment. The body of research on this topic indicates music therapy has consistently been well received by individuals with schizophrenia. Pavlicevic, Trevarthen, and Duncan (1994) found clients with schizophrenia who participated in music therapy reported increased confidence, improved concentration, and that they found music therapy pleasurable and engrossing (p. 86). Reker (1991) conducted a subjective evaluation and rating of music therapy by patients with schizophrenia, using a specially designed questionnaire. The participants reported a high level of subjective acceptance, improved relaxation, increased activation, improved opportunities for emotional expression, easier contact-making and reduced anxiety.

More recently, Silverman (2006) conducted a survey comparing psychiatric patients' perception of music therapy and other psychoeducational programming. Patients (N=73) participated in five different psychoeducational classes (coping skills, substance abuse, symptom/medication management, art class, and community

reentry/discharge planning), and two therapies (music therapy and recreational therapy) each week for a minimum of two weeks. Music therapy techniques included songwriting, lyric analysis, improvisation and music games. Results indicated that participants rated music therapy as significantly more helpful than all other programming ($p < .05$), and more effective than other programming in addressing specific psychiatric deficit areas. In addition, 57% of participants identified music therapy as their favourite class or therapy.

Music Therapy in Psychoeducation

Music therapy can be an effective medium for the delivery of psychoeducational supports for both the client and the family. The learning of new information can be enhanced by offering a selection of pre-composed music with lyrics that reinforce the psychoeducational theme of that session, then asking each participant to choose a song that best reflects his or her experience or feelings. The music therapist will facilitate the singing of each selection at appropriate times throughout the session. If the individual or group is initially reluctant to sing, the therapist can provide recorded music that can be played instead of sung. With either live or recorded music, this type of intervention allows for further discussion on the theme; provides a non-threatening and supportive environment in which to process the new information; and offers different perspectives on the theme and recovery through a creative medium. This is an effective format for a variety of psychosocial goals. For example, it can be utilized within the context of a peer group format, to enhance and improve social skills. The therapist may also offer to compile a resource for the individual or group that includes all the music utilized and

discussed on each theme. The resource can then be given to each individual to take home with other relevant materials for use as an educational or emotional support.

Music Therapy in Managing Medication Side Effects

With the commencement and compliance to medication, the client should experience some symptom relief and an improvement in mood, thinking and behaviour. Unfortunately, these improvements are often accompanied by undesirable side effects, as mentioned earlier. For example, the dry mouth and nasal congestion as caused by anticholinergics, would result in difficulty singing or playing wind instruments, while blurred vision would compromise tasks that involve reading or hand/eye coordination (Houghton, Scovel, Smeltekop, Thaut, Unkefer, & Wilson, 2004). It becomes the responsibility of the therapist, therefore, to adjust the treatment plan to accommodate the client's physical and psychological challenges. This is an important consideration, as side effects are a common cause of non-compliance or misuse of medication.

The therapist may also wish to address the side effects directly, by incorporating appropriate interventions into the treatment plan. Relaxation exercises may be utilized to address muscle rigidity, and the involuntary movements of tardive dyskinesia may be reduced by the purposeful movements of instrumental playing. Another important issue is the psychological impact of frustrating side effects. Conditions such as tachycardia, hypotension and loss of motor control can cause feelings of anxiety, preoccupation and even anger in some clients. The music therapist would then endeavour to assist the client to accept the side effects and manage the emotional reactions. To this end, Houghton and colleagues (2004) suggest the therapist should:

1. Acknowledge the reality of the occurrence of common side effects

2. Accept the validity of the feeling responses of the patient
3. Reinforce the factual information as to the source and expected course of the side effects
4. Provide encouragement and reassurance that the symptoms are transient
5. Facilitate appropriate verbal and nonverbal outlets for expression of the distressing feelings
6. Convey a firm and consistent message that, with the therapist's support, the patient can continue to work in therapy despite the side effects
7. Report complaints of side effects to the treatment team to avoid overlooking symptoms of other potentially significant pathology and to monitor for possible drug toxicity (p. 150-151).

By creating and maintaining a supportive atmosphere and an effective therapeutic relationship, the music therapist can simultaneously address the schizophrenia symptomatology and medication side effects, which will help the client adhere to medication schedules. As stated previously, this combination of psychopharmacological and psychosocial interventions can facilitate the best possible outcome for the client.

The Role of Neuroscience in Future Music Therapy Research

As the healthcare system in Ontario places increasing emphasis on evidence-based interventions, allied health professions are presented with an opportunity to validate their unique contributions to recovery and wellness. Despite a body of empirical evidence supporting music therapy as a treatment modality for a myriad of populations, it is not a regulated health profession in Ontario. This results in vulnerability for the profession and its practitioners, both in provincially funded facilities and in private practice. As Edwards (2005) states,

Those in the field of music therapy may be increasingly required to present evidence about the effectiveness of music therapy treatments and approaches to patients... Practitioners are well served to understand the levels of evidence, and to ensure they have a good knowledge of the randomized control trials and meta-analyses that have been conducted about the population with whom they work (p. 298).

It appears practitioners and researchers are heeding this advice and utilizing more evidence-guided methods. In a recent study of nine music therapy journals, it was found that since 1964, fewer than the 200 of the 1521 published papers used a qualitative research design; over one thousand were categorized as quantitative or clinical (Brooks, 2003). As explained by Thaut (2005), the theory and clinical practice of music therapy is changing from a social science model to a neuroscience-guided model. This is being facilitated, in part, by research showing the reciprocal relationship between the neurobiological foundations of music in the brain and how musical learning and experiences change brain and behaviour functions. This transformation from a model based on cultural roles and general wellness concepts, to one based on brain function and music perception, has the potential to move music therapy from an adjunct or complimentary treatment option to a central treatment modality in therapy and rehabilitation (Thaut, 2005).

Over the past 10 years, the fields of neuroscience, music cognition, music therapy and rehabilitation have converged, discovering that engaging in music changes the brain by shaping its experience-dependent plasticity (Thaut, 2005). As Thaut (2005) further explains, music can stimulate complex cognitive, affective and sensorimotor processes in the brain, which can then be generalized and transferred to nonmusical purposes. For example, he suggests music utilizes unique stimulating elements that evoke meaningful

affective responses. These responses can then be used to modify affect in clinical situations. This is clinically significant as affect modification is considered “an essential modulatory component of behavioural learning and change” (p. 2). Thaut (2005) suggests a five-step sequence is helpful to apply appropriate music therapy techniques to facilitate emotional processing: 1. The experience of emotion; 2. The identification of emotion; 3. The expression of emotion; 4. Understanding the emotional communication of others; and 5. The control, synthesis and modulation of one’s own emotional behaviour (p. 20).

Another clinical component of neuropsychiatric music therapy, as described by Thaut (2005), is the unique ability of musical experiences to induce affective/motivational qualities that provide positive affective features within each behaviour experience. These features can, in turn, tune, attenuate, modulate and positively influence a client’s cognitions and perceptions toward change in the therapeutic learning process (Thaut, 2005). He further suggests the client’s affective/motivational system is accessed through affective musical experiences, and this leads to positive mood/emotional/motivational changes. The changes enhance cognitive functioning, intrinsic to rehabilitative learning in processes such as executive functioning, control of attention, and memory encoding and decoding (Thaut, 2005).

The significance of this research is further emphasized by Hillecke, Nickel and Bolay (2005):

Neurocognitive research has the potential as a basic research approach to identify and explain relevant effects of music in therapy by the use of experimental research designs and neurophysiological investigation methods. It is also a useful tool to identify working ingredients, to generate new hypotheses, and especially to test and explain the correlation between music therapeutic intervention techniques and empirically observed outcome (p. 274).

In addition, Hillecke and colleagues (2005) suggest that neuroscientific research can help music therapy enjoy a more respected and defined role in modern health care systems.

Thaut (2005) is even more enthusiastic:

A large number of clinical studies have shown striking evidence that auditory rhythm and music can be effectively harnessed for specific therapeutic purposes. The emerging research base has guided the establishment of neurologic music therapy as a comprehensive new clinical model of music therapy practice that has found recognition and acceptance as an evidence-based rehabilitation discipline (p.306).

Incorporating neurocognitive research in music therapy practice has the potential to be an important development in the field; one which opens the door to defining and developing specific clinical treatment plans that are based on valid empirical research, while being flexible enough to be effective client-centred psychosocial interventions.

Resource Design

The following psychosocial goals and interventions for schizophrenia are in accordance with those outlined by Addington, Bouchard, Goldberg, Honer, Malle, Morman, Tempier, and Berzins (2005), Roder, Zorn, Muller and Brenner (2001), Lenroot and colleagues (2003), Unkefer and Thaut (2005) and Cassity and Cassity (2006). There is one module per domain of functioning, which includes presenting symptom, the corresponding psychosocial goal, and suggested music therapy interventions. These are based on the writer's clinical experience, the research identified by Gold and colleagues (2005) as being evidence-based, and the studies cited above. Some of the studies utilized randomized controlled trials, while the remainder utilized standardized rating instruments to measure patient outcome. The interventions allow for varying levels of structure and

client participation, in order for each session to be as client-focused and effective as possible, while adhering to the evidence-guided approach.

For example, a music therapy treatment plan that focuses on symptom management can include music-based relaxation techniques and the development of listening resources to help the individual with motivation, relaxation or distraction from intrusive auditory hallucinations. The music-based relaxation exercises offer the client the opportunity to be a passive participant in the intervention. Developing the listening resources, however, requires the client to participate actively, make decisions regarding the music content of the resources, and identify the purpose of the resource. It is the responsibility of the clinician, in partnership with the client to determine the level of participation and level of structuring that is most appropriate for that person at that stage in recovery.

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Music Therapy in Schizophrenia: A Guide for Clinicians

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Introduction

Over the past two decades, the field of mental health has witnessed the development of best-practice standards, and an increased emphasis on their implementation in a variety of related professions. Music therapy can both benefit from and contribute to these standards. Some music therapists, such as Michael Thaut, are utilizing increasingly rigorous testing methods, which are helping to guide and determine effective, efficient and reliable music therapy interventions. As we continue to develop best practice standards within our profession, we can hope for improved funding and support for our programs, as well as improved recognition of the value of our skills, expertise and contribution to the health care community.

To this end, the writer has endeavored to produce a manual with guidelines based on existing research evidence as well as current clinical practice. The studies and resources cited below all measure patient outcomes, are well-designed, and include easily implemented treatment plans and/or interventions. Future areas of research could include further testing of these interventions, not only for clients with schizophrenia, but also across other mental health populations. As Thaut (2005) explains, “The establishment of clinical evidence is strongly dependent on available research data, showing therapeutic mechanisms and outcomes of treatment techniques” (p.v). This is not to suggest we should view every interaction with our clients as potential data, but we can and should develop standardized guidelines, while retaining the creative, supportive and client-centred elements of our work. What better motivation than the development of a core set of interventions that help our clients attain better outcomes in terms of symptoms, functional status and quality of life?

The recommendations contained herein are based on my own clinical experience, feedback from other music therapists working in mental health, and the studies and interventions described in the previous section. The layout contains tables summarizing presenting symptoms, corresponding psychosocial goal areas and suggested music therapy interventions. These are organized in small chapters across the affective, communicative, cognitive, motor and social domains of functioning. In the Music Therapy Interventions column of each table, the reader will find numbers following each intervention. These numbers refer to the studies in which they were utilized and measured. The studies can then be found, listed in alphabetical order, in the 'References' box directly below the table. For example, if the intervention of "Guided music listening" is followed by the number (3), that indicates the intervention was utilized in the study numbered '3' in the 'References' box. Likewise, if the intervention was utilized in several studies, it will have several numbers following it. If there is no number, that indicates the intervention was not found in the studies and references, but has been used with success by the writer and colleagues.

Preceding each table and corresponding "References' box, there is a brief discussion of other evidence or relevant information pertaining to music therapy in that domain of functioning. This is intended to provide context for the summary of information contained in each table.

Description of Interventions

Group Instrumental Improvisation

Instrumental improvisation provides opportunities for self-expression, communication, socialization, creativity and leadership experiences. The therapist provides support in the form of a musical structure that allows each group member to lead the group, and to participate as part of the group. Unpitched percussion instruments are frequently used, although pitched instruments such as guitar, keyboard or xylophone may also be incorporated, depending on the clients' comfort level and the structure of the task. Themes may be chosen ahead of time to guide and provide a focus for the task.

Individual Instrumental Improvisation

This provides the same opportunities for self-expression, communication, socialization, creativity and leadership experiences as the group improvisation, with the emphasis being on the musical exchange between the client and the therapist. The improvisation may involve both the client and therapist sharing an instrument such as a keyboard or a drum, or they may play their own instrument(s). The therapist can provide musical structure that allows for turn-taking, leadership opportunities and spontaneous creativity. A theme may be decided upon before the task begins.

Group Vocal Improvisation

This task provides opportunities for self-expression, communication, socialization, creativity and leadership experiences. It also can serve as a means to re-establish compromised vocal, respiratory, and postural skills. Structuring levels can vary widely, to accommodate many musical styles and genres.

Group Singing – Pre-Composed Music

Like other groups, this provides opportunities for self-expression, communication and socialization. It does so within the context of familiar music, which can instill a sense of common experience and group identity. This structure allows for broad participation and can be guided by themes.

Songwriting

Songwriting provides opportunities for self-expression, creativity, reality orientation and emotional identification. It utilizes skills such as talking, writing, insightful or abstract thought, and communication. This task can be very loosely structured, such as where a song develops out of an improvisation; or highly structured, as in lyric replacement. Songwriting may be done in individual sessions, or in group format, where the participants collaborate on the development of the song. The song can then be recorded, and copies provided for the client or group.

Psychotherapeutic Music Listening/Sharing Group

The emphasis for this task is on the use of music listening to elicit associative thoughts and feelings that, in turn, provoke verbalizations and discussion that reflect or refer to personal experience. This task promotes healthy interactions, social participation, and reality orientation within a supportive, safe environment. The group may be guided by each client's personal musical selection, or may incorporate predetermined goals for each session.

Music and Motor Tasks

Movement techniques can provide a client with sensory and social feedback, and successful experiences that can promote body awareness and identity. Music can serve as an accompaniment to movement techniques, a timing cue, or a medium to inspire creative movement interaction and expression. The role and type of music is determined by the objective of the task.

In some tasks, instrumental playing as described above can have the dual purpose of facilitating self-expression, etc. and providing motivating and rewarding effects for controlled gross- and fine-motor movement.

Music and Relaxation

In this type of intervention, music can facilitate relaxation by providing a concrete focal point around which deep breathing exercises may be incorporated. Music can also be used as a background stimulus to heighten the relaxation response to a scripted muscle relaxation exercise, or it may provide cues for previously established deep breathing and muscle relaxation techniques. The use of imagery is not recommended for people who are delusional or have psychotic disorders, so the therapist is encouraged to keep the relaxation exercised as reality-oriented as possible. These interventions are effective in both individual and group formats.

Resource Compilation

This intervention involves the compiling of musical resources, as chosen by the client, to assist in motivation, relaxation, thought distraction, or emotional release. For resources intended for motivation or relaxation purposes, the use of the *Iso Principle* is recommended. This task allows for decision-making, discussion, collaboration, and self-

expression within the context of the therapeutic relationship. The resource itself can then be taken home by the client, and utilized for its intended purpose. This intervention is effective in both individual and group formats. It can also be incorporated into other group tasks such as Psychotherapeutic Music Listening, although it is recommended that the group be limited to 5 participants or fewer.

Psychosocial Goals and Corresponding Music Therapy Interventions across Domains of Functioning

Affective Domain

Music is widely known as a vehicle through which we can transmit emotional content or evoke an emotional response. Perhaps the most obvious example of music evoking a particular feeling is the use of dissonant music to increase suspense in a horror film. This auditory cue was investigated by Thayer and Levenson (1983) who paired either dissonant 'horror' music or neutral 'documentary' music with a stressful film. Not surprisingly, both physiological and psychological measures indicated the horror music increased participants' reported distress, while the documentary music decreased participants' reported distress (Thayer & Levenson, 1983). This is not to suggest the relationship between music and affective response is a simple one of cause and effect, but this study, along with many others (see Unkefer & Thaut, 2005) indicate music communicates some type of affective information that influences human behaviour. Thus, music provides us with a valuable tool to evoke and explore a wide range of affective responses (Gfeller, 2005).

Another important consideration of affective responses to music is that of conventionalism: the idea that musical representation of particular moods and emotions is easily accomplished through the use of familiar musical devices (Gfeller, 2005). For example, certain scales, timbres and harmonies found in Western music have become synonymous with certain emotional states (Peretz, Gaudreau, & Bonnel, 1998), as demonstrated in the 'horror' music study cited above. This cultural convention can be exploited by the music therapist to facilitate a sense of group cohesiveness, shared

experience and unity, by presenting carefully chosen musical selections of easily-recognizable affective representation.

There is evidence to suggest the music conveys emotional meaning with uniformity across psychiatric populations as well (Biller, 1973; Giacobbe, 1973), further validating the use of music as a viable form of communication with people with schizophrenia. As suggested by Gfeller (2005), music can reflect, influence and alter emotional response, and therefore is particularly valuable as a therapeutic tool in psychosocial goal areas that involve awareness, identification and expression of feelings and emotions.

Music Therapy Interventions in the Affective Domain

<i>Presenting Symptom</i>	<i>Psychosocial Goal</i>	<i>MT Intervention</i>
Blunted/flat affect	Utilize means for affective self-expression	Guided and/or structured music listening and playing (1,2,3,4,5) Group/individual instrumental improvisation (1,2,3,5) Group singing (1,2,3,5) Psychotherapeutic music listening group (1,2,3,5)
Inappropriate affect	Identify and express emotions in an appropriate manner	Supportive interactions to identify emotions(2,5) Psychotherapeutic music listening group (2,5) Guided expressive music playing to evoke emotional responses (1,2,4,5)
Depressive mood/anxiety	Stimulate improved mood; provide appropriate outlet for negative thoughts and feelings	Guided music improvisation (1,2,4,5) Musically guided relaxation (2,5) Resource compilation Psychotherapeutic music listening group (1,2,3,5) Individual (5) and small group interactions (1,2), depending on client comfort level

References – Affective Domain

1. Cassity & Cassity (2006) -

2. De l'Etoile (2002)

3. Gfeller (2005)

4. Kerr, Walsh, & Marshall (2001)

5. Unkefer & Thaut (2005)

Communicative Domain

Musicians, music therapists, neurologists and psychologists have long recognized and music's ability to convey meaning without the use of words. As suggested by Gaston (1968), there would be no need for music if it were possible to communicate verbally that which is easily communicated musically. The neurophysiologist Karl Pribram (1982) described music as a language-like form by which humans express themselves and communicate with each other. Indeed, there are many similarities between music and language. Structurally, both have pitch, duration, timbre, intensity and organization, and both are processed by the auditory system. In addition, both evolve over time, are culture-specific, take on meaning within a cultural context and are found in all known populations (Aiello, 1994). However, neurologically, speech is processed predominately in the left hemisphere of the brain, whereas processing music involves both left and right hemispheres. Which hemisphere is activated is determined by what musical aspect is being processed. These differences in neurological processing of speech and music allow for therapeutic interventions in which intact abilities to process music may be utilized to restore compromised speech and language production (Sparks, Helm & Martin, 1974). Consequently, music therapists can implement interventions that exercise vocal mechanisms, develop alternate methods of communication, improve clarity and fluency of speech, increase expressive speech, develop range and volume, and increase client comfort and confidence in communicative attempts.

Other significant differences between music and speech, particularly interpretative differences, contribute to music's unique role in the therapeutic process. Gfeller (2005) suggests the most significant such difference is the lack of referential

meaning in music. Simply put, while words and language denote or refer to specific ideas or objects, musical pitches do not. This means musical communication is less dependent on rational or intellectual capacity, which allows for meaningful communicative interactions with clients of all intellectual levels (Gfeller, 2005). Further, it allows for greater flexibility in terms of meaning and content for the musical interactions, thus increasing the therapist's ability to meet the needs of the client.

Music Therapy Interventions in the Communicative Domain

<i>Presenting Symptom</i>	<i>Psychosocial Goal</i>	<i>MT Intervention</i>
Internal preoccupation	Reality orientation	Group improvisation (1,3,5) Individual improvisation (2,4) Group singing (1,5) Psychotherapeutic music listening group (1,5) Music instruction (1,5) Lyric analysis (3) Songwriting (3)
Pressured speech	Demonstrate a slower rate of speaking and clearer enunciation	Singing interventions that vary in lyric complexity (1, 5)
Poor nonverbal communication	Increase awareness of appropriate non-verbal skills	Instrumental "conversation" utilizing call-and-response or turn-taking structures in both individual and group formats (1,4,5)
Alogia	Increase more effective and appropriate verbalizations	Singing and song-writing tasks that encourage interactive verbalizations (1,5)

<i>References – Communicative Domain</i>
1. Cassity & Cassity (2006)
2. Dvorkin (1982)
3. Gfeller (2005)
4. Pavlicevic, Trevarthen & Duncan (1994)
5. Unkefer & Thaut (2005)

Cognitive Domain

Social learning theory explains human behaviour in terms of continuous reciprocal interaction between cognitive, behavioural, and environmental influences. Bandura (1977) stated that although change is mediated by cognitive processes, cognitive events are induced and altered most readily by success experiences through performance. “Performance” in this case does not directly pertain to musical experience, but one can draw parallels between this theory and music therapy goals in the cognitive domain of functioning: The “environment” refers to the therapeutic relationships and interactions where we provide opportunities for successful, meaningful and rewarding experiences for our clients. This environment facilitates the development of new cognitive skills, which can then be utilized to modify behaviour, and ultimately help the client achieve the best possible outcome.

The impact of compromised cognitive systems on the prognosis and course of recovery in schizophrenia was discussed earlier in this paper. There is a great deal of literature linking cognition and affect, mood, behaviour and other elements of psychiatric rehabilitation. There is also a large body of literature connecting music’s ability to influence cognition. Rachman (1981) and others (see Thaut, 2005) suggest music therapy is an effective means to influence the affective domain, and thus influence cognition and behaviour. Thaut (2005) developed a model of music therapy that relates stimulus properties and neuropsychological processing in music to modification of thinking, feeling and behaviour in psychiatric rehabilitation. Gaston and Eagle (1970) state that even in populations with compromised perceptual capacities (autism, brain injuries, psychiatric disorders) the perception of rewarding and time-ordered musical elements

remains intact, and can then be used to develop reality orientation and cognitive organization. Thaut (2005) takes this further, suggesting the experience of ordered and organized musical structures that provide clarity, comprehension, tension and resolution, can help clients reorganize their behaviour through their affective and cognitive perception and responses.

As neurologists, psychologists and music therapists are increasingly utilizing music to explore brain function, processing and plasticity, we can look forward to further scientific developments that will guide our practice, and will help us design interventions to improve cognitive function in our clients. Considering the extent to which cognitive functioning serves as a catalyst to other systems in recovery, this is an exciting and worthy goal.

Music Therapy Interventions in the Cognitive Domain

<i>Presenting Symptom</i>	<i>Psychosocial Goal</i>	<i>MT Intervention</i>
Hallucinations	Focus to reality-based stimuli; reality orientation	Singing/playing pre-composed familiar songs (5,6) Vocal/instrumental improvisation (2,5,6) Psychotherapeutic music listening group (1,3,4,5,6)
Delusions	Reality orientation	Group/individual instrumental improvisation (1,2,5,6) Group vocal improvisation (1,2,5,6) Group singing (1,5,6) Songwriting (5) Psychotherapeutic music listening group (3,5)
Impaired self-awareness	Increase awareness of current life situation	Music-based relaxation (4,5,6) Psychotherapeutic music listening group (3,5,6)
Ambivalence	Increase problem solving and decision making skills	Group improvisation (5,6) Group singing (5,6) Individual improvisation (2,5)
Avolition/anhedonia	Stimulate sufficient interest and motivation to achieve realistic goals and complete tasks	Musical performing (6) Psychotherapeutic music listening group (3,4,5,6) Resource compilation
Poor attention span	Increase duration of on-task concentration	Singing/playing/songwriting tasks utilizing music client prefers (5,6)
Impaired memory function	Retrain memory function	Singing/instrumental tasks that allow music to have a mnemonic role for improved memory skills (1,5,6)

<i>References – Cognitive Domain</i>
1. Cassity & Cassity (2006)
2. Dvorkin (1982)
3. Glickson & Cohen (2000)
4. Kerr, Walsh, & Marshall (2001)
5. Thaut (1989)
6. Unkefer & Thaut (2005)

Motor Domain

Research into motor responses to music and rhythm has grown significantly over the past decade. Two rationales are consistently mentioned throughout much of the literature on this subject: the motor-activating effect of music stimuli or playing musical instruments, and the facilitating effect of the rhythmic structure of music on motor performance. This body of literature now constitutes a research base that documents basic biological mechanisms and clinical outcomes regarding the influence of music on motor learning and rehabilitation, and has resulted in the development of model of rhythmic auditory-motor entrainment (Thaut, Kenyon, Shcauer, & McIntosh, 1999). In these models, the time information in the temporal structure of rhythm is activated to optimize motor function, planning and execution (Thaut), 2005).

Another development is that of the standardization of the literature into two treatment techniques: Patterned Sensory Enhancement (PSE) and Therapeutic Instrumental Music Performance (TIMP) (Thaut, 2005). These evidence-based treatment techniques have been developed within the context of neurological music therapy (Thaut, 2000) and are the basis for the interventions suggested below.

Although the ability of improved motor function to positively influence mental status is largely unknown, Steinberg, Raith, Rosnagl, and Eben (1995) found increased coherence in the fine-motor skills of piano playing was associated with increased

coherence in mental health status. This link has also been proposed by proposed by researchers who are particularly interested in the perceptually organizing effects of rhythm (Perilli, 1995). New research into this area may lead to new therapeutic functions of music in the motor and psychological rehabilitation in psychiatric populations.

Music Therapy Interventions in the Motor Domain

<i>Presenting Symptom</i>	<i>Psychosocial Goal</i>	<i>MT Intervention</i>
Poor gross motor skills	Increase ability to control large muscle groups	Instrumental/rhythmic playing/improvisation utilizing large, easily manipulated instruments (2,4)
Poor fine motor skills	Increase ability to control small muscle groups	Instrumental/rhythmic playing/improvisation utilizing smaller instruments that activate the targeted music groups (2,4)
Rigidity, stiffness	Expand range of motion; increase smoothness of movements	Music and movement techniques such as walking or dancing within a rhythmic structure (1,3,4)
Perseverative movements	Increase purposeful movements and body awareness; increase relaxation	Music and movement techniques that encourage relaxed movement (1) Music-based deep breathing/muscle relaxation exercises (1)

<i>References – Motor Domain</i>
1. Cassity & Cassity (2006)
2. Steinberg, Raith, Rossnagl, & Eben (1985)
3. Thaut, Kenyon, Schauer & McIntosh (1999)
4. Unkefer & Thaut (2005)

Social Domain

Social behaviour is a common theme in schizophrenia rehabilitation, with many models recognizing the significance of social learning for successful recovery. Social skills ensure our clients can cope with common social situations, and can see their interpersonal needs are met. Social skills training is based on the assumption that effective social functioning requires the smooth integration of specific component skills – perceptual, cognitive (problem-solving) and behavioural (Mueser, Noordsy, Drake & Fox, 2003). Simply put, one must first accurately perceive relevant social information in order to be socially effective. Secondly, when the situation is accurately identified, an appropriate response is required (problem-solving). Finally, once the response has been chosen, behavioural skills are needed to implement it. Music therapy can offer opportunities to practice and learn all three component skills experientially, in a safe and positive environment, through the use of motivating musical experiences. Indeed, Gaston (1968) views music as a “social art” that provides unique opportunities to integrate individuals in rewarding, nonthreatening situations (Thaut, 2005).

Numerous studies have documented the effectiveness of music to facilitate social interactions in a therapeutic context. For example, Talwar et al. (2006), de l’Etoile (2002), Bednarz and Nikkel (1992), Henderson (1983) and Cassity (1976) all found music therapy had a positive effect on awareness of mood, group cohesion and self-esteem among various psychiatric populations.

Throughout history, music has been enjoyed as a social binding agent – bringing people together with a common theme, idea or experience to be shared and communicated through music. This ability of music to facilitate group building and

communicate group feelings and values can be used as a powerful source of social learning in therapy.

Music Therapy Interventions in the Social Domain

<i>Presenting Symptom</i>	<i>Psychosocial Goal</i>	<i>MT Intervention</i>
Isolation	Social participation	<p>Themed instrumental group improvisation (1,2,5,6,7,8)</p> <p>Themed vocal group improvisation (1,2,3,5,6)</p> <p>Group singing (1,2,3,5,8,9)</p> <p>Group songwriting (3,4,5,8)</p> <p>Psychotherapeutic music listening group (1,2,5,8,9)</p>
Difficulty relating to others	Improve quality of social and interpersonal interactions	<p>Vocal improvisation group with opportunities for both leading and following other participants (1,2,5,7,8,9)</p> <p>Instrumental improvisation group with opportunities for both leading and following other participants (1,2,5,6,7)</p> <p>Relationship-themed singing group (1,2,3,5,8)</p> <p>Lyric analysis (1,5,8)</p> <p>Relationship-themed psychotherapeutic music listening group (1,2,5,8,9)</p>
Difficulty interacting in community	Generalization of skills	<p>Community trips to concerts, dress rehearsals or other events (4)</p> <p>Hold a "Friends and Family" event for client to practice skills</p> <p>Inform other staff/team members to prompt clients to use skills in appropriate situations (4)</p>

<i>References – Social Domain</i>
1. Cassity & Cassity (2006)
2. Unkefer & Thaut (2005)
3. Silverman (2003)
4. Mueser, Noordsy, Drake & Fox (2003)
5. de l'Etoile (2002)
6. Yang (1998)
7. Pavlicevic, Trevarthen & Duncan (1994)
8. Bednarz (1992)
9. Henderson (1983)

Additional Resources

Evidence-Guided Practice

Canadian Cochrane Network: www.ccn.cochrane.org

Canadian Interdisciplinary Network for Complementary and Alternative Medicine Research: www.incamresearch.ca/

Centre for Evidence-Based Medicine: www.cebm.utoronto.ca/

Evidence-Based Complementary and Alternative Medicine (journal):
www.ecam.oxfordjournals.org/

PubMed Database: www.ncbi.nlm.nih.gov

Music Perception and Cognition

European Society for the Cognitive Sciences of Music: www.musicweb.hmt-hannover.de/escom/

MuSICA: Music and Science Information Computer Archive: www.musica.uci.edu

Musicpsychology.net: www.musicpsychology.net/

Music Cognition Resource Centre: www.music-cog.ohio-state.edu/Resources/

Music Perception: An Interdisciplinary Journal: www.ucpressjournals.com/

SEMPRE: Society for Education, Music and Psychology Research: www.sempre.org.uk/

Society of Music Perception and Cognition: www.musicperception.org/

Music Therapy

Canadian Association for Music Therapy: www.musictherapy.ca

American Music Therapy Association: www.musictherapy.org

Music Therapy World: www.musictherapyworld.de

Barcelona Publishers: www.barcelonapublishers.com

Jessica Kingsley Publishers: www.jkp.com

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