ELSEVIER

The Arts in Psychotherapy 35 (2008) 34–48

THE ARTS IN PSYCHOTHERAPY

Drumming through trauma: Music therapy with post-traumatic soldiers

Moshe Bensimon, Ph.D. [a,*], Dorit Amir, D.A., ACMT [b], Yuval Wolf, Ph.D. [a,c]

[a] *Department of Criminology, Bar-Ilan University, Ramat-Gan 52900, Israel*
[b] *Music Department, Bar-Ilan University, Ramat-Gan, Israel*
[c] *Sha'arei Mishpat College of Law, Hod HaSharon, Israel*

Abstract

Combat stress reaction is common among soldiers and can develop to a post-traumatic stress disorder (PTSD). This distressing condition embraces symptoms such as feelings of loneliness and isolation from society, intrusive memories, outbursts of anger and generalized feelings of helplessness. Drumming has been receiving considerable attention in music therapy. Only few references relate to such activity among those who suffer from PTSD, and even fewer relate to combat induced post-traumatic syndrome, none of them empirical. The current study presents music therapy group work with six soldiers diagnosed as suffering from combat or terror related PTSD. Data were collected from digital cameras which filmed the sessions, open-ended in-depth interviews, and a self-report of the therapist. Some reduction in PTSD symptoms was observed following drumming, especially increased sense of openness, togetherness, belonging, sharing, closeness, connectedness and intimacy, as well as achieving a non-intimidating access to traumatic memories, facilitating an outlet for rage and regaining a sense of self-control.

Keywords: Trauma; PTSD; Soldiers; Group music therapy; Drumming

Introduction

Dancing and drumming have served as communal expression since the early ages of humanity. Communities used to beat drums before hunting and harvest feasts, during marriage and funeral ceremonies, and when preparing for and during battle (Beattie, 1963; Blades, 1970; Carrington, 1969; Gerson-Kiwi, 1950; Hanna, 1979; Moore, 1979; Okoreaffia, 1979; Putilov, 1979; Reck, 1977). Drumming has been receiving considerable attention in music therapy (see for example, Aigen, 1998; Amir, 1999; Edgerton, 1994; Kaser, 1991; Nordoff & Robbins, 1977, 1985; Watson, 2002). However, only few references relate to drumming with people who suffer from Post-Traumatic Stress Disorder (PTSD; Orth & Verburgt, 2004; Rogers, 1993; Slotoroff, 1994). Even fewer were found to relate to soldiers (Burt, 1995). None of them are empirical research.

Combat stress reaction is a common syndrome among soldiers and can take the form of PTSD. This distressing condition includes symptoms such as feelings of loneliness and isolation from society (Solomon & Mikulincer, 1990; Walker & Nash, 1981), intrusive traumatic memories, and outbursts of anger (DSM-IV-TR; American Psychiatric Association, 1994). It may weaken the individual's strength and power of control while leaving the individual with feelings of helplessness (Herman, 1992; Stark & Flitcraft, 1988; Symonds, 1982).

* Corresponding author. Tel.: +972 3 5318981; fax: +972 3 7384038.
E-mail address: bensimm@mail.biu.ac.il (M. Bensimon).

0197-4556/$ – see front matter © 2007 Elsevier Ltd. All rights reserved.
doi:10.1016/j.aip.2007.09.002

The current study explored the use of group music therapy with soldiers who suffer from PTSD induced by combat or terror attack. It examined spontaneous drumming as a way to facilitate a sense of belonging, intimacy, togetherness, and connectedness; to achieve a non-intimidating access to traumatic memories; to allow an outlet for rage; and to regain a sense of control.

Drums in wars

Until the noisy and lethal weapons of the 20th century made them vanished, drums were inseparable part of warfare. Drums have frequently been used before battle to inspire and boost the moral and on the battlefield to intimidate the enemy and give signals to troops as well (Reck, 1977). In the mid-18th century, the Turkish army of the Ottoman Empire marched to the sounds of kettledrum, tenor drum and bass drum among other instruments. This impressing percussion sound was soon adopted by European armies (Hart, 1990).

By the time of the Renaissance, armies in Europe had worked out musical languages to communicate information during battles. Warriors marched into the battle field to the beat of side drums. Changes in drum rhythm signaled march, approach, fire, battle, skirmish, retreat or cease fire (Blades, 1970; Hart, 1990), and each army had its unique set of rhythms (Blades, 1970). It was considered dishonorable to wound a drummer, although the capture of an enemy's drum was symbolically very important (Hart, 1990).

In the 20th century, drums served as a means to communicate between outer villages within virgin forests. During the four years Nigeria suffered from war (1967–1970), drums were used to announce the arrival of supply (Hindley, 1981). In North Africa, in a place named Kele, two lower beat tones followed by two upper ones signaled the arrival of the enemy (Carrington, 1969). In Ghana, after the Ashanti people submitted to British rule, whenever the Governor appeared for a durbar, he was greeted ceremonially with drum music. The Ashanti used talking drums which translated the text of an old song 'Slowly but surely we shall kill . . .' whose meaning was clear to everyone except the British (Rhodes, 1962).

Post-combat stress

In terms of the DSM-IV-TR (1994), psychological trauma is a response to overwhelming personal threat in which the psychic apparatus surrenders to a situation of terror and immediacy of death. PTSD is a complex array of symptoms which may appear in three forms, according to the onset and duration of the symptoms: acute, when the duration of symptoms is less than three months; chronic, when the duration of symptoms lasts three months or longer; and with delayed onset, when at least six months have lapsed between the traumatic event and the onset of the symptoms. PTSD comprises three sets of symptoms: intrusion, avoidance, and hyper-arousal. Some of its salient symptoms are intrusive traumatic memories and outbursts of anger. The latter can cause undesirable disturbances in interpersonal communication.

Combat stress is common among soldiers and can develop into PTSD syndrome (Solomon, 1989a, 1989b; Solomon & Oppenheimer, 1986; Solomon, Oppenheimer, Elizur, & Waysman, 1990). Soldiers who suffer from combat induced PTSD report feelings of loneliness and isolation from society (Solomon & Mikulincer, 1990; Walker & Nash, 1981), being left helpless and deprived of strength and power of control (Herman, 1992; Stark & Flitcraft, 1988; Symonds, 1982).

Between 27% and 29% of World War II veterans have suffered from PTSD (Rosen, Fields, Hand, Falsettie, & van Kammen, 1989; Speed, Engdahl, Schwartz, & Eberly, 1989). The National Vietnam Veterans Readjustment Study (NVVRS) estimated PTSD prevalence rate among Vietnam veterans to be 15.2% (Kulka et al., 1990). PTSD has been found among 16% of the frontline Israeli soldiers one year after the 1982 Lebanon War (Solomon, Weisenberg, Schewarzwald, & Mikulincer, 1987).

Group music therapy and PTSD

The powerful effect of playing music in a group may be due to its idiosyncratic merit. During group discussions it is impossible to talk simultaneously and feel 'we-ness' since it requires individuality for its intelligibility. This, however, is achievable in group music playing, since pitch intervals allow harmonious voice blending when sounding together and temporal regularity facilitates motor synchronicity (Brown, 2000). Moreover, an individual can simultaneously

listen to his or her own playing, pay attention to another's music, and listen to the entire group product as a whole without the necessity of eye contact while attaining a feeling of the group as a harmonic entity (Bensimon, 2005).

The development of a sense of belonging and interpersonal communication via creative process is one of the major therapeutic aims in a music therapy group with PTSD patients (Blake, 1994; Blake & Bishop, 1994; Burt, 1995; Dixon, 2002; Orth & Verburgt, 1998). Orth and Verburgt (2004) describe how a group of traumatized refugees from different surroundings create music together within minutes despite language limitations. Blake and Bishop (1994) describe how the Bonny method of Guided Imagery and Music (GIM) can be effective in addressing major experiences of disempowerment and disconnection.

The rationale for using music therapy with PTSD victims is based on the nature of traumatic memories as presented in flashbacks and nightmares. Such memories are considered as primitive and visually based fragments that emerge as a whole including every detail, as if they were photographed, whenever stimulated by similar sensory input. They are preserved in inflexible structures and are therefore not transformable as other memories (Brett & Ostroff, 1985; Gardner, 1982; Van der Kolk, Blitz, Burr, Sherry, & Hartmann, 1984; Van der Kolk & Fisler, 1995; Volkman, 1993). This state includes an inability to translate sensory motor representations, processed apparently in the right hemisphere, into meaningful symbolic and verbal representations which are processed apparently in the left side (Sifneos, 1973). This may result in disability to translate emotions into words (Alexithymia; see Yehuda et al., 1997; Zlotnick, Mattia, & Zimmerman, 2001).

Music (Storr, 1992; Volkman, 1993) and traumatic events (Van der Kolk & Fisler, 1995) are sensory mediated. Therefore, music therapy might function as a means of sensory approach to traumatic memories as a detour of linguistic and logical mediation (Johnson, 1987). This road has not been discussed in the literature. The current study attempted to exemplify how music enables access to traumatic memories in a non-intimidating way.

As can be seen from the above, the role of drums in music therapy with people who suffer from PTSD in a group setting seems to deserve further attention. The present study's overall propose was to explore the meaning of group drumming for young men who suffer from PTSD.

Method

Participants

The participants were nine men, 20–23 years old, who experienced traumatic events during military service and were diagnosed as chronically suffering from PTSD. In addition to group music therapy, each one of them participated in individual psychotherapy. After four weekly group music therapy sessions three participants dropped out. A brief depiction of the personal background of each one of the remaining participants is presented below (for ethical considerations they are represented by arbitrarily assigned letters).

Participant A was a 21-year-old soldier. He was severely wounded in his thigh during a battle where he witnessed the death of his friend. Participant B, a 20-year-old soldier, was on a bus heading to his camp with his father and three more friends who were all killed during a suicide attack on the bus. He himself flew out of the bus and suffered from burns and a broken leg. Participant C, a 23-year-old soldier, was asked to identify three of his dead friends right after a deadly combat incident. Participant D, a 21-year-old sniper, killed two terrorists from a short distance and saw their last expressions. Participant E, a 21-year-old soldier, sat at a coffee shop with a friend when a suicide bomber blew himself up nearby. While helping those injured he saw unbearable sights. The thigh of participant F, a 21-year-old soldier, was severely injured during a combat incident where two of his friends were killed.

Data collection

The data were collected from the following three sources: (1) Two digital cameras posted in two opposed corners of the room that filmed the sessions. Overlapping angles of sight provided a whole picture of the group circle. The filmed sessions were subjected to verbal and musical analyses (see below). (2) An open-ended in-depth interview (Kvale, 1996; Moustakas, 1994) with each participant was conducted after the last group meeting. Each interview lasted between 1 and 1.5 h and was transcribed and analyzed. (3) A self-report of the therapist–researcher, deliberated to reflect his personal experience, thoughts, associations and feelings, was scripted right at the end of each session and analyzed.

Setting and procedure

The group's meetings took place in the Military Unit for Combat Stress Reactions. The participants and the therapist sat in a circle while the musical instruments were placed in the center. The setting included a Darbuka, Tabla, Indian Drum, Floor Drum and two Djembes, as well as many other melodic, harmonic and wind instruments. Playing and talking during sessions were spontaneous except the last 10–15 min of each session which were dedicated to listening to relaxing music.

A confirmation from the Helsinki Committee was received prior to the implementation of this study. Then, a music workshop was conducted for the psychiatrists, psychologists, and social workers of the Military Unit for Combat Stress Reactions, who were not familiar with music therapy in the context of traumatic events. Following this experience they were able to refer their patients to this study's group music therapy. Soldiers who were interested in partaking in the project participated in two intake sessions. The first group session took place three weeks later. The entire treatment included sixteen 90 min weekly meetings.

Prior to the first meeting, each member of the group signed an informed consent. The music therapist received clinical supervision from a certified music therapist, a psychologist from the Unit for Combat Stress Reactions and a social psychologist throughout the related period of four months.

Data analysis

The following quantitative and qualitative procedures were made in order to follow up overt and covert changes in the group process:

1. The extent of time that each musical instrument was played and its intensity, tempo, and other variables were measured and analyzed in terms of simple statistical measures like percentages and frequencies.
2. Content analysis (Guba & Lincoln, 1981) was conducted via extraction of categories and themes in the interviews and records from all sessions.
3. Rhythmic patterns were transcribed note-by-note using the conventional notation system following Lee (1989, 1990, 1995, 2000). Rhythms' categorization was performed in drumming improvisational instances.

Trustworthiness of the study

To minimize falsifications and maintain high standard of credibility the following steps were undertaken:

1. Triangulation (Fetterman, 1989) was achieved by using the following data measures: statistical measurements, content analysis, and rhythm categorization.
2. Peer debriefing was used for enhancing external validation (Denzin & Lincoln, 1994; Lincoln & Guba, 1985). The transcribed matter of two random sessions was shown to five professionals: three experienced music therapists, a group psychotherapist who was working for 6 years with PTSD's groups, and a clinical psychologist with 14 years of professional background in the military service. Their comments were taken into consideration while analyzing the data.
3. Multiple observations (Dey, 1993) were achieved by watching the sessions' films over and over again. This intensive contact with the related phenomenon enabled the researcher to become thoroughly familiar with the musical and verbal contents of the sessions and interviews.
4. Analyzing the data after the end of the entire therapeutic venture in the original sequence (session 1 first, then session 2, etc.) enabled the attainment of a reliable picture of the researched phenomena.

Results

Based on a detailed analysis of the data, the entire bulk of material was divided into five phases. Each phase contains three sessions, except the first phase which included four sessions (all phases were assigned with the same statistical weight). An analysis of the findings indicated that participants invested in drumming considerably more time than in the other instruments, as illustrated in Fig. 1.

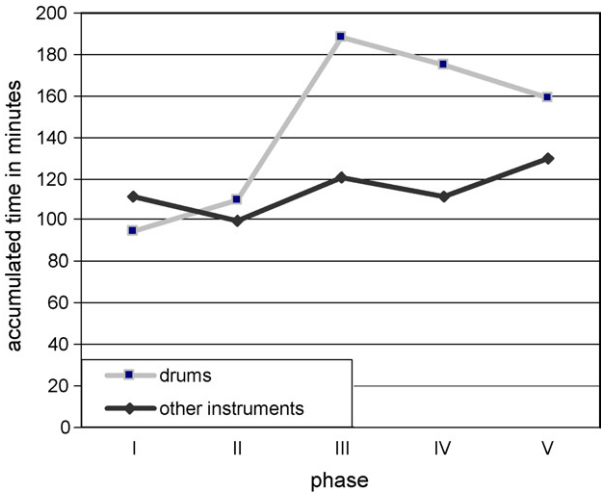


Fig. 1. Accumulated time in minutes of drum playing versus playing on all other instruments.

The following are four categories of group drumming: group cohesion, traumatic associations, rage and relief, and rhythmic categorization.

Group cohesion

Group drumming was found to create feelings of openness, togetherness, sharing, closeness, connectedness and intimacy as reflected in participant E's report:

> "All of the mutual crazy drumming created openness which enabled free talking about everything. Once you beat the drum, although you don't know anyone, it gives a feeling of togetherness which makes it possible for you to share everything with the group. It's as if you'll go naked in front of them. Yes! Exactly! As if they saw everything, so I can tell them all about myself. If I spoke about personal issues it's only due to the group drumming which enabled us to open up. It brought us closer to each other when we hit the drums. I really connected myself with the group members. It's like working together. If something facilitated intimacy above all the instruments, it was the drums" (personal interview).

The therapist's perspective was quite similar as reflected in the analysis of his self-report: "The intensive, loud and accelerated group drumming made me feel fused with the group members" (session 12). Fig. 2 supports this impression. It presents group versus individual drumming. (Drumming of at least two participants in the same beat is considered as group drumming.) As can be seen in Fig. 2, group drumming increased consistently as the treatment progressed while individual drumming decreased respectively.

Circle group drumming was developed spontaneously by the group members and was found to promote group interactions and cohesion. The participants sat in a circle while one member played a certain rhythmic pattern which was followed immediately by another member who sat next to him. Another such activity took the form of call-and-response where one participant played a certain rhythm and the group imitated him. During these interactions the participants used terms of give-and-take as follows:

> Participant C to participant A: "Let's go! Let's go! Let's go, play a beat! Every one plays a beat and gets one back in return." Participant A: "Yeh, the moment everyone gets a beat, he should play back one in return!" Participant A to Participant D: "As you get a beat, you should immediately play one back in return" (session 10).

Circle group drumming became much more complex when the participants gradually accelerated the tempo. They considered beginning the same rhythm simultaneously from two different locations in the circle to be a challeng-

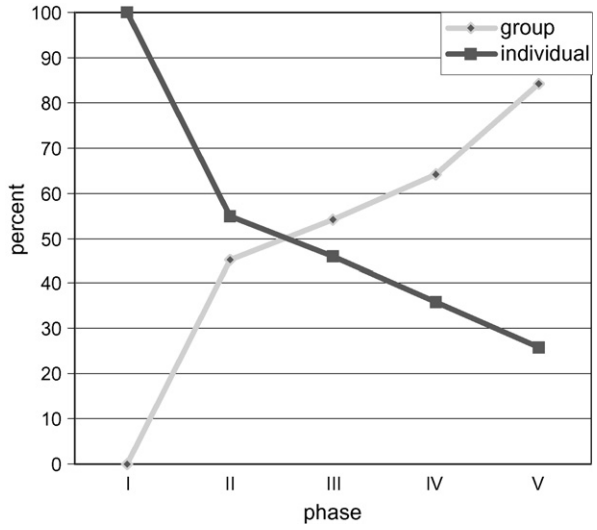


Fig. 2. Group drumming versus individual drumming.

ing exercise, since it required a high level of group synchronicity. This dynamics are reflected in the following example:

> After another failure to play simultaneously from two different locations in the circle, participant C said: "It's hard isn't it? Let's see, I think we can manage!" The group members played and failed again. Participant C shouted at participant A: "You messed up! You messed up!!!" Every body laughed. Participant C to the group: "Okay, let's try again, again guys!!! We won't give up!!!" (session 10).

Traumatic associations

Drums were found to evoke frightening associations of trauma, war, chase and flight in the current study. The following exemplifies the deliberated use of drum to facilitate association with traumatic experience:

> Participant B: "Maybe . . . Maybe a drum . . . bom bom bom bom bom can remind me of the trauma . . . because the noise stresses me. That's what happened there at the moment of the fire, because the bus was also burnt. Everyone suddenly bended . . . and the explosion of the . . . the ammunition . . . and bom bom bom bom bom . . . and suddenly I found myself alone and every one bent to the floor . . . and flames which are impossible to describe. Dreadful heat!" Participant F: "Were you in the bus?" Participant B: "Yes, I was in the bus." Participant C: "Were you thrown outside the bus or . . .?" Participant B: "Yeh, yeh, I was thrown outside. If that wouldn't have happened, I would have ended as every one else did. I would have been burnt to death! People screamed and one could hear their screaming slowly dying out. That's all. And the drums, you know, takatakatakataka bom bom bom bom bom, drive me crazy." The group members played the drums under the instructions of participant B. After the group playing participant B said: "It reminds me exactly the chaos that was there." Participant C: "It was frightening, it reminds me of war" (session 4).

Another example is the following discussion after a group drumming improvisation in a Marching rhythm:

> Participant F: "Army! It reminded me of the army!" Participant C: "It's . . . It's a march before attacking as it used to be in the past! They would march and shoot each other like idiots." Participant D: "Yeh!" Participant C summed it all up by saying: "Marching to their death; marching to their death if we want to make a long story short" (session 12).

Fig. 3 adds a longitudinal dimension to the above illustrations. It presents frequencies of spontaneous reported traumatic associations evoked by drumming. Evidently, Phase 2 is characterized by the highest rate. The next phases show a moderate decline till the end of the treatment.

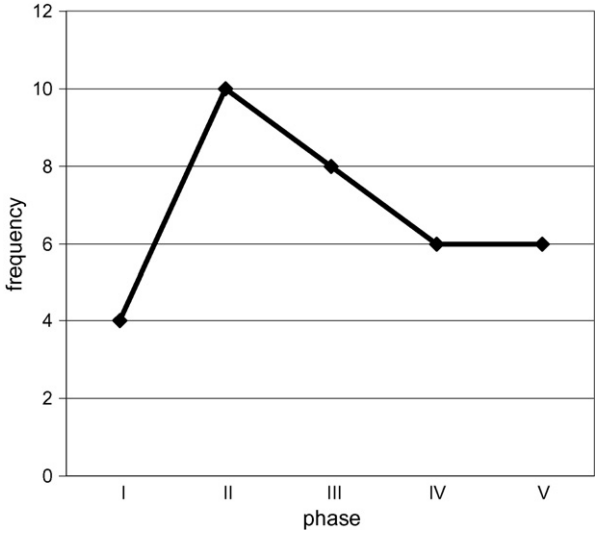


Fig. 3. Frequencies of spontaneous reported associations related to traumatic aspects in the context of group drumming.

Rage and relief

Drumming in very loud volume (*forte-fortissimo—fff*) served participants as an outlet for rage as was portrayed by participant D who explained the group attraction to drumming in *fff*:

> "We might be attracted to the drum because one has to hit it. It takes out all the rage!! When you hit something, you beat it. You don't do something gentle, you beat it with a temper. I think that is what makes drumming so attractive to us" (session 9).

The group tendency to play *fff* on drums more then on all other instruments is presented in Fig. 4, which presents the accumulated time of group playing *fff* according to instruments categorization. It appears that a major part of the time was spent on drum playing.

This activity facilitated a prolonging sense of relief as illustrated by participant A:

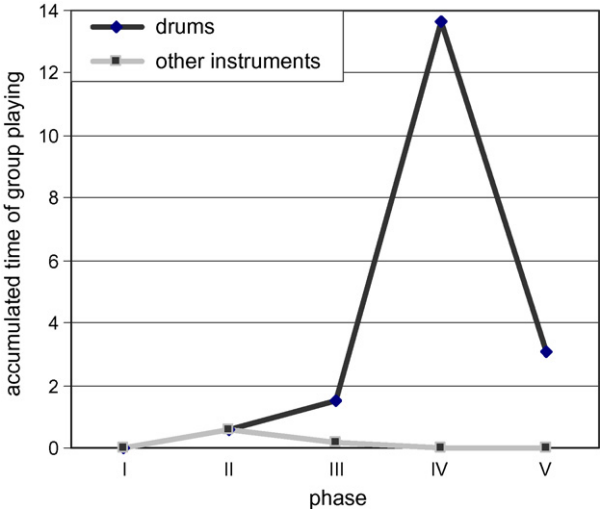


Fig. 4. Accumulated time in minutes of group playing in very loud volume (*fff*) while dividing musical instruments into two categories—drums versus all the other instruments.

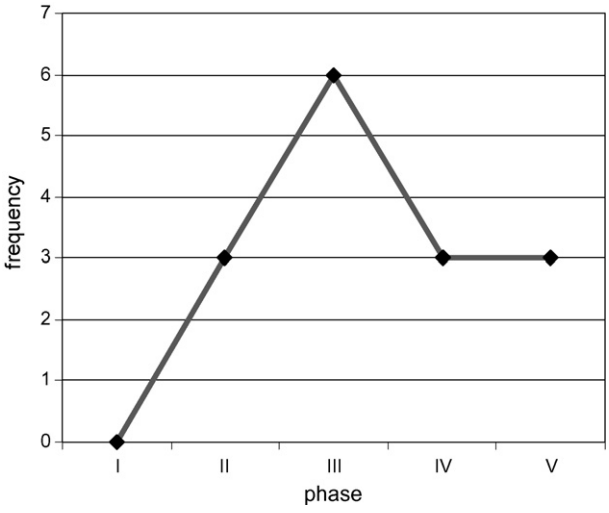


Fig. 5. Frequencies of spontaneous reported feelings of relief in the context of group drumming in very loud volume (*fff*).

> "It might be that we were attracted to drums, because when you keep on drumming hard, you get rid of all of your nerves!! Group drumming is also a kind of relief which releases tension. You beat the drum like crazy and discharge lots of energy. You make a noise and then you feel a sense of relief. It's a real feeling and it affected me positively. I started my weekend with more strength" (personal interview).

Fig. 5 presents a longitudinal perspective of spontaneous reported feelings of relief in the context of very loud group drumming. It seems that Phase 3 carries the highest frequencies of reported feelings of relief.

Drumming in *fff* was followed too by a sense of satisfaction. The next conversation took place right after a very intense group drumming improvisation:

> Participant C referred to the therapist: "Oh! We boomed the whole building!!" Participant D: "We shook up the whole construction!!" Participant C laughed and said: "They can't imagine what's going on here!!" Everyone laughed and participant B said: "The psychologists in the upper floor are driven mad, for sure!!" Participant E: "It was really fun! It was funny!" Participant D: "It was cool!" (session 10).

In this context, participants also reported a sense of empowerment as noted by participant D:

> "I mainly liked playing the drums with open palms and it was so empowering!!! I was drumming like crazy while unloading lots of energy. I went out of here empowered and its positive effect lasted for the whole weekend!" (personal interview).

Rhythmic categorization

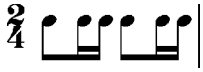
A categorization of the group's varied rhythmic patterns is presented below. Basic rhythmic patterns are characterized by keeping the basic beat, while complex rhythmic patterns contain syncopations or fragmentary rhythms.

Basic rhythmic patterns

Basic rhythmic patterns are as follows:

1. A basic rhythmical beat is an accented metric beat which coincide strongly with one another. This rhythm accents its natural metric without dividing the basic beat:

2. Division of the basic beat while maintaining the natural metric accents:

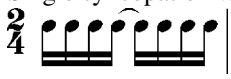


3. Division of the basic beat by sustaining it in half while keeping the natural metric accents:

Complex rhythmic patterns

Complex rhythmic patterns are as follows:

1. Single syncopation which appeared in this rhythmic pattern:



2. Similar sequential syncopation:

3. Density of syncopation as in rhythmical strettoes:

4. Fragmentary rhythms which are characterized by a shift from odd to even meter and vice versa:

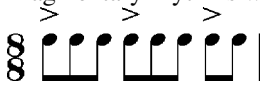


Fig. 6 examines the prevalence of basic versus complex group drumming rhythmic patterns throughout the therapeutic process. It is quite noticeable that in Phase 2 the participants played only basic patterns, while in Phase 3 a significant use of complex patterns was documented. Phases 4 and 5 show moderate measures of both variables.

Fig. 7 examines the frequencies of basic versus complex group rhythmic patterns which were played after a conversation concerning a traumatic issue. As can be seen, Phases 1, 2, and 3 are not characterized by high prevalence of rhythmic patterns of any kind, whereas Phase 4 stands out in its high frequencies of basic patterns and Phase 5 in its high frequencies of complex patterns as well.

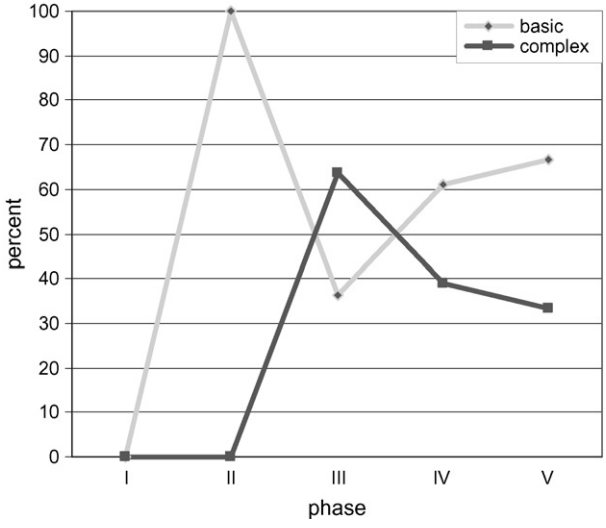


Fig. 6. Percentages of basic versus complex group rhythmic patterns.

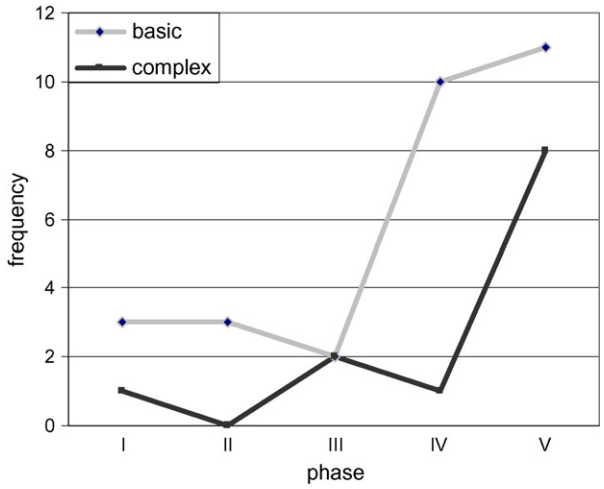


Fig. 7. Frequencies of basic versus complex group rhythmic patterns which followed a conversation concerning a traumatic issue.

Hereby an example which can illustrate how unstable the participants felt after a conversation concerning a traumatic issue during Phase 2:

> Participant F referred to the therapist after a group conversation about the appearance of the PTSD symptoms in the daily life of the participants: "You know, I am not sure that all these conversations about the traumatic incidents and the PTSD symptoms are doing me any good." Participant B: "Yeh, after such conversations I feel a bit down." Participant C: "Yes, I think it also influences me in that direction" (session 6).

Discussion

This study was deliberated to explore the meaning of group drumming for young men who suffer from PTSD induced by combat or terror attack. The essential components which were found to comprise this process are examined and discussed below.

Loneliness versus togetherness

Trauma can isolate and disconnect the victim from society. Group therapy can restore social relationships by fostering feelings of belonging (Herman, 1992; Walker & Nash, 1981). Group cohesion was found to affect people who suffer from PTSD in lessening feelings of loneliness and strengthening feelings of belonging (Harvey, 1991; Herman, 1992; Scurfield, Kenderdine, & Pollard, 1990; Van der Kolk, 1987; Wigren, 1994). Group cohesion can increase easily through music. Strong musical rhythm has a catching effect on human beings who usually move their heads or limbs in unison with the rhythm (Scherer & Zentner, 2001). Storr (1992) emphasized the potential of a strong beat to unite individuals and create a strong feeling of togetherness due to the similar bodily effects.

In the current study, results indicate that participants felt contact, unity and togetherness which were accompanied with an atmosphere of give-and-take while drumming together. They stated explicitly that group drumming promoted openness, sharing, closeness, connectedness and intimacy. These results are in line with the assertion of Reuer, Crowe, and Bernstein (1999) that "feeling of belonging is created because . . . the sustained repetition of the steady beat acts to bring people together physically, emotionally and mentally" (p. 2).

Many models of developmental stages in group therapy mention that during the first stages of the group feelings of uncertainty and insecurity are dominant, and group members tend to be occupied in checking out the leader and each other. Trust is achieved only in later phases of the treatment (see for example, Bernstein & Duquette, 1995; MacKenzie & Livesley, 1983). The current study provides evidence supporting this development. During Phase 1 (see Fig. 2) there was no group drumming at all. At this stage, the group members did not know each other. They had no previous musical qualification and probably felt uncertain and insecure to dare and play together on the drums. As the treatment

progressed, the percentage of group drumming increased consistently and reached its peak at Phase 5, while individual drumming decreased respectively. This can indicate that the participants went gradually through a process of getting to know and trusting each other which was reflected by their daring to take part in group drumming. These findings are compatible with the effort of a psychotherapist to enhance interpersonal communication between those who suffer from PTSD as a central therapeutic aim (Harvey, 1991; Herman, 1992; Scurfield et al., 1990; Van der Kolk, 1987; Wigren, 1994).

Non-intimidating access to traumatic memories

The nature of a traumatic memory is firmly fixed and the sufferer might find it difficult to verbalize related emotions (Brett & Ostroff, 1985; Gardner, 1982; Van der Kolk & Fisler, 1995; Volkman, 1993). A traumatic event affects an individual with his or her auditory sense, therefore music as a sensorial stimulus can help people who suffer from PTSD to detour linguistic and logical mediation (Johnson, 1987). Among other instruments, the drum was found to serve as a suitable instrument to communicate feelings of fear (Bodner & Gilboa, 2006). And indeed, music therapists reported that the drum was found to be a vivid auditorial reminder of trauma (Burt, 1995; Orth & Verburgt, 2004).

In the current study, drumming evoked harsh associations with the participants' traumatic events, war, chase and flight mainly during Phase 2 (see Fig. 3). However, participants continued to recall these associations during the later phases without reporting any reluctance or intimidation. These findings may be explained in the light of the behavioral therapy technique of habituation. This concept refers to learning in which there is a progressive diminution of behavioral response with a repetitive continual stimulus. It is used for reducing the client's self-reported anxiety during confrontation with feared stimuli (Jaycox, Foa, & Morral, 1998). Presumably, a repetitive confrontation with the 'sounds of trauma' during Phase 2 enabled the participants to achieve self-habituation. As the treatment progressed, the reported associations decreased (see Fig. 3) despite the continual use of drums till the last phases of the treatment (see Fig. 1). This may support the assumption that the participants responded with less fear to these sounds as the self-exposure continued. Presumably, the supportive group environment promoted access to their traumatic memories in a less intimidating way.

Drumming out the rage

One of the salient characteristics of the PTSD syndrome is outbursts of anger (DSM-IV-TR, 1994). Drumming was found to serve as a substantive instrument for expressing aggression (Winkelman, 2003), and communicating anger (Behrens & Green, 1993; Bodner & Gilboa, 2006). In the ecstatic healing rituals of North Africa as well as Central and North Asia, drumming proved to be a dominant instrument. During such rituals, the healer intensifies the dynamic and reaches a peak of *fff*, overshadowing this way pain and anxiety. As a result, the client sublimates his or her aggression and experiences psychophysiological relief (Sekeles, 1996). According to Amir (1999), anger and rage are the most prevalent emotions associated with drumming in music therapy. She contends that by playing *fff* the client can release a lot of energy and can experience a sense of relief.

Intensive drum beating is used very often in music therapy with people suffering from PTSD. Playing *fff* requires long and harsh arm movements. Thereby, it releases physical energy as a vent for anger enabling the client an aggressive and continual 'rage of sounds' (Dixon, 2002; Orth & Verburgt, 2004; Rogers, 1993; Sekeles, 1994, 1996; Slotoroff, 1994). Drumming facilitates bodily effects. It creates sound waves which travel either through the air or through the drum's handles or sticks. Thus, the drummer's body can feel the sound vibrations which in turn can increase his or her self-awareness of body sensations. This experience may facilitate emotional release (Gardner, 1990). Accordingly, intensive group improvisation on hand drums with Vietnam veterans helped to modulate misdirected, exaggerated, and unrecognized rage (Burt, 1995). These reports are in line with studies which show that loud volume is associated with tension (Krumhansl, 1996) and anger (Juslin, 1997, 2000).

The participants in the present study reported that drumming extremely loudly in *fff* during group improvisations provided them with an outlet for rage followed by feelings of relief, satisfaction and empowerment. A gradual course for discharging rage is revealed by conjoining results from Figs. 3–5 in this sequence. During Phase 2 (see Fig. 3), participants experienced high frequencies of traumatic associations which can indicate emotional charging. At Phase 3 (see Fig. 5) they reported achieving feelings of relief through group drumming in *fff* which can represent an emotional discharge. This was intensified and reached its peak during Phase 4 (see Fig. 4) by spontaneous group drumming in *fff*

for the longest length of time. This spontaneous sequence seems to reflect the participants' safe and tentative path to sublimate their rage.

Regaining a sense of control

Traumatic experience may impoverish the individual's sense of strength and power of control and leave him or her with feelings of helplessness. Hence, a leading therapeutic goal in the recovery from such conditions deals with regaining power of control (Erikson, 1963; Herman, 1992; Kardiner & Spiegel, 1947; Stark & Flitcraft, 1988; Symonds, 1982). In relation to music therapy, Burt (1995), who worked with Vietnam veterans, mentioned that group members learned how to control their feelings by controlling rhythm, volume, tempo, and timbre of the drums. As they took control of the drums, they actually took control of themselves. Mikenas (2000) pointed out that drumming activities have been found as promoting rhythmic and motoric control, concentration, and coordination. According to Sekeles (1994), clients' chaotic and intensive drumming may develop into a rhythmical organization without any instructions on the part of the therapist. This organization can bestow a sense of satisfaction and control.

Music therapists use basic rhythmic patterns for enhancing inner stability and control within handicapped populations. A client without previous musical qualifications might experience a high level of self-confidence while playing a complex rhythmic pattern (Aigen, 1998; Nordoff & Robbins, 1977, 1985). Following this reasoning, the participants of the present study started with basic rhythmic patterns, which probably provided them with inner stability and a sense of control. Then, they gradually challenged themselves to shift towards more complex rhythmic patterns which can reflect increased self-confidence. These complex rhythmic patterns required from each participant a high level of attention, concentration and movement control in order to obtain synchronization with the other participants' movements and sounds. Higher group synchronization was needed when the participants accelerated the tempo of a steady beat and began it simultaneously from two different locations in a circle group drumming. These activities might reflect the high motivation of all group members to gradually regain a sense of control.

It appears that the participants felt emotional instability after conversations concerning traumatic issues. In this context, another gradual shift from basic to complex rhythmic patterns was noticeable. Phase 4 (see Fig. 7), which was characterized by its high frequencies of basic rhythmic patterns following conversations concerning traumatic issues, probably provided the participants with inner stability and a sense of control. This enabled them to dare and play complex rhythmic patterns even after such conversations during Phase 5. According to the literature (Aigen, 1998; Nordoff & Robbins, 1977, 1985), these findings indicate that the participants felt more confidence in themselves.

Limitations and further research

A balance of advantages and disadvantages typifies case studies in general and the specific version of this methodology employed in the present study. Disadvantages are substantively due the necessary focus on one appearance of the related phenomenon, a series of group music therapy sessions. Necessarily, such research is unable to control for possible jeopardizing variables (Campbell & Stanley, 1972). On the positive end of the scale, however, such a study, if conducted carefully, provides a comprehensive picture of the to-be-studied phenomenon.

Presumably, this is the case with the present study, as implied from the research and detailed results presented above. Moreover, beyond the very many trees pictured by the present findings, an overarched look at them exposes a meaningful forest marking the core role of drumming in group music therapy. That is due to the unique combination of several qualifications of the design and performance of the study.

One essential qualification is the heartfelt involvement of the patients. Another important qualification is the multiple array of musical instruments available to the participants at any moment of all 16 sessions, which contributed substantively to the participants' willingness to jump into the water. The unique combination of qualitative and quantitative measures as well as the amalgamation of qualitative and quantitative statistical arrangement of the data enabled a comparison of the relative effect of drumming.

Recalling that in the given conditions the present study was possible, i.e., there was no other way to research the issue, there should be a decent reason to accept the results as a starting point for longitudinal studies with several therapy groups, which will monitor variables such as gender, age and trauma characteristics. It is to be expected that such studies will enable a better 'cause and effect' understanding of music therapy treatment. Moreover, since this

study deals only with a few PTSD symptoms, further studies should strive to develop music therapy techniques for treating other PTSD symptoms.

Conclusions

Overall, the therapeutic viability of the following therapeutic goals was seemingly exemplified in this study:

1. Group drumming increased a sense of openness, togetherness, belonging, sharing, closeness, connectedness, and intimacy.
2. Drumming evoked associations which were connected to trauma. This activity took place in a creative and safe atmosphere. Thus, it may have established a platform for accessing traumatic memories in a non-intimidating way.
3. Group drumming facilitated an outlet through 'drumming out the rage' as an acceptable way of expression. This activity ultimately enabled to sublimate latent rage while promoting a sense of relief, satisfaction, and empowerment.
4. It may be assumed that the participants were able to regain a sense of control and increase self-confidence by obtaining rhythmical synchronization while playing basic and complex rhythmic patterns in a circle group drumming.

Unfortunately, soldiers will likely experience PTSD as long as wars continue to be the solution chosen to solve humanity's conflicts. Therefore, music therapists, among other psychotherapists, will be summoned to help this population. Hence, the significance of studies that will contribute to the treatment of this population is very relevant and actually indispensable. This study exemplifies how a simple instrument such as a drum – that can be made out of natural materials and does not require former qualifications for producing an esthetic sound – can help to deal with a complicated syndrome like PTSD. In this study, the drum was found to be an efficient instrument for coping with difficulties such as feelings of loneliness, harsh traumatic memories, outbursts of anger, and loss of control. More research is needed in order to further understand the mechanisms through which music can help this population. This can promote theoretical comprehension in this field and lead to designing a specific intervention model which will be applied by music therapists who work with victims of trauma.

Acknowledgements

We wish to thank the Israeli Military Unit for Combat Stress Reaction for their cooperation. We also thank Mrs. Esther Bensimon for her valuable comments on the draft of this article. Foremost, we are grateful to each one of the group members for their willingness to share with us via words and sounds some of their traumatic and personal aspects of their lives.

References

Aigen, K. (1998). *Path of development in Nordoff-Robbins music therapy*. Barcelona: Gilsum, NH.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders: DSM-IV*. Washington, DC: American Psychiatric Association.

Amir, D. (1999). *Meeting the sounds. Music therapy practice, theory and research*. Ben Shemen: Modan. (in Hebrew).

Beattie, J. H. M. (1963). A note on the connection between spirit mediumship and hunting in Bunyoro, with special reference to possession by animal ghosts. *Man*, *63*, 188–189.

Behrens, G. A., & Green, S. G. (1993). The ability to identify emotional content of solo improvisations performed vocally and on three different instruments. *Psychology of Music*, *21*, 20–33.

Bensimon, M. (2005). *Group music therapy for posttraumatic patients*. Unpublished doctoral dissertation. Ramat-Gan, Israel: Bar-Ilan University (in Hebrew).

Bernstein, E., & Duquette, J. S. (1995). Inpatient group psychotherapy program: A model. *Journal of Child and Adolescent Group Therapy*, *5*, 35–45.

Blades, J. (1970). *Percussion instruments and their history*. London: Farber & Farber Limited.

Blake, R. L. (1994). Vietnam veterans with post-traumatic stress disorder: Finding from a music and imagery project. *Journal of the Association for Music and Imagery*, *3*, 5–17.

Blake, R. L., & Bishop, S. R. (1994). Special feature—The Bonny method of guided imagery and music (GIM) in the treatment of post-traumatic stress disorder (PTSD) with adults in the psychiatric setting. *Music Therapy Perspectives*, *12*, 125–129.

Bodner, E., & Gilboa, A. (2006). Emotional communicability on music therapy: Different instruments for different emotions? *Nordic Journal of Music Therapy*, *15*, 3–16.

Brett, E. A., & Ostroff, E. (1985). Imagery in post-traumatic stress disorder: An overview. *American Journal of Psychiatry*, *142*, 417–424.
Brown, S. (2000). The 'musilanguage' model of music evaluation. In N. Wallin, B. Marker, & S. Brown (Eds.), *The origins of music* (pp. 271–300). Cambridge, MA: MIT Press.
Burt, J. W. (1995). Information sharing: Distant thunder: Drumming with Vietnam veterans. *Music Therapy Perspectives*, *13*, 110–112.
Campbell, D. T., & Stanley, J. C. (1972). *Experimental and quasi-experimental designs for research*. Chicago, IL: Rand McNally.
Carrington, J. F. (1969). *Talking drums of Africa*. New York: Negro Universities Press.
Denzin, N., & Lincoln, Y. S. (1994). *Handbook of qualitative research*. Thousand Oaks, CA: Sage.
Dey, I. (1993). *Qualitative data analysis*. London: Routledge.
Dixon, M. (2002). Music and human rights. In J. Sutton (Ed.), *Music, music therapy and trauma* (pp. 119–132). London: Jessica Kingsley Publishers.
Edgerton, C. L. (1994). The effect of improvisational music therapy on the communicative behaviours of autistic children. *Journal of Music Therapy*, *31*, 31–62.
Erikson, E. (1963). *Childhood and society*. New York: Norton.
Fetterman, D. M. (1989). *Ethnography—Step by step*. Thousand Oaks, CA: Sage.
Gardner, H. (1982). *Art, mind and brain*. New York: Basic Books.
Gardner, K. (1990). *Sounding the inner landscape: Music as medicine*. Rockport, MA: Element.
Gerson-Kiwi, E. (1950). Wedding dances and songs of Jews of Bokhara. *Journal of the International Folk Music Council*, *2*, 17–18.
Guba, E. G., & Lincoln, Y. S. (1981). *Effective evaluation*. San Francisco, CA: Jossey-Bass Publishers.
Hanna, J. L. (1979). Towards a cross-cultural conceptualization of dance and some correlate considerations. In J. Blacking & J. W. Kealiinohomoku (Eds.), *The performing arts—Music and dance* (pp. 17–45). Paris: Mouton Publishers.
Hart, M. (1990). *Drumming at the edge of magic: A journey into the spirit of precussion*. San Francisco, CA: Harper SanFrancisco.
Harvey, M. (1991). Group treatment for survivors. In M. Koss & M. Harvey (Eds.), *The rape victim: Clinical and community interventions* (pp. 205–244). Beverly Hills, CA: Sage.
Herman, J. L. (1992). *Trauma and recovery*. New York: Basic Books.
Hindley, G. (Ed.). (1981). *Larousse encyclopedia of music*. London: Hamlyn.
Jaycox, L. H., Foa, E. B., & Morral, A. R. (1998). Influence of emotional engagement and habituation on exposure therapy or PTSD. *Journal of Consulting and Clinical Psychology*, *66*, 185–192.
Johnson, D. R. (1987). The role of the creative arts therapies in the diagnosis and treatment of psychological trauma. *The Arts in Psychotherapy*, *14*, 7–13.
Juslin, P. N. (1997). Perceived emotional expression in synthesized performances of a short melody: Capturing the listener's judgment policy. *Musicae Scientiae*, *1*, 225–256.
Juslin, P. N. (2000). Cue utilization in communication of emotion in music performance: Relating performance to perception. *Journal of Experimental Psychology: Human Perception and Performance*, *26*, 1797–1813.
Kardiner, A., & Spiegel, A. (1947). *War, stress, and neurotic illness*. New York: Hoeber.
Kaser, V. A. (1991). Music therapy treatment of pedophilia using the drum set. *The Arts in Psychotherapy*, *18*, 7–15.
Krumhansl, C. L. (1996). A perceptual analysis of Mozart's Piano Sonata K. 282: Segmentation, tension, and musical ideas. *Music Perception*, *13*, 401–432.
Kulka, R. A., Schlenger, W. E., Fairbank, J. A., Hough, R. L., Jordan, B. K., & Marmar, C. R. (1990). *The National Vietnam Veterans Readjustment Study: Tables of findings and technical appendices*. New York: Brunner/Mazel.
Kvale, S. (1996). *Interviews: An introduction to qualitative research interviewing*. Thousand Oaks, CA: Sage.
Lee, C. A. (1989). Structural analysis of therapeutic improvisatory music. *Journal of British Music Therapy*, *3*, 11–19.
Lee, C. A. (1990). Structural analysis of post-tonal therapeutic improvisatory music. *Journal of British Music Therapy*, *4*, 6–20.
Lee, C. A. (1995). The analysis of therapeutic improvisatory music. In A. Gilroy & C. Lee (Eds.), *Art and music therapy and research* (pp. 35–50). New York: Routledge.
Lee, C. A. (2000). A method of analyzing improvisations in music therapy. *Journal of Music Therapy*, *37*, 147–167.
Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. London: Sage.
MacKenzie, K. R., & Livesley, W. J. (1983). A developmental model for brief group therapy. In R. R. Dies & K. R. MacKenzie (Eds.), *Advances in group psychotherapy monograph I* (pp. 101–116). New York: International Universities Press.
Mikenas, E. (2000). *Drumming on the edge of leadership: Hand drumming and leadership skills for the new millennium*. Lynchburg, VA: Urban Wilde.
Moore, J. G. (1979). Music and dance as expressions of religious worship in Jamaica. In J. Blacking & J. W. Kealiinohomoku (Eds.), *The performing arts—Music and dance* (pp. 293–318). Paris: Mouton Publishers.
Moustakas, C. (1994). *Phenomenological research methods*. Thousand Oaks, CA: Sage.
Nordoff, P., & Robbins, C. (1977). *Creative music therapy*. New York: John Day Company.
Nordoff, P., & Robbins, C. (1985). *Therapy in music for handicapped children*. London: Victor Golancz Ltd.
Okoreaffia, C. O. (1979). Igeri Ututu: An Igbo folk requiem music dance ritual. In J. Blacking & J. W. Kealiinohomoku (Eds.), *The performing arts—Music and dance* (pp. 265–276). Paris: Mouton Publishers.
Orth, J., & Verburgt, J. (1998). One step beyond: Music therapy with traumatised refugees in a psychiatric clinic. In D. Dokter (Ed.), *Art therapists, refugees and migrants* (pp. 80–93). London: Jessica Kingsley Publishers.
Orth, J., & Verburgt, J. (2004). Sounds of trauma: An introduction to methodological in music therapy with traumatizes refugees in a clinical setting. In J. P. Wilson & B. Drozdek (Eds.), *Broken spirits: The treatment of asylum seekers and refugees with PTSD* (pp. 443–481). New York: Brunner-Routledge Press.

Putilov, B. N. (1979). Contemporary music of the Maclay coast. In J. Blacking & J. W. Kealiinohomoku (Eds.), *The performing arts—Music and dance* (pp. 159–165). Paris: Mouton Publishers.

Reck, D. (1977). *Music of the whole earth*. New York: Charles Scribner's Sons.

Reuer, B., Crowe, B., & Bernstein, B. (1999). *Best practice in music therapy: Utilizing group percusion strategies for promoting volunteerism in the well older adults*. Silver Spring, MD: The American Music Therapy Association, Inc.

Rhodes, W. (1962). Music as an agent of political change. *African Studies Bulletin*, *5*, 14–22.

Rogers, P. (1993). Research in music therapy with sexually abused clients. In H. Payne (Ed.), *Handbook of inquiry in the arts therapies* (pp. 197–217). London: Jessica Kingsley.

Rosen, J., Fields, R. B., Hand, A. M., Falsettie, G., & van Kammen, D. P. (1989). Concurrent posttraumatic stress disorder in psychogeriatric patients. *Journal of Geriatry Psychiatry and Neurology*, *2*, 65–69.

Scherer, K. R., & Zentner, M. R. (2001). Emotional effects of music: Production rules. In P. N. Juslin & J. A. Sloboda (Eds.), *Music and emotion: Theory and research* (pp. 361–392). Oxford: Oxford University Press.

Scurfield, R. M., Kenderdine, S. K., & Pollard, R. J. (1990). Inpatient treatment for war-related post-traumatic stress disorder: Initial findings on a longer-term outcome study. *Journal of Traumatic Stress*, *3*, 185–202.

Sekeles, C. (1994). The many faces of the drum. *Therapy Through the Arts*, *1*, 7–19 (in Hebrew).

Sekeles, C. (1996). *Music: Motion and emotion—The developmental-integrative model in music therapy*. St. Louis, MO: MMB Music.

Sifneos, P. E. (1973). The prevalence of alexithymic characteristics in psychosomatic patients. *Psychotherapy and Psychosomatics*, *22*, 255–262.

Slotoroff, C. (1994). Drumming technique for assertiveness and anger management in the short-term psychiatry setting for adult and adolescent survivors of trauma. *Music Therapy Perspectives*, *12*, 111–116.

Solomon, Z. (1989a). Characteristic psychiatric symptomatology of post-traumatic stress disorder in veterans: A three-year follow-up. *Psychological Medicine*, *19*, 927–936.

Solomon, Z. (1989b). Psychological sequel of war, a 3-year prospective study of Israeli combat stress casualties. *The Journal of Nervous and Mental Disease*, *177*, 342–350.

Solomon, Z., & Mikulincer, M. (1990). Life events and combat-related posttraumatic stress disorder: The intervening role of locus of control and social support. *Military Psychology*, *2*, 241–256.

Solomon, Z., & Oppenheimer, B. (1986). Social network variables and stress reaction lessons from the 1973 Yom-Kippur War. *Military Medicine*, *15*, 12–15.

Solomon, Z., Oppenheimer, B., Elizur, Y., & Waysman, M. (1990). Trauma deepens trauma: The consequences of recurrent combat stress reaction. *Israel Journal Psychiatry and Related Sciences*, *27*, 233–241.

Solomon, Z., Weisenberg, M., Schewarzwald, J., & Mikulincer, M. (1987). Posttraumatic stress disorder among frontline soldiers with combat stress reaction: The 1982 Israeli experience. *American Journal of Psychiatry*, *144*, 448–454.

Speed, N., Engdahl, B., Schwartz, J., & Eberly, R. (1989). Posttraumatic stress disorder as a consequence of the POW experience. *Journal of Nervous and Mental Disease*, *177*, 147–153.

Stark, E., & Flitcraft, A. (1988). Personal power and institutional victimization: Treating the dual trauma of woman battering. In F. Ochberg (Ed.), *Post-traumatic therapy and victims of violence* (pp. 115–151). New York: Brunner/Mazal.

Storr, A. (1992). *Music and the mind*. St. Louis, MO: MMB Music.

Symonds, M. (1982). Victim responses to terror: Understanding and treatment. In F. Ochberg & D. Soskis (Eds.), *Victims of terrorism* (pp. 95–105). Boulder, CO: Westview.

Van der Kolk, B. A. (1987). The role of the group in the origin and resolution of the trauma response. In B. A. Van Der Kolk (Ed.), *Psychological trauma* (pp. 153–172). Washington, DC: American Psychiatric.

Van der Kolk, B. A., Blitz, R., Burr, W., Sherry, S., & Hartmann, E. (1984). Night-mares and trauma. *American Journal of Psychiatry*, *141*, 187–190.

Van der Kolk, B. A., & Fisler, R. (1995). Dissociation and the fragmentary nature of traumatic memories: Background and experimental evidence. *Journal of Traumatic Stress*, *8*, 505–525.

Volkman, S. (1993). Music therapy and the treatment of trauma-induced dissociative disorders. *The Arts in Psychotherapy*, *20*, 243–251.

Walker, J. I., & Nash, J. L. (1981). Group therapy in the treatment of Vietnam combat veterans. *International Journal of Group Therapy*, *31*, 379–389.

Watson, D. A. (2002). Drumming and improvisation with adult male sexual offenders. *Music Therapy Perspectives*, *20*, 105–111.

Wigren, J. (1994). Narrative completion in the treatment of trauma. *Psychotherapy: Theory, Research, Practice, Treatment, Training*, *31*, 415–423.

Winkelman, M. (2003). Complementary therapy for addiction: "Drumming out drugs". *American Journal of Public Health*, *93*, 647–651.

Yehuda, R., Steiner, A., Kahana, B., Binder-Brynes, K., Southwick, J. M., Zemelman, S., et al. (1997). Alexithymia in holocaust survivors with and without PTSD. *Journal of Traumatic Stress*, *10*, 93–100.

Zlotnick, C., Mattia, J. I., & Zimmerman, M. (2001). The relationship between post traumatic stress disorder, childhood trauma and alexithymia in an outpatient sample. *Journal of Traumatic Stress*, *14*, 177–188.