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An application of the Primitive Expression form of dance therapy in a psychiatric population

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ABSTRACT

Primitive Expression (PE) is a form of dance therapy providing physical and neuropsychological benefits. It involves ethologically and socially based forms which are supplied for re-enactment, as well as an incentive for successful performance and a challenge to "transcend". In PE, play, rhythm, dance and song work on a symbolic level. The aim is to alert the participants to act and express themselves, while orienting their drives in a positive way.

In this paper we present preliminary results of a PE-based protocol with a small group of psychiatric patients (psychotic and depressive disorders). It is shown that a relatively short duration of PE treatment led to observable changes in psychological state, behavior, and brain physiology. It was found that the patients (1) experienced an increase in their happiness level, (2) expressed a positive attitude to the PE process by utilizing appropriate word associations, and (3) exhibited (a patient subset) an increase in EEG activity related to a relaxed awake state.

This study presents encouraging results related to the application of PE therapy with psychiatric patients. PE can be added to other dance therapy methodologies which have been shown to be promising therapeutic approaches in psychiatric populations.

Introduction

Dancing is one of the earliest forms of therapeutic practice and experience known to humanity. It is the rhythmic relationship of sound and motion combined with a collective expression of feelings.

Dance therapy is the psychotherapeutic use of movement and dance through which the individual participates creatively in a process that furthers his cognitive, emotional, physical and social integration (American Dance Therapy Association). Several applications of dance therapy and related methodologies exist in the literature, with various groups of participants (e.g., Apter, Sharir, Tyano, & Wijsenbeek, 1978; Berrol, Ooi, & Katz, 1997; Brooks & Stark, 1989; Dibbell-Hope, 2000; Dosamantes, 1990; Heber, 1993; Jeong et al., 2005; Koch, 2008; Lee, Park, Kim, & Kim, 2008; Payne, 2009; Rohricht, Papadopoulos, Holden, Clarke, & Priebe, 2011).

The Primitive Expression (PE) form of dance therapy was utilized in the present study. It is a technique initiated by Katherine Dunham (dancer, choreographer and educator) in the fifties in the US, which she named "modern primitive", based on anthropological studies of ritualistic dances that she conducted in the Caribbean while earning a doctorate in anthropology. She examined the dance rhythms particular to Jamaica, Martinique, Trinidad, and Haiti. She founded a Chicago-based dance company, the Ballet Negre, which became famous by showing off its unique style of foot-stamping, hip-and-shoulder shaking, and primitive African dance. Dunham is credited with teaching the technique of isolationism, a dance form that emphasizes movements of individual body parts. Her techniques are still taught in modern-dance schools and have influenced many contemporary choreographers, including Alvin Ailey (www.notablebiographies.com/newsmakers2/2007-Co-Lh/Dunham-Katherine.html). Based on the work of Dunham, France Schott-Billman in France developed the PE technique further, utilizing ethno-psychoanalytical principles (Schott-Billmann, 1977, 1985, 1997).

PE is a body activity which provides physical and neuropsychological benefits. There is an epigenetic interaction of ethologically

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and socially based forms which are supplied for re-enactment, as well as an incentive for successful performance and a challenge to "transcend". The individual undergoing PE therapy finds himself involved in dynamics which push him to go even further, to exceed each time his previous output, to go beyond limits. The atmosphere of play, which exists in the therapeutic procedure, reinforces the possibility of permissible excess. In PE, with the use of percussion, roles are played just as children do and figures of myth are enacted: warrior, hunter, thief, tribal leader, real or imaginary animals. This provides opportunities and justifications for satisfying the most buried desires, exploring new behaviors, trying out unfamiliar stances, and expressing a wide range of feelings such as power, anger, pride, fear, and tenderness, leading to a therapeutic experience. The combination of rhythm, dance and song works on a symbolic level. If man utilizes symbolism, as in art, for example, it is because his desires are suppressed by society. He feels obliged to defer, by giving a ceremonial form to his needs, utilizing speech, writing, movement and music. Art operates as a mechanism towards idealization.

Thus, the aim through symbolic movements in PE is to alert the participants to act and express themselves, while orienting their drives in a positive way. In this manner, they experience the truth and the beauty of movement through exceeding the limits of their personality, in a warm, secure and playful environment. According to the New York Times (www.notablebiographies.com/newsmakers2/2007-Co-Lh/Dunham-Katherine.html), Dunham said that her goal was "to make the individual aware of himself and his environment, to create a desire to be alive". PE utilizes a basic therapeutic tool which Levi-Strauss calls symbolic effectiveness (Levi-Strauss, 1958; Schott-Billmann, 1989). In this context, the PE session is like a ritual leading to transcendence.

Severe mental disorders, e.g., psychotic disorders, in particular, are characterized by a disintegration of thought processes, most commonly manifesting as delusional/paranoid ideas, auditory hallucinations and disorganized thinking, as well as disturbed emotional responsiveness. These so-called "positive" psychotic symptoms are contrasted to the "negative" symptoms, which are deficits of normal emotional responses, sociability, motivation, and thought processing. Such symptoms result in the significant blurring of ego boundaries, increase psychic tension, anxiety and aggression, reduce the capacity for interpersonal communication and pleasure, and finally may lead to severe withdrawal. On the other hand, the cardinal feature of depressive disorders is the occurrence of low mood, which pervades all aspects of life and severely impacts well-being and everyday functioning. In this context, PE may produce improvements through the engagement and encouragement of such patients to express themselves, relate to others and increase self-awareness in a secure environment.

In this paper we present preliminary results of using a PE-based protocol with a small group of psychiatric patients. It is shown that a relatively short duration of PE treatment led to observable changes in psychological state, behavior, and, to some extent, brain physiology. Specifically, it was found that the patients (1) experienced an increase in their happiness level, (2) expressed a positive attitude to the PE process by utilizing appropriate word associations, and (3) exhibited (a patient subset) an increase in EEG activity related to a relaxed awake state.

Method

Subjects

The place of the study was the University of Athens Psychiatric Clinic, Aiginiteion Hospital, Athens, Greece. The participants were 11, live-in, psychiatric patients. The group included: 6 patients with psychotic disorders, 1 with an obsessive compulsive disorder and 4 with depressive disorder (age range: 21–64; 6 females and 5 males). Dance therapy studies in psychiatric settings may be confounded by the heterogeneity of diagnoses included in a study (Ritter & Low, 1996). The particular clinical source of patients for this study did not provide enough subjects (for statistical validity) to establish a homogeneous patient group as far as diagnosis is concerned. The patients were under appropriate pharmacotherapy (mostly atypical antipsychotics and antidepressants). There were 12 PE sessions, 2 times per week, for 6 weeks. The study conformed to the Helsinki declaration on human experimentation and was approved by the ethics committee of the Aiginiteion Hospital. Written informed consent was obtained from all participants.

The specific tools of PE

The specific tools of PE which were utilized in this study are described below:

The force of rhythm

In all its modalities, rhythm has a definite force. From the first hearing experience of the mother's heartbeat, to the everyday experience of breathing, the change from day to night, the succession of the seasons, a rhythm can make an individual relax, feel calm and secure. However, paradoxically, it can also give him strength and lead him to action by activating related neurophysiological mechanisms (Hanna, 2006; Schott-Billmann, 1989).

Some patients suffering from psychotic disorders may be very nervous, with lack of rhythm and structure in movement. Others may be hyperactive and chaotic, while others may be quiet with no energy to move. This PE tool, along with the tool of percussion (see below), provides the opportunity for the patient to focus and generate rhythmic output.

The sound of percussion

The sound of percussion recalls the human heart beat, the strong rhythm that the baby listens to while a fetus. This experience has a maternal as well as a paternal component, which relate to calmness (security) and excitement (independence), respectively (Schott-Billmann, 1997).

The use of voice

The human species needs to communicate. One means is the human voice. The baby matures by listening to his mother's voice. He then reacts to that, and possibly remembers it while developing his voice as a communication tool with others. In PE, the use of voice is very important. The technique uses melodies or "phonimata" (Greek for phonetic forms) in order to engage the participant in a communication process reminiscent of the one he was involved with as a baby, while in his mother's lap. Singing, along with all the others in the group, he uses the voice in a completely acceptable way. Furthermore, expressing himself through his voice imparts extra strength to his dance movements as well as to the whole group. Through his voice, he expresses his own personal feelings, consciously or subconsciously.

The simplicity of movements

The participant engages in the PE session by copying the simple movement provided by the therapist. Usually, the patient has no "movement vocabulary". In other words, he has no preconceived notion concerning a dance output. He may be under medication which causes constraint in his movements. Furthermore, he may not have a good relationship with his body, resulting in a difficulty of bodily expression. Therefore, the simplicity of movement tool helps the patient copy effectively the movement that is given from

the therapist and provides the possibility for the patient to impart his own meaning to the movement. So, finally, by using the rhythm and the simplicity of movements as catalysts, the participant starts moving and dancing.

The repetition process

Through this tool, the patient is made to "give a bit more" with each repetition of a given movement. It is as if, by moving rhythmically in a specific place in space, with repetitive movements, the patient may be "putting things in order". Speaking about therapeutic efficacy in dance, Freud's opinion about repetition is of interest: "Every fresh repetition seems to strengthen this mastery for which [the individual] strives" (Hanna, 2006).

The importance of the group

The PE experience is a group process which provides the dancers with a maternal substitute. In other words, being part of the group provides the experience of a *mother–child* relation and prepares for the experience of a *me–Other* relation. The patient can see the group as a reflection of his self and can be encouraged to experience the above dynamics. This provides a feeling of calmness and of safeness. The Other represents the other self or selves of the patient, which dance enables him to experience. The within-group dynamics are being developed progressively through the force of rhythm, the sound of the percussion and the force of voice. In this process, the group behaves like a collective heart (Schott-Billmann, 1997).

The relation to the ground

The PE technique requires for the dancers to be barefoot, since the relation to the ground is very important for well-being (sense of grounding). The patients may lack this sense, which is as necessary as the roots are for the growth of a plant. The importance of the relation to the ground is part of ancient wisdom (see, for example, the ancient Greek myth of Heracles' fight with Antaios). The feeling of the ground under the feet contributes to the sense of support and safety. Given that, the whole body feels free to act, by moving and dancing.

The use of play

It is in the experience of play that the individual, whether child or adult, is able to become creative and to use his personality effectively. Furthermore, it is only during the creative process that the individual discovers himself (Winnicott, 1971). Also, since laughing can happen during play, it enables the experience of joy.

Engaged in the creative process mentioned above, the PE participant is dancing roles—as if he were a warrior, or an animal, aggressor or victim, seducing or being seduced. He improvises ceremonies influenced by nature. He plays and dances roles from his own life and expresses them effortlessly without the criticism of anyone, because he is in a play. In this way, he also minimizes paying attention to himself, contributing to the use of the tool related to sublimation (see below).

The duality

Duality is everywhere. Human beings have to struggle with biphasic conditions (e.g., positive–negative, life–death, male–female) which are inherent in everyday life. This PE tool relates to the above by proposing exercises which involve antitheses and sequences thereof. Examples are steps that interchange left to right foot, reaching towards and moving away from the ground, engaging the upper and the lower part of the body, front and back. Symbolically, in these exercises there exists an elaboration between opposites, e.g., sky and earth, give and take, myself and the other, my inner self and the Other (as mentioned above). By utilizing them (opposites), this tool reinforces an acceptance of antitheses which may lead, through a centering process, to a healthy balance of feelings and thoughts in the patient.

In summary, each of the above tools can by itself be a therapeutic element in the therapeutic process. However, through the combination of all these tools, the dancer may feel freer to overcome the super-ego, possible limits and insecurities expressed in restricted movements, and may experience sublimation, enabling the feeling of enthusiasm (word of Greek origin meaning "God within you"). This state of sublimation can function as a gate to the ultimate PE objective which is transcendence (Schott-Billmann, 1997). By this we mean a quest for personal beauty in the participant's movements, independent from social or other dance conventions. As a result, the participant empowers himself, exceeds his movement limits, and experiences a sense of fulfillment and, eventually, happiness. A parameter facilitating the above process may be that of trance which can lead to transcendence by engaging powerful dynamics within the individual. Such dynamics have been described from a psychoanalytical as well as anthropological perspective (Schott-Billmann, 1985). From a therapeutic point of view, PE, by engaging the patient in a complex physical-cognitive-affective process of recollecting and releasing repressed emotions and tensions, enables the dancer to come to terms with them through the goal of transcendence (e.g., Hanna, 2006).

Data collection and analysis

Questionnaires

Several questionnaires were utilized in this study. A Greek version of the Oxford Happiness Questionnaire (OHQ) which assesses the happiness level of the patients (Hills & Argyle, 2002), a questionnaire regarding word associations (WA) concerning the patient experience/response with the PE sessions, a questionnaire for the staff concerning their assessment of the patient reaction to the PE sessions (QS), and a questionnaire for the relatives also concerning their assessment of their family member's reaction to the PE sessions (QR). Included in the WA questionnaire were questions asking the patients to indicate which words came to their mind related to, for example, "dance therapy", "sound of percussion", "dance group", and others. In this paper we present results concerning word associations with "dance therapy" only.

OHQ was administered before the 1st session, and after the 5th and 11th sessions. WA was administered after the 1st, 5th and 11th sessions. QS was administered after the 5th and 11th sessions, while QR was administered after the 11th session. Only results related to the OHQ and WA questionnaires will be presented in this work.

Electroencephalogram

Electroencephalography (EEG) was performed in the awake resting state with eyes closed for about 3 min, before and after the 5th and the 11th sessions. Although the original intention was to record all patients, some of them did not give their consent to be recorded. Furthermore, some patients had EEG data corrupted by recording artifacts which made further analysis unreliable. Therefore, results from only 5 patients with psychotic disorders, whose EEG was appropriate for analysis, will be presented in this paper.

EEG activity in the alpha range (8–12 Hz) is typical of a state of relaxed wakefulness in healthy adults (Spehlmann, 1981). It has been known that there is decreased alpha EEG activity in the awake resting state in schizophrenia (Dierks, Maurer, Ihl, & Schmidtke, 1989; Fenton, Fenwick, & Dollimore, 1980; Itil, 1977; Koukkou, 1982). This has been confirmed in the magnetoencephalogram (MEG) as well (Canive, Lewine, & Edgar, 1996). Therefore, in the context of this study, it was hypothesized that PE therapy could enhance alpha EEG activity.

Electrodes were applied at the frontal, central and occipital scalp areas in both hemispheres. The presence of alpha EEG

activity was quantified with visual analysis as follows: the last 30 s of the EEG recording for a given patient were checked visually for the presence of well-defined alpha EEG activity of at least 30 μV peak-to-peak amplitude. The percentage of time in which such activity was present was noted. For each EEG channel, the difference of the percentage values corresponding to 2 EEG recordings (e.g., before and after a given PE session) was obtained. That difference was averaged across all EEG channels to obtain an overall difference figure (ODF) for these 2 EEG recordings of a given patient.

Audio–video recording of PE sessions

All the PE sessions were recorded for further analysis related to the quantification of kinesthetic and vocal output, socialization behavior, as well as other related behavior during the therapeutic process. The results of such analysis will be presented in another publication.

Statistical analysis

Questionnaires were analyzed with several statistical tests including ANOVA for repeated measures and post hoc *t*-tests with a Bonferroni adjustment. The WA questionnaires underwent a structural analysis of word associations based on an approach proposed by Vergès (Sakalaki, 2001). The latter method can be briefly described as follows:

After the 1st, 5th, and 11th sessions, the patients were asked to respond to the following statement: "write the first three words that come to mind when you hear the word **dance therapy**". The patients were instructed to rank those three words as 1st, 2nd, and 3rd, in terms of relative importance. Given the initial word association responses, a set of final categories of word associations was defined. Each such final word association category (to be named CWA) included one or more words of similar content related to the PE tools. For example, the CWA [expression, creation] contains two words denoting similar content related to the PE tool "the use of play". In this way, the totality of the words mentioned by all the patients was organized in a set of indicative CWAs of small enough number to minimize interpretative uncertainty. Each CWA was associated with 2 parameters: Number of Appearance and Average Rank. Number of Appearance related to the number of times a particular CWA (all words defining the CWA or a subset thereof) appeared in the patient responses. Average Rank related to the average order of appearance (1st, 2nd or 3rd) of a particular CWA (all words defining the CWA or a subset thereof) in the patient responses.

The various CWAs were arranged in a 2×2 matrix form comprising 4 sections. In the upper left section were CWAs of a relatively large Number of Appearance and of a relatively high Average Rank. These CWAs were considered to be the most important CWAs of the patient group. On the other hand, the lower right section included CWAs of a relatively small Number of Appearance and of a relatively low Average Rank. These CWAs were considered to be the least important CWAs of the patient group.

Results

Oxford Happiness Questionnaire

Table 1 shows results related to the OHQ. As shown, there was a gradual increase in happiness level, on the average, as the PE sessions progressed, indicating a possible positive effect of PE on the patients.

Word association questionnaire

Table 2 shows results related to the analysis of the word associations, as described in Section "Method".

Table 1
Results related to the Oxford Happiness Questionnaire.

	Mean score	Std. deviation
Before the 1st session	2.756	0.455
After the 5th session	3.038	0.441
After the 11th session	3.248	0.581

Note. ANOVA for repeated measures showed that there is a statistically significant difference between at least two of the three observed mean scores [$F2.20 = 5.329$, $p < 0.05$].
Post hoc *t*-tests with a Bonferroni adjustment showed that there is a statistically significant difference between the mean scores of the 1st and 11th session [$t = -2.822$, $df = 10$, $p < 0.05$].

Table 2a
Results related to word associations after the 1st session.

	High rank (<1.91)	Low rank (≥1.91)
High frequency (>3.30)	[movement, dance, sound, music] 9 (1.40)	[therapy] 5 (2.20) [joy, happiness, laughter] 4 (2.75) [group, group spirit] 4 (2.25)
Low frequency (≤3.30)	[exercise, workout] 3 (1.66) [love] 2 (1.50) [expression, creation] 1 (1.00)	[colors, images] 3 (2.33) [relaxation, relief] 1 (2.00) [power, energy] 1 (2.00)

Table 2b
Results related to word associations after the 5th session.

	High rank (<2.016)	Low rank (≥2.016)
High frequency (>2.70)	[movement, dance, sound, music] 6 (1.83) [exercise, workout] 3 (1.30)	[joy, happiness, laughter] 5 (2.40) [expression, creation] 5 (2.60)
Low frequency (≤2.70)	[power, energy] 2 (2.00) [therapy] 2 (2.00) [peacefulness] 1 (1.00) [relaxation, relief] 1 (1.00)	[colors, images] 1 (3.00) [security, confidence] 1 (3.00)

In Table 2a, the word association category (CWA) comprised of the words [movement, dance, sound, music] was considered as the most important (upper left section). This was because (a) its Number of Appearance (or frequency) was 9 (which was more than the average of the numbers of appearance, which was 3.30), and (b) its Average Rank (shown in parentheses in the table) was 1.40 (which was less than the average of the average ranks, which was 1.91), indicating a relatively high order of appearance. In this work, the average of the numbers of appearance and the average of the average ranks were used to indicate the limits that the Number of Appearance and the Average Rank must have exceeded and been below, respectively, in order for the related CWA to have been considered as important (based on the work of Sakalaki, 2001).

Table 2b shows that there were 2 CWAs considered as the most important after the 5th session. One being the same as in Table 2a and the other comprised of the words [exercise, workout].

Table 2c shows that only one CWA was considered as the most important after the 11th session, and it was comprised of the words [joy, happiness, laughter].

EEG

To investigate possible "acute" effects of a PE session on the alpha EEG activity, the ODFs corresponding to the EEG recordings before and after the 5th PE session were found to be (5 patients): −3%, −3%, +5%, −9%, +8% (negative values indicate more alpha

Table 2c
Results related to word associations after the 11th session.

	High rank (<1.94)	Low rank (≥1.94)
High frequency (>3.00)	[joy, happiness, laughter] 6 (1.60)	[movement, dance, sound, music] 9 (2.00)
Low frequency (≤3.00)	[relaxation, relief] 2 (1.50) [exercise, workout] 1 (1.00) [security, confidence] 1 (1.00)	[group, group spirit] 3 (2.30) [therapy] 3 (2.00) [power, energy] 1 (3.00) [expression, creation] 1 (3.00)

activity before the PE session). Similarly, the ODFs corresponding to the EEG recordings before and after the 11th PE session were found to be (patients in the same order as before, but only 4, since the EEG data before the 11th PE session of the 5th patient were corrupted with recording artifact and were not analyzable visually): +29%, +5%, −2%, +14%. The results indicate that, overall, there appeared to be more of an increase in alpha EEG activity after the 11th PE session than after the 5th PE session.

To investigate possible "long-term" effects of the PE sessions on the alpha EEG activity, the ODFs corresponding to the EEG recordings after the 5th and 11th sessions were found to be (the same order in the 5 patients as before): +22%, +40%, +4%, +28%, −13% (the negative value indicates more alpha activity after the 5th session). These results indicate that, overall, there was more alpha EEG activity after the 11th session than after the 5th session, implying that the intervening PE sessions after the 5th one might have produced a "cumulative" facilitative effect on the alpha EEG activity.

Nevertheless, since the possibility existed that the latter results might have been due to the ongoing pharmacotherapy, we calculated the ODFs corresponding to the EEG recordings before the 5th and the 11th sessions. The results were found to be as follows (these results and the first 4 ODF values of the previous results correspond to the same order of patients): −13%, +32%, +10%, +5% (the negative value indicates more alpha activity before the 5th session). If pharmacotherapy was the sole contributor to the increase in alpha activity after the 5th session onwards, one would have expected the latter overall results to be similar to the ones related to the EEG recordings after the 5th and the 11th sessions. However, since they appear not to be (there are overall higher positive values for the EEG recordings after the 5th and the 11th sessions), the PE sessions might have contributed as well to the increase in alpha EEG activity, in a "cumulative" facilitative effect, as mentioned earlier.

Discussion

General results

This paper presents encouraging results of using a PE-based protocol with a small group of psychiatric patients. It was shown that a relatively short duration of PE treatment lasting for about 1.5 months led to measurable changes in patient psychological state, behavior and, to some extent, brain physiology. Specifically, it was shown that the patients (1) experienced throughout the PE process a progressive increase in their happiness level measured by the OHQ, (2) expressed a positive attitude to the PE process by utilizing appropriate word associations which related to the tools of the PE process (see below), and (3) exhibited (in a subset of 5 patients with psychotic disorders) a relative increase in alpha EEG activity (indicative of a relaxed, awake state in healthy adults) both in an acute fashion (i.e., right after a PE session) as well as in a long-term fashion (i.e., throughout a period of several PE sessions).

The above results are preliminary and should be viewed with caution due to the relatively small number of patients. The fact that these patients represented more than one psychiatric disorder may be also of concern. Furthermore, the possibility for these results to be related to the pharmacotherapy that the patients were under throughout the study should not be discarded. Due to methodological constraints, there was no patient control group in this study. For future such studies, more patients should be utilized, as well as a control group comprised of patients under appropriate pharmacotherapy but not taking part in the PE sessions. Nevertheless, despite the above shortcomings, this study is of importance because this is the first time, as far as the authors are aware, that the PE process has been applied to psychiatric patients, with encouraging results.

Questionnaire results

OHQ

As reported in Section "Results", the patient level of happiness, quantified by the OHQ, increased on the average throughout the PE sessions. This could have been the result of the therapeutic PE process, since the combination of the PE tools might have led to the enhancement of that feeling in the patients, as elaborated in Section "Method". However, an increase in happiness level could have also been the result of the appropriate pharmacotherapy that the patients were under throughout the PE sessions. The differential contribution of both treatments may be difficult to assess under the constraints of the protocol utilized in this study. Specifically, there was no control group (i.e., patient group not treated with the PE process) due to the unavailability of appropriate patients, which is one of the limitations of this study. Future studies should include such control groups for completeness. In these studies, additional questionnaires quantifying different aspects of quality of life and level of well-being could be used to control the results obtained through the OHQ.

WA

A qualitative discussion of the results in Table 2 is presented below, attempting to demonstrate the successive states (reflected in the CWAs) that the patients might have experienced throughout the PE procedure. After the 1st PE session, in the upper left section of Table 2a, the CWA [movement, dance, sound, music] was the most important. This could be explained as follows. The structure of a PE session is characterized to a large extent by the above components, which, apparently, impressed the patients. Accordingly, the basic sound is that of the percussion, with its clearly rhythmic characteristics, in combination with the participant voices (either melodic–legato, or phonimata–staccato). Maybe the above acoustic qualities generated several feelings which called for externalization. Therefore, due to the need for such externalization, the activation of the body became necessary, causing a movement process leading to dance, experiences reflected in the patient words.

It is of interest to observe that in the upper right section as well as in the lower left one of Table 2a, sections of intermediate importance in the qualitative analysis, the patients used words that describe the existence of a group ([group, group spirit]) which, through exercise ([exercise, workout]), love ([love]), and creativity ([expression, creation]), reaches happiness ([joy, happiness, laughter]) and experiences the objectives of the therapeutic process ([therapy]). It is as if in this early stage of therapy the patients "sensed" the tools as well as the final goals of the therapeutic process.

After the 5th PE session (Table 2b), it is observed that the CWA [exercise, workout] moved to the important upper left section. It is as if the patients felt being exercised by dance therapy, since in the clinic there was no opportunity for bodily activity. Also, the CWAs [joy, happiness, laughter] and [expression, creation] were mentioned by more patients than after the 1st session. Possibly, as

the patients learned more about the PE method, they managed to feel freer to express themselves. It is as if they managed to "utilize" a certain tool that led them to paths which they had to experience. Being in-patients, they could not work. It is a basic need for a human being to express himself, to create, to produce. Thus, with dance therapy, they had the opportunity, through an easy and playful activity, to satisfy that need.

After the 11th PE session (Table 2c), the CWA [joy, happiness, laughter] moved to the important upper left section, having been used by more patients than in the 5th session. It is as if the changes in the state of the patients, from the 5th PE session onwards, led to a rearrangement of the CWAs in the various sections, resulting in the final use of the above CWA as summarizing the ultimate result of the PE therapeutic process. It is also of interest to observe that the CWA [exercise, workout] was somehow deemphasized by being moved from the important upper left section (after the 5th PE session) to the lower left section, while the CWA [security, confidence] was somehow emphasized by being moved from the least important lower right section (after the 5th session) to the lower left section. The last two changes may relate to the final assessment on the part of the patients that dance therapy might have not been just a form of exercise, and that it might have boosted their sense of self-confidence.

It may be interesting to investigate how specific PE tools might have led to the above word association results. For this, a list of all the PE tools (see Section "Method") is presented below, where related word associations used by the patients are indicated next to each tool within brackets, indicating that the tools indeed might have influenced the word choice.

- the force of rhythm [sound, music]
- the sound of percussion [sound, music]
- the use of voice [sound]
- the simplicity of movements [movement]
- the repetition process [exercise, workout, energy]
- the importance of the group [group, group spirit, love]
- the relation to the ground
- the use of play [laughter, expression, creation]
- the duality

As mentioned in Section "Method", the quest for transcendence through sublimation is the ultimate objective of the PE methodology. Consequently, the words joy and happiness used by the patients after the 11th PE session may possibly relate to the attainment of that objective. Interestingly enough, the above two words were mentioned as patient responses to their therapeutic experience in a previous PE study conducted in the Psychiatric Hospital of Attica, Greece, with patients suffering from drug addiction (Margariti, 1994).

EEG results

The results of this study showed that PE might have led to an increase in the alpha EEG activity in the patient awake resting state, both in an acute as well as in a long-term fashion. Since it has been known that there is decreased alpha EEG activity in the awake resting state in schizophrenia (Dierks et al., 1989; Fenton et al., 1980; Itil, 1977; Koukkou, 1982), the above results indicate that PE might have "normalized" the alpha activity level in these patients, according to the hypothesis mentioned in Section "Method". Furthermore, given the fact that alpha EEG activity is typical of a state of relaxed wakefulness in healthy adults (Spehlmann, 1981), it is of interest to hypothesize that this EEG change might have related to the on the average happiness level change as well as to the word associations chosen by the patients to describe their reaction to the PE process, as exemplified by the CWA [joy, happiness, laughter]. Therefore, one is tempted to speculate that changes in the psychological as well as behavioral state of the patients, possibly related to the PE process, seem to have been accompanied by "appropriate" changes in the brain physiology of a patient subset. Nevertheless, the above speculation needs to be viewed with caution, due to the small number of patients that underwent EEG recordings and because of the possible pharmacotherapy effects on the EEG results. However, as described in Section "Results", the possibility of such pharmacotherapeutic influence on the EEG changes might have not been that important.

Conclusions

This study presents encouraging results related to the application of PE therapy with psychiatric patients. Positive changes have been observed in patient psychological, behavioral as well as physiological state. Therefore, PE can be added to other dance therapy methodologies which have been shown to be promising therapeutic approaches for these patient populations.

Of particular interest should be the utilization of dance therapy protocols assessing both psychological/behavioral as well as neurophysiological changes in the psychiatric patients undergoing treatment. It appears that there is an emerging interest to apply neuroscience-based approaches in dance therapy applications (see, e.g., the work of Jeong et al., 2005, who report that dance therapy modulates hormonal and neurotransmitter release which may be involved in the therapeutic process). To our knowledge, the present study may be one of very few which utilize in their protocol tools for the assessment of possible neurophysiological changes (i.e., EEG changes) as a result of the dance therapy process. More such studies should be undertaken in the future. Furthermore, more studies are needed where several psychiatric populations, each one exhibiting the presence of a particular disorder uniformly in the population, are compared in terms of their respective response to PE therapy.

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