DRUMMING, HYPNOSIS AND PHENOMENOLOGICAL EXPERIENCE

by

RONALD L. MAURER, SR.

An Abstract of a Thesis Submitted in Partial Fulfillment

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ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 – 1346

ABSTRACT

The present study examined the effects of a 15-min drumming session on producing alterations in one's phenomenological experiences. Specifically, it examined (a) the extent to which such experiences resembled those obtained under hypnosis using the Harvard Scale induction, (b) if the phenomenological experiences in response to the drumming varied as a function of level of hypnotizability, (c) whether the ordering of drumming and the Harvard Scale affected phenomenological experiences to drumming, (d) the nature of narratives written in reference to the drumming and the relationship of such experiences to hypnotizability.

Participants (N = 206) were tested in groups assigned to one of two conditions. In Condition 1, participants experienced the drumming session first, wrote a short narrative, filled out the Phenomenology of Consciousness Inventory (PCI) in reference to the last 4-min of drumming, and were then administered the Harvard Group Scale procedure. In Condition 2, participants were administered the Harvard Scale first, followed by the drumming, the written narratives, and then filled out the PCI.

The results showed that while objective hypnotizability (Harvard scores) did not differ significantly as a function of stimulus order, hypnoidal scores (a measure of objective and subjective trance) were significantly higher when drumming preceded hypnosis. Participant's level of trance

fell in the medium range of susceptibility (5 - 8) on the Harvard scale using norms provided by Pekala (1995). Other findings were that high vis-a-vis low susceptibles (based on the Harvard scale) showed significantly higher altered experience, higher altered state, and lower volitional control in response to drumming. An earlier study (Kumar & Pekala, 1988) found that high and low susceptibles differed similarly on these PCI dimensions in response to the Harvard hypnotic induction. However, there were other PCI dimensions on which the high and low susceptibles differed in response to the Harvard scale. It appears that drumming produces a trance that contains some of the same components of the phenomenological experiences reported during hypnosis with the Harvard scale.

The written narratives were classified into four groups: (a) negative, (b) neutral, (c) relaxed, and (d) Shamanic (responses typically reported by people who journey in response to drumming). Participants who reported relaxed and Shamanic type experiences had significantly higher Harvard and hypnoidal scores vs. those who reported negative and neutral experiences. Of the participants reporting shamanic experiences, 91% came from the medium and high susceptible groups.

These data suggest that drumming is a viable tool for inducing alterations in one's phenomenological experiences.

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RONALD LEWIS MAURER, SR

Thesis Approval

for

Master of Arts Psychology Degree

COMMITTEE MEMBERS	DATE
[signature] Chair	5/4/95
[signature] Member	5/4/95
[signature] Member	5/4/95
[signature] Member	5/4/95
[signature] Dean of Graduate Studies	5/8/95

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Introduction

The present study was primarily designed to evaluate the effects of a monotonous percussion (drum) beat, on producing alterations in the phenomenological experiences of one's states of consciousness, and to examine the extent to which such experiences resemble those obtained by a standardized hypnotic induction procedure such as the Harvard Group Scale of Hypnotic Susceptibility (Shor & Orne, 1962). The study also examined if the nature and/or intensity of the phenomenological experiences in response to the monotonous drum beat varied as a function of whether the drumming preceded or followed the hypnotic induction and/or level of hypnotizability. One further objective of the study was to examine the nature of the written narratives in response to the drumming experience and see if the type of responses varied as a function of hypnotizability.

The impetus for the present study came from exploratory work reported by Harner (1980/1990), Goodman (1990), Wright (1991) and Woodside, Kumar, and Pekala (1993).

Harner's Work

Harner studied the accounts of workshop participants who experienced shamanic journeying while listening to strong, monotonous, and rapid drum beat for 10-min. The journeyers are given specific instructions, such as; "This will be a simple journey of exploration down through the

Tunnel into the lower world.... Now visualize an opening into the earth that you remember from some time in your life.... When the drumming begins, visualize your familiar opening into the earth, enter it, and begin the journey.... Go down through the opening and enter the Tunnel...." (Harner, 1980/1990, pp. 30-32).

According to Harner (see also Goodman, 1990), the journeyers report seeing, hearing, feeling, and smelling their experiences. They see caves, water, encounter animals (or become one), plants or other human forms, metamorphose into other forms of matter (e.g., becoming dissolved in water), floating sensations, feeling out of the body, feeling sexually aroused, being in a tunnel, seeing Native American Indians, seeing natives dancing, hearing singing, buzzing sounds, and music.

Peggy Wright's Study

Wright found that live repetitive drumming combined with verbal suggestions invoking imagery, produced "shaman-like states of consciousness" (p. 5). In her study, Wright used Pekala's (1982, 1991a) Phenomenology of Consciousness Inventory (PCI) to measure the participant's subjective states of consciousness in response to 10-min of repetitive drumming. The PCI is a self-report measure that quantifies states of consciousness in terms of 12 major and 14 minor dimensions. The major and minor dimensions include: positive affect (joy, sexual excitement, love); negative affect

(anger, sadness, fear); altered experience (body image, time sense, perception, meaning); visual imagery (amount, intensity); attention (direction-inward, absorption); self-awareness; altered state; internal dialogue; rationality; volitional control; memory; and arousal.

Wright had the participants respond to the PCI, Form 1, in reference to a sitting quietly with their eyes closed condition for 5-min. Then in a subsequent condition they completed the PCI, Form 2, in reference to listening to a monotonous drum beat with specific visualization instructions for shamanic type journeying. (Forms 1 & 2 are composed of the same items but the items are arranged in a different sequence.) The participants laid supine and listened to a drum beat of approximately 4.5 beats per sec for 10-min, produced on a single-headed drum. A pre-established signal marked the end of the "journey" after which the participants laid quietly for 2-min and then completed the PCI, Form 2, in reference to the entire 12-min period.

Wright compared the responses of the eyes closed, sitting quietly condition to the shamanistic journeying condition and found: (a) significant positive increases in altered experiences (body image, time, perception, and meaning); positive affect (joy, love, sexual excitement), negative affect (fear), imagery (amount, vividness), and altered state; (b) significant decreases in self-awareness,

arousal, volitional control, and internal dialogue; and (c) that participants with prior high levels of experience with shamanistic journeying showed more heightened imagery, positive affect, and rationality than those with less prior experience.

Felicitas Goodman's Work

In studies of religious trance states and trance experiences, many of which involve rattling or drumming, Goodman (1990) stated that the holding of any one of 31 specific body postures found in various ancient cultures, (as depicted in paintings, drawings, and statuary), accompanied by rattling or drumming produced distinctly different phenomonological experiences. She stated that the particular postures were used to attain trance states in which information concerning the solution to individual and/or community problems could be obtained.

Her work involved 890 participants (with 217 repeaters) over a 5-year period who were naive to the effects of the postures. Without giving any instructions as to what might be the expected effects of the particular postures in terms of imagery or other subjective experiences, she asked the participants to assume a posture, take 50 deep breaths, and concentrate as they listened to 15-min of monotonous rattling. The results indicated two main findings: (a) a specific (any one of the 31 specified) posture, accompanied by the rattling, produced visionary experiences which are

often in agreement across trancers, and (b) the subjective reports by the trancers with a given posture correspond with important information found in myths, regarding problem solving, healing, and major life transitions. In these various postures, the practitioner had the experience of encountering or becoming an animal, envisioning various entities, enduring various trials, and/or learning unusual information.

Woodside et al.'s and Other Related Studies

Following the lines of Goodman's work, Woodside et al. (1993) conducted a study of trance states induced by drumming with a group of freshmen students who had no knowledge of Goodman's work. In their study, four different conditions were employed: two conditions of a certain standing posture (called the feathered serpent) accompanied by 15-min of drumming; (a) one with a verbal induction which indicated that the participants might find the experience energizing, see images of birds, animals, mythical beings, geometric patterns, experience entering a safe place and have a sense of rising up renewed; (b) a second identical posture without the verbal induction; and two sitting conditions: (c) one with instructions to just sit quietly and comfortably with their eyes closed and concentrate on their breathing for 15-min; and (d) a second identical sitting situation accompanied by 15-min of drumming. The participants were asked to fill out the Phenomonology of

Consciousness Inventory, Form 1, in response to the 15-min stimulus period and write a narrative about their subjective experiences after completing the PCI. Her objectives were to see (a) if the feathered serpent posture would produce narratives of experiences similar to those reported by Goodman (1990), (b) if the feathered serpent posture would produce subjective experiences, (as measured by the PCI), different than those that might be experienced while sitting during the drumming session, and (c) how similar the nature of the trance is to one obtained with a standard hypnotic induction as measured by the PCI.

Woodside et al. found that 40% of the participants in the posture with induction condition reported elements in their narratives as per Goodman's claims. Although this was significantly higher than in the sitting conditions, it was not significantly higher than the posture without induction condition. The posture without induction did not significantly differ from the two sitting conditions. Thus, they concluded that there was little evidence to support Goodman's claims that predicted imagery effects can be obtained with participants who are naive with respect to having prior knowledge concerning the effects of the postures. However, they also noted a methodological weakness in their study; the narratives were written after filling out the PCI which might have contaminated what participants wrote in their narratives.

In regards to the differences in the phenomenological experiences, Woodside et al. noted that drumming by itself had little effect. The sitting with drumming lead to decreased love and vividness of imagery scores when compared with the sitting quietly condition. The latter finding is unexpected since drumming is traditionally related in the shamanic literature with increased internal imagery. It is possible that with the use of more experienced participants better results might be obtained. They also found no significant differences in the two posture conditions suggesting that induction added nothing to the posture in affecting phenomenological experiences. But the two posture conditions differed significantly on a number of PCI dimensions compared to the just sitting quietly condition. The posture with drumming seems to have produced less positive affect (joy, love), anger, imagery (amount and vividness), attention and (absorption).

Finally, Woodside et al. examined how similar the nature of the trances obtained in response to the four conditions were to one obtained with a standard hypnotic induction. This was done by computing hypnoidal scores for each of the conditions. The hypnoidal scores are predicted Harvard scale scores using 10 of the 26 (sub)dimensions of the PCI (altered state, self-awareness, altered time sense, absorption, volitional control, rationality, internal dialogue, altered experience, memory, and altered body

image; Pekala & Kumar, 1987). These scores vary between -.71 and 11.77 (usually between 1 and 9). A score of 7 or above is indicative of being in a "hypnoidal state" (Pekala & Nagler 1989). Hypnoidal scores assess the level of hypnotic susceptibility obtained under a stimulus condition in which the level could not be directly assessed by means of standard procedures such as the Harvard scale. Since the hypnoidal scores account for about 32% to 42% of the variance in the Harvard scores (Pekala, 1991b, p 318), upon cross-validation, they may be said to measure both objective (as indicated by the Harvard scale) and subjective (as measured by the PCI) aspects of a trance. It may be noted that the Harvard scale measures to what extent participants responded to the (motor) tasks built into the induction of the Harvard scale, whereas the PCI only asks for their (internal) responses to phenomenological variables quite unrelated to the suggestions included in the induction. Thus, the hypnoidal scores effectively combine the two types of measures, objective and subjective, into one score; higher hypnoidal scores imply not only higher levels of susceptibility as obtained by an objective measure, but also a deeper subjective experience.

In regards to the comparison of the hypnoidal scores across the four stimulus conditions, Woodside et al. found that the two posture conditions scored lower than the two sitting quietly conditions. Comparing these scores to the

norms provided by Pekala (1995), the comparable Harvard scores were about 5 for the posture conditions and closer to 6 for the two sitting quietly conditions.

Woodside et al. concluded that the lower PCI intensity and hypnoidal scores in the posture conditions may be explained by the possibility that the standing posture employed may have been difficult to hold for 15-min and caused distraction from attending to their phenomenological experience.

More recently, Kremer, Jurgen, Krippner and Stanley (1994) have criticized the work of Goodman on the grounds that (a) there is no evidence that the prehistoric cultures (hunter-gatherers and horticulturists) actually practiced posture trances, it is simply that she may have founded a new ritual; and (b) her investigative methods are not clear in terms sample sizes studied, how she obtained the narratives, and how they were analyzed. Their own studies done between 1989 and 1992 show no evidence that the postures mediate the type of experiences claimed by Goodman to occur in the narratives of her participants. In their study, they identified a group of participants who showed high levels of alterations in their experience using the Phenomenology of Consciousness Questionnaire (Pekala, 1985; Pekala & Levine, 1981), a precursor to the PCI, and examined their written narratives of the experience.

Additional Literature

The use of music or other auditory stimulation is widely used in a variety of cultures to produce trance states in an attempt to produce healing, drive out possessions of evil spirits, achieve ecstasy, make contact with supernatural forces, or perform extraordinary feats. In this effort a variety of instruments are employed. Rouget (1985) reviews much of this literature, for example the Barong's of Bali use gamelian instruments (gongs, cymbals), the Tarantulas of Southern Italy use the violin as their preferred instrument, the Songhay of Niger use the fiddle, the Kotoko in Chad use the harp and the water drum. It is interesting to note that Mesmer used the piano to play "moving tunes" to trigger trances in his patients when they could not attain the "perfect crisis."

What are the mechanisms by which drumming or other stimuli produce trance effects? The answer at best is controversial. Rouget reviewed much of this evidence and noted that various hypotheses had been offered from the driving of alpha rhythms to the significance of psychological and contextual factors. For example, Andrew Neher (1961, cited by Rouget, 1985) argued that ceremonial drumming has its effects by driving the brain's alpha rhythms thereby triggering unusual behaviors such as trance states, unusual perceptions or hallucinations, and in extreme cases contraction of the body and generalized

convulsion. Neher derived his hypothesis from the results of photic stimulation experiments (using intermittent light stimuli) which have been shown to cause unusual perceptions or hallucinations. In his laboratory experiments, Neher used an (auditory) drumming signal of low frequency (75-150 Khz) and high volume (120 dBs), and struck at 3, 4, 5, 6, and 8 beats per sec. He examined the EEG records and the response of the left eyelid blinking of some of the participants and concluded that slower drum beats of 3 and 4 per sec, but not the faster drum beats of 6 to 8, produced the driving phenomenon similar to what would be obtained with intermittent photic stimulation.

In a related article, Neher (1962) stated that a drum beat (auditory) contains many frequencies (mainly low frequencies), which are transmitted along different pathways in the brain. Bright rhythmic flashing light (photic), with a frequency near the alpha rhythm (normal basic brain wave rhythm) has several electrical effects: (a) the brain wave amplitude is built up, (b) the brain wave rhythm changes to match the changes in the frequency of the light (Adrian & Matthews, 1934, cited by Neher), and (c) nerves in the brain have a spontaneous firing rate that is reinforced by a rhythmic stimulus of similar frequency. Brain wave frequencies range from 8 to 13 cycles in different individuals, and although they differ, it is essentially constant for a given individual over time, as is the

frequency at which he/she is most susceptible to stimulation. Neher noted that emotional response was greatest at the point of highest driving.

However, Rouget (1985) argues against the neurological mediation of trance in response to drumming since a variety of musical instruments and varying drum beats (4-12 beats/sec) are played in possession seances, cadences which cover the entire spectrum of tempi from moderato to prestissimo and beyond.

Nina Rodriguez (1935, cited by Rouget), a Brazilian medical doctor, influenced by Charcot and Janet, who was studying the Candomble in South America, speculated that trance induction via drumming was due to a hypnotic or somnambulistic effect produced by the unusual monotony of the drumming. Herskovits (1943, cited by Rouget) regarded that trance by drumming was a learned response, a conditioned reflex. Others, such as Bastide (1945, cited by Rouget) have stressed the importance of contextual factors in the production of the trance, claiming that if the same drum beat is heard out of context, nothing would happen. It is possible that a combination of neurological and psychological factors, including both state and trait aspects, are involved in the experience of trance states in response to visual or auditory stimuli.

Schuman (1980, cited by Wright) stated that certain tempos of drumming facilitate auditory driving in the low

alpha and theta ranges (9 - 11 hz), which may contribute to the development of a shamanic altered state of consciousness. Subjective experience of theta wave bursts in meditation practice have been described as peaceful and pleasant, awake and self-aware, with periods of reverie and rich imagery, and emergence of unconscious material. Wendy-Louise Walker (1992) reported that a number of her highly hypnotizable clients regularly experience synaesthesia (seeing colors) in response to music, and tend to experience the same colors in response to certain "visual" pieces (e.g. some pieces by Vivaldi).

The Present Study

Given the relatively few number of studies it is difficult to draw any conclusions with regards to the effects of drumming and/or postures on producing alterations in the states of consciousness. It seems that further investigations are warranted especially since drumming and rattling are becoming increasingly popular in certain sections of our society as a means to produce growth experiences (Harner, 1980/1990).

The present study differed from the previous studies in that it focussed on the relationship of drumming and hypnosis in a more direct way by employing a standard hypnotic induction procedure -- the Harvard scale, and a phenomenological instrument that is predictive of the Harvard scores. There were several questions of interest to

the present study:

1. Does objective hypnotizability, as measured by the Harvard scale, vary as a function of whether or not drumming preceded the standard induction?

2. Does the level of trance in response to drumming vary as a function of whether or not the participants were hypnotized by a standard induction procedure before the drumming?

3. Does the level of trance vary as a function of the level of objective hypnotizability of the participants as measured by the Harvard Scale of Group Susceptibility (Shor & Orne, 1962).

4. What level of trance (as measured by the hypnoidal scores) does drumming produce?

5. Do subjective experiences in response to drumming, as measured by the PCI, vary as a function of drumming and hypnotizability?

6. What is the nature of the experiences in response to drumming and do these experiences vary as a function of the level of objective hypnotizability?

Because of the exploratory nature of the study, no specific hypotheses have been offered.

The basic design of the study was that one group of participants experienced a 15-min drumming session, while seated with eyes closed, followed by the standard Harvard Group Scale of Hypnotic Susceptibility induction. A second

group received the stimulus conditions in the reverse order. In both groups, participants wrote narratives of their internal experiences in response to the drumming experience (in reference to the last 4-min of the drumming) and then completed the PCI in reference to the same time period. The PCI was not administered in relation to the Harvard scale in either group.

METHOD

Participants

Participants were 206 volunteer students from various sections of an Introduction to Psychology course at West Chester University. They participated to fulfill the departmental research requirement. Participation was voluntary in as much as the participants were given a choice among several ongoing departmental projects or a research paper. Participants could terminate their participation in the departmental projects at any time with impunity.

INSTRUMENTS

The Harvard Group Scale of Hypnotic Susceptibility. The scale (Shor & Orne, 1962) is a self-report instrument in which the participant judges afterwards whether or not he/she performed the requested behaviors suggested during the induction associated with the scale. The suggestions include: one's head falling forward, eyes closing, an outstretched arm becoming heavy and falling down, one's resting arm being too heavy to lift, inability to unlock

interlocked fingers, inability to bend an outstretched arm, outstretched hands being pulled together, inability to shake one's head "no", hallucinating a fly buzzing around one's head and shooing it away, inability to open one's eyes, touching one's ankle when a rapping sound is made, and amnesia of the event. The scores on the scale range between 0 and 12.

The Phenomenology of Consciousness Inventory (PCI). The PCI, Form 1 (Pekala, 1982; 1991a) was used to assess subjective phenomonological experiences. It consists of 53 self-report questions (with opposite dipoles on a Likert type scale) assessing 12 major dimensions and 14 minor (sub) dimensions which include: Internal Dialogue (the extent to which one was silently talking to him/herself), Self-awareness (awareness of being aware of self versus having lost consciousness of self or not being aware of oneself), Altered State of Awareness (being in an extraordinarily unusual and non-ordinary state of awareness versus being in a state of consciousness no different than usual), Imagery [amount, vividness (the extent to which visual imagery is vivid and three-dimensional, or clear and vivid as objects in the real world)], Positive Affect [Joy (feelings of ecstacy and extreme happiness), Sexual Excitement (extent of intense sexual feelings), Love (feelings of love and loving-kindness)], Negative Affect, [Anger (feelings of being very angry and upset or enraged), Fear (feeling very frightened,

scared or afraid), Sadness (feeling very, very sad or unhappy)], Altered Experience [Time Sense (the extent to which the flow of time seemed to change drastically, whether it seemed to speed up or slow down), Body Image (the extent of feeling that bodily feelings expand into the world around oneself), Perceptions (changes in perception of the world in terms of color, form, size, shape, or perspective), Unusual Meanings (the extent to which the experience might be labeled as religious, spiritual, or transcendental, or feelings of awe, sacredness, or reverence)], Attention [Absorption (the extent to which the person was absorbed in what they were doing versus being continually distracted by extraneous impressions), Direction (the extent of internal subjective experience, versus toward the environment around oneself)], Memory (the person's perception that he/she can remember just about everything that was experienced versus not being able to remember what was experienced), Rationality (that thinking was clear and distinct, or rational and easy to comprehend versus being confused and muddled, or non-rational and very hard to comprehend), Volitional Control (the extent to which one has complete control over what one is paying attention to, or is willfully controlling the experience versus being passive and receptive to the experience or having images and thoughts pop into one's mind without control), and Arousal (the extent of muscular tension -- being very tense and

tight versus no feelings of tension or tightness at all; Pekala, 1991b pp. 130-32). It is completed retrospectively in reference to a preceding stimulus condition.

PROCEDURE

There were two different conditions: (a) Condition 1 in which the participants received the drumming experience first followed by the Harvard procedure, and (b) Condition 2 in which the participants received the Harvard procedure first followed by the drumming experience. Participants were tested in six groups, each of which was randomly assigned to one or the other condition, three in the drumming first condition, and three in the hypnosis first condition.

The drumming session was conducted live for 15-min on a 16-inch, mylar drum with a tympani mallet. The drummer followed along with a commercial drumming tape (The Foundation of Shamanic Studies, 1989) through earphones played on a walkman-type tape player so as to keep a steady beat of three beats per second. The sessions were timed with a stop-watch.

A short narrative was written by each of the participants as to what they experienced internally (their thoughts, feelings, etc.) in reference to the concluding 4-min of the drumming session.

All six groups were tested in the same university auditorium and the participants were seated in plain seats without padding, not on the floor or any other unusual

seating position or posture, with an empty seat between each person. The researcher who did the speaking and drumming in all six sessions wore the same set of plain clothes (with no obvious designs, emblems or pictures on them which might be suggestive of any particular type of experience) in each of the six sessions.

The participants were informed that the researcher was interested in learning about their stream of consciousness, in particular their inner subjective experiences in response to drumming and hypnosis. They were not given any information as to what they might experience internally and they were asked not to preview any of the forms or questions before they were directed to do so by the investigator so as to not influence their experiences.

After explaining the purpose of the study, participants were asked to read and fill in their names on the their Informed Consent Form (see Appendix 1) and fill in their participant number on the computer answer forms and the essay forms. At the end of the testing session, the participants were given a copy of a debriefing form (see Appendix 2).

In Condition 1, the participants were informed that they would be guided through a 3-min breathing and relaxation procedure (which was timed with a stop watch) after which they would sit quietly with their eyes closed through 15-min of a steady, continuous drumming procedure.

(The 3-min and 15-min configurations were used to be consistent with Goodman's and Woodside et al.'s work.) They were further told that after 11-min of drumming they would be signalled with a distinct -- short change in the drumming (three rapid beats) to signal the end of the first 11-min and the beginning of the last 4-min of drumming and that the previous steady continuous drumming would then continue. [This timing was chosen as there is some evidence that shows that theta production starts to increase at 9-min of drumming exposure and plateaus at 15-min with naive participants (Maxfield, 1991, cited in Wright, 1991)]. Participants were also told that the end of the drumming session would be signalled with three sets of seven rapid beats. They would then be asked to write a brief narrative of what they experienced internally, their thoughts and feelings, in reference to the concluding 4-min of the drumming, and after completing their narratives they would be asked to answer the PCI questionnaire on the computer answer forms. Nothing was said or suggested as what they could expect in terms of their responses to drumming; they were to simply allow themselves to experience internally whatever occurred.

When they were finished writing their narratives and answering the PCI, they were given a short 15-sec stretching period, after which they were administered the Harvard Group Scale of Hypnotic Susceptibility. The Harvard scale

induction was shortened by approximately 10-min to accommodate the time constraints of the study. This was done by eliminating redundant phraseology prior to the various behavioral suggestions in the induction. Prior research indicated no contraindications to shortening the scale (Kumar & Pekala, 1988). After the induction, the participants completed the response items of the Harvard scale.

In Condition 2, all procedures and instructions were identical except that the participants were administered the Harvard Scale first, followed by the 3-min stretching session, the 3-min breathing and relaxation procedure, then the drumming session which was followed by the written narrative and lastly the PCI.

Results

Preliminary Analysis

The PCI includes six pairs of identical items arranged randomly within the form. These items are used to monitor how consistently the participants completed the questionnaire. Participants who answered each pair identically would have a reliability index (RI) of 0 for each item-pair; participants who answer oppositely would have an RI score of 6 (using a 7-point Likert scale) for each item-pair; and participants who answer randomly would have an average RI score of 3. Marginal reliability is defined as an average RI score of greater than 2 across all

the item-pairs (Pekala, 1991b, pp. 129-137). Participants who omitted any answers or who answered the oppositely arranged item-pairs unreliably were eliminated from the data analysis. Eliminating participants who responded unreliably resulted in 169 participants on whom the rest of the results are based.

Harvard Scores

The first analysis examined if Harvard scores differed significantly as a function of whether the Harvard scale was administered before or after the drumming. It may be recalled that in Condition 1, participants received drumming first followed by hypnosis, and in Condition 2, the reverse occurred.

A two-tailed *t*-test for independent groups showed no significant difference between the groups, t (167) = 1.56, p = .12. The *N*s, means and standard deviations were as follows: Condition 1 (drumming first): 78, 7.10, 2.72; Condition 2 (hypnosis first): 91, 6.44, 2.78.

Hypnoidal Scores

The question of interest here was if the level of trance, as measured by the hypnoidal scores, varied as a function of the ordering of drumming and hypnosis. However, since Harvard scores were not affected by the order of administration, it was decided to examine if hypnoidal scores varied not only as a function of the ordering of drumming and hypnosis, but also the level of hypnotic

susceptibility or objective hypnotizability as measured by the Harvard scale.

The regression equation reported by Pekala and Kumar (1987) was used to compute the hypnoidal scores (predicted Harvard scores) from the raw PCI scores for the participants in these two experimental conditions, however, this equation used a 7-point scale (rating scale of 0 to 6), and since the PCI scores obtained in the present study were on a 5-point scale, they were transformed to a 7-point scale as follows: (1=0; 2=1.5; 3=3; 4=4.5; & 5=6). This transformation was done to facilitate the interpretation of the scores using the norms given by Pekala (1995).

Participants were divided into three levels of susceptibility based on their responses to the Harvard scale. The cut-off scores recommended by Kirsch, Council & Wickless (1990) were used: low = 0 through 4, medium = 5 through 8, and high = 9 through 12.

A 2x3 analysis of variance (2 levels of stimulus order: drumming first or hypnosis first by 3 levels of hypnotic susceptibility: low, medium, and high) was conducted using the hypnoidal scores as the dependent variable. The results showed the main effects for the stimulus order, F (1,163)= 4.47, p = .036; and level of susceptibility, F (2,163) = 11.40, p = .000 were significant. However, the interaction was not significant, F (2,163) = 2.14, p = .120. Table 1 presents the means and standard deviations for this

analysis.

The main effect of stimulus condition (see Table 1) shows that the level of trance, as measured by the hypnoidal scores, achieved by participants who received drumming first was significantly higher than those who received drumming second. Comparing the scores to the norms provided by Pekala (1995), the level of objective trance obtained during drumming in both conditions falls in the medium range (5-8) on the Harvard scale.

Table 1

Means and Standard Deviations of Hypnoidal Scores in the Low, Medium and High Susceptibility Groups for the two Stimulus Conditions

	Harvard Susceptibility Groups						
	Low		Med		High		Overall
	M	SD	M	SD	M	SD	M
Cond 1	5.02	1.69	5.27	1.60	6.49	1.56	5.46
n	17		45		16		78
Cond 2	3.72	1.47	5.16	1.45	5.69	1.96	4.86
n	24		53		14		91
Overall means	4.26		5.21		6.11		5.14
n	41		98		30		169

In regards to the susceptibility main effect, Table 1 shows that the level of trance increased with the level of objective measure of hypnotic susceptibility. The hypnoidal score means for the low, medium, and high susceptible groups appear consistent with those provided by Pekala (1995). Low susceptibles on the Harvard (0-4) have hypnoidal scores lower than 4.59; mediums (5-8) have hypnoidal scores between 4.09 and 5.59; and highs (9-12) have hypnoidal scores between 6.13 and 6.96.

A post-hoc analysis using Scheffe's procedure, (alpha = .05; critical $F = 2(3.05) = 6.10$) revealed that the lows differed significantly from both the medium and the highs, F values were 10.75 and 24.28 respectively. The mediums also differed significantly from the highs, $F = 8.19$.

Analysis on the PCI Intensity Scores.

Two separate analyses were conducted on the minor and major dimensions to see if the intensity scores on the PCI varied as a function of the stimulus condition, level of hypnotic susceptibility, and interaction between stimulus condition and level of susceptibility.

For the level of susceptibility, the low, medium and high susceptibility groups were formed based on the criterion mentioned previously (Kirsch, Council, & Wickless 1990). In each case, multivariate analyses preceded the univariate 2x3 analyses of variance.

For the PCI minor dimensions, the multivariate F for

the main effect of stimulus condition was significant, Wilks multivariate *F* (14, 150) = 2.47, *p* = .004. The multivariate *F* for the main effect of susceptibility and the interaction effect between susceptibility and stimulus condition were not significant; susceptibility, Wilks multivariate *F* (28,300) = 1.46, *p* = .068; interaction, Wilks multivariate *F* (28,300) = .93, *p* = .57.

For the PCI major dimensions, the multivariate *F* for the main effect of stimulus condition was significant, Wilks multivariate *F* (12, 152) = 1.85, *p* = .045; and the main effect of level of susceptibility was also significant, Wilks multivariate *F* (24, 304)= 2.11, *p* = .002. The interaction between stimulus condition and susceptibility was not significant, Wilks multivariate *F* (24, 304) = 1.29, *p* = .167.

Table 2 presents the results of the univariate analysis of variance on the effect of the stimulus conditions for both the major and minor dimensions. Since there are 12 major and 14 minor dimensions, the alpha required for significance for each dimension was set at .004 so as to keep the overall alpha at about .05. It shows that when drumming preceded hypnosis, body image, absorption (minor dimensions), and attention (major dimension) scores were significantly higher in Condition 1. Arousal (major dimension) was marginally significantly lower in Condition 1.

Table 2

Differences on PCI (Sub)Dimensions among the two Stimulus Conditions

	Conditions			
	Drumming Cond 1	Harvard Cond 2	F	P
Positive Affect	1.99	1.97	.56	.456
Joy	1.63	1.66	.24	.624
Sexual Excitement	1.52	1.48	.52	.472
Love	2.82	2.78	.40	.529
Negative Affect	1.26	1.34	.42	.516
Anger	1.17	1.79	5.10	.025
Sadness	1.50	1.41	.09	.763
Fear	1.24	.82	.45	.505
Altered Experience	2.52	2.05	5.47	.021
Body Image	3.17	2.09	16.25	.000
Time Sense	3.64	3.34	.63	.427
Perception	1.76	1.31	2.11	.149
Meaning	1.76	1.62	.48	.490
Visual Imagery	3.48	3.35	1.45	.231
Amount	3.58	3.52	.68	.411
Vividness	3.38	3.18	1.93	.166
Attention	4.22	3.75	9.73	.002
Direction	4.39	3.96	5.41	.021
Absorption	3.97	3.44	8.46	.004
Self-Awareness	3.67	3.80	.50	.480
Altered State	3.26	2.39	6.68	.011
Internal Dialogue	3.77	3.30	.21	.649
Rationality	3.76	3.80	.88	.348
Volitional Control	2.92	3.32	2.50	.116
Memory	4.20	4.31	.82	.366
Arousal	1.55	2.31	8.21	.005

Table 3 presents the means of the PCI scores for the main effect of level of hypnotic susceptibility for both major and minor dimensions. It is to be noted that the multivariate analysis revealed that the main effect was

significant only for the major dimensions. However, the means for the minor dimensions were included for informational purposes only. The results of post-hoc analyses using Scheffe's procedure are indicated in the last column of Table 3 only for the major dimensions. It shows that only altered experience, altered state of awareness and volitional control were significantly different in the three susceptibility groups. Post-hoc analyses, using Scheffe's procedure (alpha = .05; critical $\underline{F}$ value = 6.10), were then conducted on these three variables to test for pair-wise differences among the three means (see last column of Table 3). For altered experience, the lows differed significantly from the mediums, $\underline{F}$ = 16.87; and the highs, $\underline{F}$ = 27.68. The mediums did not differ significantly from the highs, $\underline{F}$ = 5.75. For altered state of awareness, the lows differed significantly from the mediums, $\underline{F}$ = 12.09, and the highs, $\underline{F}$ = 29.09. The mediums also differed significantly from the highs, $\underline{F}$ = 9.79. For volitional control, the lows differed significantly from the highs, $\underline{F}$ = 13.68; but not the mediums, $\underline{F}$ = 4.45. The mediums did not differ significantly from the highs, $\underline{F}$ = 5.60.

Table 3

PCI (Sub)Dimensions and Susceptibility

	Susceptibility					
	Low	Med	High	F	P	Post-hoc
n	41	98	30			
Positive Affect	1.52	2.14	2.07	2.05	.132	
Joy	1.02	1.84	1.85	4.05	.019	
Sexual Excitement	.99	1.73	1.42	1.74	.178	
Love	2.56	2.85	2.92	.27	.764	
Negative Affect	1.18	1.39	1.21	.36	.696	
Anger	1.54	1.52	1.42	.01	.994	
Sadness	1.34	1.57	1.22	.60	.552	
Fear	.66	1.07	.97	.76	.470	
Altered Experience	1.58	2.37	2.89	13.19	.000	(1,2;1,3)
Body Image	1.78	2.67	3.42	9.46	.000	
Time Sense	2.78	3.66	3.82	4.26	.016	
Perception	.87	1.61	2.12	6.43	.002	
Meaning	1.05	1.74	2.38	7.75	.001	
Visual Imagery	2.77	3.50	4.00	4.52	.012	
Amount	2.85	3.63	4.22	4.44	.013	
Vividness	2.69	3.37	3.77	3.10	.048	
Attention	3.81	3.90	4.41	2.12	.125	
Direction	4.02	4.09	4.55	1.27	.283	
Absorption	3.49	3.60	4.20	1.71	.185	
Self-Awareness	4.24	3.74	3.05	4.85	.009	
Altered State	1.80	2.86	3.93	12.97	.000	(1,2;1,3;2,3)
Internal Dialogue	3.62	3.48	3.47	.04	.963	
Rationality	4.28	3.72	3.32	4.26	.016	
Volitional Control	3.77	3.12	2.30	5.84	.004	(1,3)
Memory	4.62	4.11	4.25	1.03	.359	
Arousal	2.56	1.81	1.63	2.71	.069	

Analysis of the Narratives

It may be recalled that the narratives were written soon after the drumming -- in reference to the last 4-min of the drumming. There was special interest in looking for

those participants who reported shamanic or journey type experiences consistent with those found in the literature in response to drumming (Goodman 1990; Harner 1980/1990).

The participants were assigned a different identification number so that the coders would not be aware of the order in which they received drumming (before or after hypnosis). Coders were also unaware of the participant's hypnoidal or susceptibility scores.

The narratives were coded by two coders separately so as to not influence each other, each person placing each of the participants into one of the four categories; those who experienced predominantly: (a) negative feelings or imagery (e.g., annoyance, headache, frustration, anxiety, and fidgety responses), (b) neutral feelings or imagery (logical thinking, cognitive statements, blank mind, thoughts about current daily events, food, etc.), (c) relaxed feelings or sensations (statements of being calm and relaxed only), and (d) shamanic or journey type experiences typical to drumming (seeing unusual color patterns, feeling dissociated from one's body, being around and/or becoming an animal, sexual arousal, tunnel experiences, time distortion, hearing singing, buzzing sounds, music, seeing Native American Indians or other tribal cultures.

The judgements of coders were compared for agreement, and with the assistance of a third coder, agreements were arrived at for the ones initially disagreed upon. Initially,

the first two coders agreed on 67% of the judgements, and the reasons for the disagreements were largely due to the interpretations of the requirements for each of the classifications. There were 40 participants in the Negative group, 41 in the Neutral, 43 in the Relaxed, and 45 in the Shamanic.

It is to be noted that some the participants who gave shamanic type responses may also have reported positive, negative or relaxation experiences, however, they were classified into the shamanic response group because of one or more journey type experiences typically associated with the stimulus of drumming (see Appendix 3 for excerpts of responses within each group).

Stimulus Order and Type of Responses to Drumming. To determine if the type of responding was related to the order in which drumming was experienced, frequencies were cross-tabulated. The results of a chi-square analysis are presented on Table 4, which shows that there was a significant association between stimulus order and type of responses given to drumming, Chi-square (3) = 14.23, p =.003.

Table 4

Frequencies of Type of Responses to Drumming by Stimulus Order

	Type of Responses				
	Negative	Neutral	Relaxed	Shamanic	Total
Order					
Condition 1	9	18	26	25	78
(Drumming 1st)	11.5%	23.1%	33.3%	32.1%	
Condition 2	31	23	17	20	91
(Hypnosis 1st)	34.1%	25.3%	18.7%	21.2%	

Differences in the Hypnoidal and Harvard scores among the four drumming response groups. On an exploratory basis it was decided to examine if hypnoidal scores and susceptibility scores differed among these four groups. Two univariate one-way analyses of variance, one on hypnoidal scores and the other on Harvard scores were first preceded by a multivariate analysis of variance. The multivariate F was found to be significant, Wilkes multivariate F (6,328) = 5.04, p = .000. Table 5 presents the means and standard deviations of hypnoidal and Harvard scores for the four drumming response groups.

Univariate F-tests done separately for hypnoidal and Harvard scores revealed significant F values for hypnoidal scores, F (3,165) = 10.26, p = .000; but not for Harvard scores, F (3,165) = 2.39, p = .071.

A post-hoc analysis using Scheffe's procedure revealed the averaged hypnoidal scores of the negative and neutral groups were significantly different from the averaged hypnoidal scores of the relaxation and shamanic groups (alpha = .05); hypnoidal scores, F (1,163) = 21.34 (see table 5).

Table 5

Means and Standard Deviations of Hypnoidal Scores and Harvard Scores in the Drumming Response Groups

	Drumming Response Groups									
	Negative		Neutral		Relaxed		Shamanic			
	1		2		3		4		Overall	
	M	SD	M	SD	M	SD	M	SD	M	SD
Hypnoidal	4.34	1.46	4.76	1.81	5.19	1.48	6.14	1.54	5.14	1.70
n	40		41		43		45		169	
Harvard	6.08	3.02	6.49	2.74	6.72	2.83	7.60	2.34	6.75	2.77
n	40		41		43		45		169	

Hypnoidal Scores as a Function of Susceptibility and Type of Responses to Drumming. An analysis was undertaken to see if hypnoidal scores varied as a function of level of hypnotic susceptibility (3 levels) and types of response groups (4 levels) obtained in response to drumming. A 3 by 4 analysis of variance on hypnoidal scores revealed significant F values for main effects of susceptibility, F (2,157) = 7.77, p = .001; and response groups, F (3,157) =

7.45, p = .000. The interaction effect was not significant, F (6,157) = .64.

Table 6 presents means and standard deviations of the hypnoidal scores in the three hypnotic susceptibility groups within the four drumming response groups and shows that the hypnoidal scores increase as a function of response groups and susceptibility groups.

Table 6

Means and Standard Deviations of Hypnoidal Scores for the Susceptibility and the Drumming Response Groups

	Drumming Response Groups							
	Negative		Neutral		Relaxed		Shamanic	
	M	SD	M	SD	M	SD	M	SD
Susceptibility								
Low	3.75	1.40	3.76	1.23	4.90	1.97	5.81	1.76
n	16		10		11		4	
Med	4.75	1.30	4.80	1.77	5.03	1.19	5.96	1.42
n	20		24		23		31	
High	4.67	2.01	6.08	1.95	5.98	1.36	6.83	1.76
n	4		7		9		10	

PCI Intensity Scores and Type of Responses to Drumming. An analysis was conducted to see if PCI scores varied as a function of type of response to drumming. The multivariate F on Major dimensions was found to be significant, Wilks multivariate F (36,432) = 2.74, p = .000. The multivariate F on Minor dimensions was also found to be significant, Wilks

multivariate F (42,427) = 2.53, p = .000. Univariate one-way analyses on Major dimensions showed significance for the dimensions of arousal, F (3,157) = 17.28, p = .000; negative affect, F (3,157) = 8.74, p = .000; altered experience, F (3,157) = 7.82, p = .000. Univariate one-way analyses on Minor dimensions showed significance for the dimensions of anger, F (3,157) = 14.18, p = .000; fear, F (3,157) = 5.33, p = .002; perceptions, F (3,157) = 5.59, p = .001; unusual meanings, F (3,157) = 5.93, p = .001; and absorption, F (3,157) = 6.12, p = .001. Table 7 presents the overall means of the PCI scores for the significant major and minor dimensions.

Table 7

Significant Overall Means of the PCI Scores in the Drumming Response Groups

	Drumming Response Groups				
	Negative	Neutral	Relaxed	Shamanic	
	M	M	M	M	Post-hoc
Negative Affect	1.92	1.12	0.69	1.51	(1,2;1,3;3,4)
Anger	2.64	1.37	0.47	1.60	(1,2;1,3;1,4;3,4)
Fear	1.18	0.49	0.54	1.57	(2,4;3,4)
Altered Experience	1.81	2.02	2.11	3.05	(1,4;2,4;3,4)
Perceptions	0.99	1.32	1.27	2.41	(1,4;2,4;3,4)
Unusual Meanings	1.14	1.56	1.41	2.53	(1,4;2,4;3,4)
Absorption	2.74	3.55	4.19	4.17	(1,3;1,4)
Arousal	3.52	1.43	1.10	1.87	(1,2;1,3;1,4)

Post-hoc analyses using Scheffe's procedure [(alpha = .05; Critical F = (3 x 2.08) = 8.04] were then conducted to test for pair-wise differences among the means. The last column indicates the significant results of the post-hoc analyses. The results are summarized as follows:

1. The negatives experienced significantly more negative affect than the neutrals, F = 8.77, and the relaxed, F = 21.01; the shamanic group experienced significantly more negative affect than the relaxed, F = 10.03, but not the negative and the neutral groups.

2. The negatives experienced significantly more anger than the neutrals, F = 12.70; the relaxed, F = 37.67; and the shamanics, F = 8.87. The shamanic group experienced significantly more anger than the relaxed group, F = 10.92.

3. The shamanics experienced significantly more fear than the neutrals, F = 11.66; and the relaxed, F = 10.83, but not the negatives.

4. The shamanics experienced significantly higher levels of altered experience than the negatives, F = 33.44; the neutrals, F = 23.58; and the relaxed, F = 20.09.

5. The shamanics experienced significantly more alteration in perceptions than the negatives, F = 22.15; the neutrals, F = 13.35; and the relaxed, F = 14.93.

6. The shamanics experienced significantly higher unusual meanings than the negatives, F = 25.76; the neutrals, F = 12.72; and the relaxed, F = 17.42.

7. The relaxed group experienced significantly higher levels of absorption of attention than the negatives, F = 20.82; and the shamanic group experienced significantly higher levels of absorption than the negatives, F = 20.66.

8. The negatives experienced significantly higher levels of arousal (less relaxation) than the neutrals, F = 34.67; the relaxed, F = 47.61; and the shamanics, F = 22.50.

Discussion

The main focus of the present study was to examine the effects of drumming on producing altered states of consciousness. The design of the study allowed investigation of an interesting question about whether or not hypnotizability would be modified by prior drumming for 15-min. A comparison of the Harvard scores for the two groups, those receiving drumming first or hypnosis first revealed no significant differences (p = .12) between the two groups. These results are consistent with the notion that the Harvard scale is a trait measure. However, whether we can regard the Harvard scale as a pure measure of trait is controversial. Kumar, Pekala, and Cummings (1993) have argued that the Harvard scale necessarily taps both state and trait aspects since it assesses a domain of behavior after the participants have experienced an induction procedure that is intended to alter a person's expectations or subjective experiences. The modifiability of hypnotizability has been of great interest to investigators. Kirsch and Council (1992) reviewing this evidence note that a variety of methods, such as reinforced practice, modeling, poetry, personal growth training, and imagination training have been used to modify hypnotizability. They noted that such effects tend to be small.

Given that hypnotizability, as measured by the Harvard scale did not vary as function of the stimulus order

(whether or not drumming preceded hypnosis), most of the subsequent analysis included level of susceptibility as a measure by dividing the participants into low, medium, and high susceptible groups.

A question of interest was to see if the hypnoidal scores obtained in response to drumming varied as a function of stimulus order (whether drumming came first or hypnosis). It may be recalled that hypnoidal scores are a measure of both objective and subjective feelings of the depth of trance achieved during a stimulus condition. Results reported in Table 1 suggest that when drumming came before hypnosis, the participants experienced significantly higher hypnoidal scores than when it came after hypnosis. These results are understandable when we compare the tasks required in response for the Harvard scale and drumming. The Harvard induction, lasting approximately 45 minutes, is very task oriented. Drumming is not task oriented at all, rather the participants were instructed to sit quietly with their eyes closed and told that would be asked to report later whatever thoughts and feelings they experienced. When participants came out of hypnosis, filled out the Harvard booklet, and then went on to experience drumming, they had already completed about an hour's worth of participation. Thus, they might have been more reluctant to go along with the second part of the experiment related to drumming. The frequencies in Table 4 support these interpretations. A

significantly greater percentage of participants reported negative or neutral responses when drumming came after hypnosis (condition 2), relative to when the stimulus order was reversed (condition 1). This is further supported by the results that PCI intensity scores were higher in condition 1 when compared with condition 2 on body image, absorption, and attention. Condition 1 participants also reported somewhat lower levels of physical arousal as opposed to condition 2 participants (see Table 2).

Table 1 also shows that the level of hypnotic susceptibility increased with hypnoidal scores. This result provides support to the validity of the hypnoidal scores being predictors of the Harvard scores. The overall hypnoidal score means of the low, medium, and high susceptibles are consistent with the data reported by Pekala (1995).

Another finding was that the high, relative to low, susceptibles showed significantly higher altered experience, higher altered state, and lower volitional control in response to drumming (see Table 3). These results may be compared to what Kumar and Pekala (1988) found when they compared the PCI intensity scores of low, medium, and high susceptible participants in response to an eyes closed sitting quietly condition and the hypnotic induction of the Harvard scale. Among other differences, they found that the highs, relative to the lows, experienced significantly

greater altered experience, increased alterations in altered state of awareness, and volitional control during hypnosis. The same differences were smaller between the highs and the lows during an eyes closed sitting quietly condition. Thus, it appears that drumming in some ways produces phenomenological experiences similar to hypnosis. Combining these results with the results of the analysis on hypnoidal scores, it seems reasonable to conclude that drumming does produce a trance state that includes some of the same components of the subjective experiences reported by the participants during hypnosis.

The analysis of the written narratives in response to the drumming showed some interesting patterns. Participants who wrote narratives that reflected a "relaxed" or elements of a "shamanic" experience during the drumming had significantly higher hypnoidal and Harvard scores relative to those whose narratives reflected negative or neutral experiences. Participants who experienced shamanic elements came largely from the medium and high susceptible groups (91%) (see Table 6). Given that hypnotic susceptibility is related to such abilities as imagery/imagination, absorption (Perry, 1992), and fantasy proneness (Wilson & Barber, 1983), it may seem hardly surprising that participants with high hypnoidal and Harvard scores experienced more alterations in phenomenology than those who scored lower. However, since the coders of narratives were unaware of the

participant's hypnoidal or Harvard scores or the condition in which they participated, it suggests that the results are not merely due to some kind of expectancy effects.

Finally, the phenomenological experience of the shamanic group, relative to the relaxed group seems to suggest that they experienced higher levels of negative affect (anger and fear), greater altered experience (perceptions and unusual meanings), but about the same level of absorption and arousal. It is interesting to note that absorption was lowest in the negative group, and arousal was highest in the negative group (see Table 7). It seems that the shamanic group did enter a trance state somewhat similar to hypnosis (in terms of altered experience, absorption, and arousal) but different in other ways (in terms of negative affect).

In conclusion the data from the present study suggests that drumming is a viable tool for inducing altered states of consciousness. The nature of such induced states tends to contain some of the same phenomenological elements as are typically found during the Harvard scale induction. Although, the phenomenological experiences to drumming and hypnosis are not identical, the results of the present study suggest that participants do achieve a moderate level of trance, roughly indicated by the medium range scores on the Harvard scale. The high and medium, relative to low, susceptible participants are more likely to report elements

of the shamanic experience during drumming. Further study is warranted to replicate these results with a larger group of participants.

Also, with the evidence from other research that theta brain wave production may begin around the 9-min point in drumming (Schuman, 1980, and Maxfield, 1991, both cited by Wright), coupled with the shamanic experiences reported in the written narratives in the current study, it is suggested that subsequent research integrate a standard hypnotic and/or verbal induction into the drumming session, perhaps beginning the hypnotic/verbal part at about the 10-min mark of the drumming (and continuing to drum for an appropriate time period), to see if the phenomenological experiences are richer in detail and/or if the Harvard scores are higher in such a condition compared to conditions without drumming. Aside from a hypnotic induction like the Harvard, verbal suggestions could include items like seeing specific colors, experiencing a specific animal, travelling to a specific place that the participants have not been before (i.e. the pyramids in Egypt), or a revelation of some pertinent information. Their narratives could then be compared to narratives from other conditions.

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Appendix 1

INFORMED CONSENT FORM

INVESTIGATORS: Ronald L. Maurer, Sr. in conjunction with Dr. V. K. Kumar at West Chester State University and Dr. Ronald Pekala at Coatesville V. A. Medical Center.

Please sign and fill in your SS# after you have read the following:

1. The nature of the study has been explained to me.
2. I understand that I am free to terminate my participation at anytime during the study.
3. I understand that I have to attend one session of approximately 2 hours.
4. I was told that I will be asked to fill out several self-report questionnaires relating to personal experiences during the study.
5. I was told that I would experience hypnosis as part of the study.
6. I was told that if I suffered from an epileptic condition or any psychiatric illness or condition then I should not participate in the study.
7. I was told that all data collected are for research purposes only and will be treated confidentially with regard to my identity. Only a participant number (not my social security number) should be written on any of the response forms.
8. I was told that a summary of the results will be made available at the end of the study if I request it.
9. I have been given an opportunity to ask whatever questions I may have had and all questions and inquiries have been answered to my satisfaction
10. I understand that I may refuse to answer or respond to any question in the questionnaires.
11. I wish to give my voluntary cooperation as a participant.
12. I understand that I will receive two (2) credit hours towards my PSY 100 grade to meet the research requirement.

SIGNATURE:_____

SOCIAL SECURITY #:_____-_____-_____

DATE:_____

CLASS & SECTION #:_____ _____

APPENDIX 2

DEBRIEFING FORM

The present study examined your subjective experiences in response to a monotonous drum beat. There has been very little work done to see what people experience as they listen to a monotonous sound. Another purpose of this study is to see if subjective experiences vary as a function of one's hypnotizability. If you are interested in the results of this study, please write your name and address on the separate sign-up sheet so a copy of the summary can be mailed to you. Be sure to sign your name on the participation sheet that has your Psy 100 instructor's name at the top so you can receive proper credit towards your Psy 100 research requirement. You may keep this sheet for your own information.

For any further information regarding this study, please contact Dr. V. K. Kumar or Mr. Ronald Maurer.

Thank you for your cooperation.

Appendix 3

Examples of Responses to Drumming

Negative Group

The participants in the negative group indicated such things as anger, anxiety, irritation, etc, (i.e. "...I was anxious to have the drumming stop...I thought about who has hurt me...the drumming was annoying so I blocked it out...I was getting bored & it was getting on my nerves...I was sick of sitting with my eyes closed...I had feelings of hostility...my main thoughts were about everything I have been most stressed out about today...I became very fidgety, moving about, crossing my legs and opening my eyes to look at my watch...it gave me a sick feeling in my stomach when he stopped drumming...I thought I would scream if I heard one more drum beat").

Neutral Group

The participants in the neutral group expressed feelings such as being hungry, thoughts about everyday issues or problems without any mention of negative affect (i.e."...I thought about the money left on my parking meter...I thought about everyday things, a party, doing my nails, my boyfriend...I was only thinking of other unconnected things, how is work going to be tonight...my thoughts shifted back and forth mostly between this hypnosis experiment and my psychology class...my thoughts and feelings weren't really that different from what they were

normally").

Relaxed Group

The participants in the relaxed group specifically indicated that they felt calm, relaxed, peaceful, etc, (i.e. "...I was extremely relaxed. My head kept on nodding to the side or the back and that would seem to wake me, yet not enough to cause my eyes to open...I felt very relaxed, but I still had control of my thoughts...The feelings were calm and placid, ongoing. Not interrupted by anything. Mentally mesmerized...My mind was blank. I could hear my heart beating. My body muscles loosened up, grew heavy...I felt nothing but pure relaxation as I concentrated on my breathing").

Shamanic Group

The participants in the shamanic group expressed one or more of the feelings or images consistent with responses traditionally associated with drumming experiences, (i.e. "...I could see shapes. Purple background with green shapes overcoming them...I saw a lot of purple and black, could see silhouettes of people spinning slowly...I saw 'visuals' in my mind - various images of hands outlined in neon colors...I saw colors bleed through each other in a kaleidoscope fashion. Also saw my girlfriend and I melt through each other like wax, that made my body feel warm...I could hear musical instruments other than the drums...the drum beat was accompanied with a pulsing light in my mind &

also added what seemed like other instruments & notes in my mind...I kept hearing humming, a sort of singing that sounded like a choir of young boys singing...It sounded like women were humming with the drums...I heard deeper, male chanting and it felt more tense and completing...I heard ethereal-like harmonics...then I heard a third sound like the wind blowing...I also felt my head very heavy and a blackness overtaking my closed eyes, darker than when I first closed them...I felt like I was being drawn into a tunnel. Again, I had swirling images in my head...I felt like I was not part of my body...I felt like my mind was elsewhere...I felt detached from my body, although I could feel extreme weight in my arms and head...I was just not thinking of anything. I was almost floating in my own thoughts...I also felt a great deal of peace within myself...My feet felt like they were not touching the ground...but it was just me floating in my chair...I felt really light and like I was traveling through the air visiting foreign, new places in nature...memories went by and it seemed like it was all being judged by someone else besides me...I do not believe that there is a God, but suddenly I felt that I had a higher potential with my mind and body...I felt loved...it felt like a weight had been lifted from me. I thought if I heard someone speak to me it would be distorted...I was an eagle soaring high above the Grand canyon, making great swooping circles and coming into

land...then I was a great brown bear...I saw myself running as though I was in a race and then transferred into a black panther...swimming like a dolphin in the Atlantic...My thoughts and feelings were fast moving. I saw clearer and colorful images before my eyes...the constant beat made me feel like I was dancing around a fire with some tribe for a cause or reason...I began thinking about Indians dancing around a fire...the fire was big and bright and I was an Indian....I was sitting around a bonfire with my family. To my right was my husband the Indian Chief (in full head dress)...an elderly Indian gentleman with long flowing hair was up on his roof. He stopped his work and climbed down a ladder made of wooden sticks tied together with rope, he untied the rope and took the wood in the house for fire wood..."