

RESEARCH

Altered Experience Mediates the Relationship between Schizotypy and Mood Disturbance during Shamanic-Like Journeying

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Abstract—Studies have found that shamanic practices are associated with statistically significant reductions in mood disturbance relative to baseline. However, contrary results were obtained for non-shamanic practitioners exposed to shamanic-like techniques. These inconsistent results may be partially due to a personality trait referred to as schizotypy, which has been demonstrated to influence susceptibility to shamanic-like techniques. Furthermore, given that an integral feature of shamanism is the production of altered states of awareness and altered experiences, and that shamanism is associated with health benefits, perhaps the production of such alterations affects health benefits. Consequently, the present study aimed to investigate whether altered state of awareness and altered experience mediated the association between schizotypy and mood disturbance during exposure to a shamanic-like condition. Sixty-nine non-shamans were randomly assigned to one of two conditions: shamanic-like journeying with drumming or sitting quietly with eyes open. Total mood disturbance-change was significantly negatively correlated with schizotypy and altered experience – but not altered state of awareness – and these correlations were significantly stronger for the shamanic-like journeying condition relative to the control condition. Furthermore, altered experience significantly mediated the association between schizotypy and total mood disturbance-change during exposure to shamanic-like journeying.

Keywords: shamanism—schizotypy—altered experience—mood disturbance

1. Introduction

Shamanism has formed the basis of indigenous healing ceremonies since antiquity; however, such practices have only recently begun to generate interest as a complementary therapeutic strategy in the traditional medical and psychological

arenas (Bittman et al., 2001). The term “shamanism” denotes “a body of techniques and activities that supposedly enable its practitioners to access information that is not ordinarily attainable by members of the social group that gave them privileged status” (Krippner, 2002: 962). Numerous scholars (e.g., Eliade, 1964; Heinze, 1991; Ripinsky-Naxon, 1993) concur that phenomena typically referred to as altered states of consciousness (Krippner, 1972; Ludwig, 1969; Tart, 1969) or, more recently, altered states of awareness (Pekala, 1991) are an integral part of shamanism.¹ Ostensible altered states of awareness cultivated in a shamanic context are typically referred to as “shamanic states of consciousness” (SSCs; Harner, 1990), and often involve “shamanic journeying” (i.e., so-called “soul-flight”; out-of-body experiences [OBES]; Krippner, 2002). A variety of methods may be used to elicit SSCs, such as sleep deprivation (Achterberg, 1987), cultivating visual mental imagery (e.g., entering “tunnels” leading to the “underworld”; Noll, 1985), ingesting psychoactive substances (e.g., *ayahuasca*, *psilocybin*; Harner, 1987), sweat lodges (Jilek, 1982), and sensory deprivation (Achterberg, 1987). However, the most commonly used method is auditory driving, a technique where the shaman listens to a monotonous percussive sound, most frequently drumming (Harner, 1990). Historically, one of the primary reasons that a shaman would cultivate SSCs was to heal community members (e.g., Krippner, 1987) or engage in self-healing (e.g., Achterberg, 1987; Harner, 1990).

In this context, Michael Harner (1988) has adapted traditional shamanic journeying techniques to develop a therapeutic tool known as “Harner Method Shamanic Counselling” (HMSC). In HMSC a client who may have no prior knowledge of shamanism is counselled by the therapist to “become his or her own shaman” (Harner, 1988: 179), engaging in journeying (through listening to shamanic journeying instructions followed by a recording of drumming) in order to accomplish self-healing or gain insight. A sample of participants experienced in HMSC was recruited for an experimental study to investigate whether shamanic journeying would produce healing effects (Harner & Tryon, 1995). Overall, the participants reported statistically significantly higher well-being and lower mood disturbance (e.g., tension/anxiety, depression/dejection) in the shamanic journeying condition compared to a baseline condition consisting of lying on the floor resting. The shamanic journeying condition did not, however, appear to provide any immunological benefit compared to baseline. One implication of this may be that shamanic journeying can provide psychological benefits, yet not directly improve physical health. In partial support of this idea, shamanic methods, including journeying, were found to provide psychological benefits to patients with life-threatening illnesses (Krycka, 2000).

Given the therapeutic potential of shamanism (Krippner, 2002), it may be prudent to investigate experimentally the subjective effects of these practices on non-shamans (Rock et al., 2008a). Consequently, previous studies (e.g., Rock et al., 2006; Woodside et al., 1997) have examined the effect of what may be described as “shamanic-like” techniques on university students. Rock et al. (2008a) suggest that, “Techniques may be conceptualized as ‘shamanic-like’

insofar as they bear some relation to shamanic techniques and yet depart from what may properly be called shamanism” (p. 80). For example, ingesting a psychoactive substance such as *psilocybin* for the purpose of accessing information designed to benefit one’s community may be considered a shamanic technique, while recreationally using *psilocybin* to produce purported alterations in one’s state of awareness is merely “shamanic-like.” Studies to date have offered promising evidence indicating that shamanic-like methods may be capable of eliciting an altered state of awareness in non-shamans. For example, Rock et al. (2006) found that university students who were administered shamanic-like stimulus conditions (i.e., journeying instructions coupled with exposure to monotonous drumming) reported a statistically significantly greater subjective sense of an altered state of awareness compared to a control condition who were instructed to merely sit quietly with their eyes open. It is perhaps noteworthy that the shamanic-like condition also reported statistically significantly higher intensity ratings regarding a conceptually related variable referred to as altered experience (Rock et al., 2006), which ostensibly quantifies alterations in one’s body image (e.g., bodily expansion into the world), time sense (e.g., dilation, contraction), perception of objects in the external world (e.g., changes in color, shape, size), and meaning (e.g., experiences that might be deemed religious or transcendental) (Pekala, 1991). These findings were replicated by Rock et al. (2008a).

Despite these promising findings, previous research using non-shamans has failed to replicate the *therapeutic* effects of shamanic journeying obtained by Harner and Tryon (1995). For example, Rock et al. (2008b) found that a shamanic-like stimulus condition was a statistically significant predictor of mood disturbance; specifically, shamanic journeying instructions coupled with monotonous drumming were positively associated with mood disturbance. It was concluded that “shamanic-like techniques may be counter-productive if applied in the absence of shamanic training” (Rock et al., 2008b: 78). It is perhaps salient, however, that there was no statistically significant differences between shamanic-like and control (i.e., sitting quietly with eyes closed) conditions with regards to altered state of awareness and altered experience.

It is also noteworthy that, while relatively little attention has been given to the influence of individual differences (e.g., personality) on shamanic-like journeying experiences (Rock et al., 2005), there is some evidence (e.g., Rock et al., 2005, 2008a,b) that personality traits affect one’s altered state of awareness, altered experience, and mood disturbance during shamanic-like journeying. Indeed, the personality trait schizotypy may prove important in this regard.

Schizotypy, or the schizotypal personality, represents the mild, non-psychotic end of the schizophrenia spectrum (Claridge et al., 1997). The schizotypal personality is characterized by deficits in interpersonal relations, cognitive-perceptual abnormalities, and bizarre speech and behavior (American Psychiatric Association, 1994). Features seen in individuals with schizotypal personality include strange ideas of reference (e.g., thinking that people are

watching you), unusual perceptual experiences (e.g., perceiving one's reflection altering), odd beliefs or magical thinking (e.g., believing in telepathy), suspiciousness (e.g., believing that people are trying to deceive you), having no close friends, excessive social anxiety, constricted affect (e.g., difficulty displaying emotion), odd behavior, and odd speech (Raine, 1991). On a conceptual level, the features of the schizotypal individual, particularly the tendency to have unusual perceptual experiences and to have magical beliefs, appear consistent with what one might expect from an individual who is capable of, and perhaps accustomed to, experiencing altered states of awareness.

A number of studies have linked schizotypy to the experiencing of a variety of states and altered states of awareness. For example, schizotypy appears to play a role in the experiencing of sleeping states; higher ratings of schizotypy have been found to be associated with greater dream recall (Watson, 2003), increased nightmare frequency (Levin, 1998) and distress (Claridge et al., 1997), and more frequent unusual nocturnal experiences (e.g., waking dreams; Watson, 2003). Associations have also been found between schizotypal traits and increased susceptibility to hypnotic induction (e.g., Gruzelier et al., 2004; Jamieson & Gruzelier, 2001). Perhaps most pertinent are findings that people who are able to induce OBEs tend to score higher on measures of schizotypy than people who cannot (e.g., McCreery & Claridge, 1996, 2002; Wolfradt & Watzke, 1999). Overall, these findings seem to indicate that people who possess more of the schizotypy trait are more prone to experience altered states of awareness than those who possess less. It would therefore be expected that schizotypy would be related to one's capacity to cultivate an altered state of awareness while engaged in shamanic journeying, and, by extension, one's capacity for self-healing.

It is proposed, therefore, that schizotypy may affect one's altered state of awareness, altered experience, and mood disturbance during shamanic-like journeying. Furthermore, given that a key feature of shamanism is the production of altered states of awareness and perhaps altered experiences, and that shamanism is associated with health benefits, perhaps the production of such alterations affects health benefits.

If this is indeed the case then it follows that individual differences in the ability to cultivate altered states of awareness and altered experiences may determine the effectiveness of shamanic journeying as a method for self-healing (e.g., reducing mood disturbance). Extrapolating from the findings of Rock et al. (2008b), it might be further argued that exposing individuals who are bereft of the capacity to cultivate altered states of awareness or altered experiences to shamanic-like techniques might serve to exacerbate mood disturbance because these individuals may perhaps find that such techniques promote frustration, boredom, lethargy, and so on.

The present study, therefore, aimed to investigate the relationship between schizotypy and mood disturbance during shamanic-like journeying and whether altered state of awareness and altered experience mediated (i.e., contributed to) this relationship. It was hypothesized that total mood disturbance-change would

be negatively correlated with schizotypy, altered state of awareness, and altered experience (and its sub-dimensions), and these correlations would be stronger for the shamanic-like journeying condition relative to the control condition. It was further hypothesized that altered state of awareness and altered experience would mediate the relationship between schizotypy and total mood disturbance-change during shamanic-like journeying.

2. Methods

2.1 Participants

The 69 participants in this investigation consisted of post-graduate and undergraduate students from Deakin University, and non-students who responded to recruitment posters. Participants ranged in age from 18 to 49 ($M = 23.17$, $SD = 4.85$) and 52 (75%) were female. Eighteen participants (26%) reported having one or more meditative or spiritual practices, though none reported that they practiced shamanic journeying. All participants were treated according to the “Ethical Principles of Psychologists and Code of Conduct” (American Psychological Association, 1992).

2.2 Materials (and Apparatus)

Participants were provided with a pencil and paper pre-condition questionnaire and post-condition questionnaire. The pre-condition questionnaire consisted of demographic items (age, gender, and spiritual practice), the Schizotypal Personality Questionnaire (SPQ), and the Profile of Mood States Short Form (POMS-SF). The post-condition questionnaire consisted of the Phenomenology of Consciousness Inventory (PCI) and the POMS-SF.

The *SPQ* (Raine, 1991) is a 74-item self-report measure of schizotypal personality, based on DSM-IV criteria for Schizotypal Personality Disorder (American Psychiatric Association, 1994). The *SPQ* yields a total scale score as well as nine subscale scores: Ideas of Reference, Excessive Social Anxiety, Odd Beliefs or Magical Thinking, Unusual Perceptual Experiences, Odd or Eccentric Behavior, No Close Friends, Odd Speech, Constricted Affect, and Suspiciousness. Raine (1991) reports impressive findings for the internal consistency of the *SPQ*, with a coefficient alpha of 0.91 for the total scale score and coefficient alphas for the nine subscales ranging from 0.71 to 0.78. Additionally, Raine (1991) found the *SPQ* to be reliable over a 2-month period (test-retest reliability coefficient was 0.82), and to possess discriminant and criterion validity (Raine, 1991).

POMS-SF (McNair et al., 1992) was used in the current study to quantify total mood disturbance-change. The POMS-SF is a 30-item self-report measure of positive and negative mood states. Each item represents an affective state (e.g., tension-anxiety) and respondents are required to indicate how much that item represents their present state on a scale from 0 (not at all) to 4 (extremely).

Scores are produced for six mood variables: Tension/Anxiety, Depression/Dejection, Anger/Hostility, Vigor/Activity, Fatigue/Inertia, and Confusion/Bewilderment. Additionally, a score for total mood disturbance is produced by summing the six subscale scores (weighting Vigor/Activity negatively). The POMS-SF has good internal consistency with coefficient alphas for the total mood disturbance and subscale scores ranging from 0.75 and 0.90 (McNair et al., 1992). Additionally, construct and discriminant validity have been established for the POMS-SF. In the present study, participants' post-condition total mood disturbance scores were subtracted from their pre-condition scores, thus creating a total mood disturbance-change variable. Thus, higher scores indicate increased total mood disturbance following the particular stimulus condition.

The *PCI* (Pekala, 1991) was used in the present study to quantify altered state of awareness and altered experience. The *PCI* purportedly quantifies the structures of consciousness and consists of 53 items scored on a 7-point Likert scale. The *PCI* has been found to possess good internal consistency (coefficient alphas ranged from 0.70 to 0.90) and criterion validity, adequately discriminating between different stimulus conditions (Pekala et al., 1986). In order to control for potential unreliability of the *PCI* in the current study, a *PCI* reliability index score was calculated for each participant and cases with a reliability index of greater than 2.0 were removed (Pekala, 1991).

A CD-R was created for the shamanic-like journeying condition, consisting of a recording of journeying instructions and 15 minutes of monotonous drumming at 8 beats-per-second.² The drumming was carried out using a mylar-covered single-headed round frame drum 16" in diameter and two "sonar 8" tympani mallets. Participants listened to the audio track through a set of headphones (Sony MDR CD780) via a laptop.

2.3 Design

The present study consisted of a between-subjects design with two conditions: (1) a control condition consisting of sitting quietly with eyes open for 15 minutes; and (2) a treatment condition consisting of listening to shamanic-like journeying instructions followed by 15 minutes of listening to monotonous drumming at 8 beats-per-second.

2.4 Procedure

Experiments were conducted for each participant individually in the same laboratory. All participants were first asked to complete a pre-condition questionnaire consisting of demographic questions, the SPQ, and the POMS-SF. Participants were randomly assigned to one of two conditions: sitting quietly with eyes open and shamanic-like journeying. Participants were administered either the treatment or control stimulus immediately after completion of the pre-condition questionnaire.

Sitting quietly with eyes open condition. Participants were instructed to sit quietly with their eyes open for 15 minutes. Participants sat on an ordinary classroom chair in a well-lit room.

Shamanic-like journeying condition. Following Harner (1990), participants were instructed to lie down on their backs, close their eyes, and place their right forearm over their eyes. Subsequently, the audio track commenced and participants were informed:

Shortly, we are going to attempt to visualize certain images while listening to drumming. But, for now, I'd like you to visualize a particular location or object in nature that will help you travel upward. . . that you remember from some time in your life. It can be a location you remember from your childhood, or one you saw last week, or even today. Any kind of location will do. For example, you can see yourself climbing up a tree, rope, or ladder; jumping from the top of a mountain; rising up on a tornado or a whirlwind; climbing over a rainbow; going up with the smoke of a fire or through a chimney; or finding a bird to take you up. The right location or object is one that really feels comfortable to you, and one which you can visualize. Spend a couple of minutes seeing the location or object without using it. Note its details clearly. (Adapted from Ingerman, 2004)

Participants were, subsequently, allocated 2 minutes to visualize their chosen "object or location in nature." At the conclusion of the 2-minute period participants were instructed as follows:

When the drumming begins, visualize your familiar location or object and begin the journey upwards. You will pass through a transition, such as a cloud or a layer of fog that will indicate that you have arrived at your destination. If you are still seeing planets and stars as you journey upward, you have not yet reached your destination. Again, you will know that you have reached your destination because of the sensation of having passed through a threshold of some kind, after which the landscape will change. Examine the landscape in detail, travel through it, and remember its features. Explore until you are signaled to come back, and then return by traveling down using your particular location or object. Do not bring anything back with you; this is only an exploratory journey. Towards the end of the journey, the drum will be struck sharply four times to signal to you that it is time to return. The drum tempo will then become very rapid for the next half a minute to accompany you on your return journey. The session will conclude with four more sharp strikes of the drum to signal that the journey is over. Are you ready to begin the journey? Okay, here we go. (Adapted from Ingerman, 2004)

Subsequently, monotonous drumming at 8 beats-per-second played for 15 minutes. Following this the drumming became rapid for 30 seconds. The participants were then informed:

The journey is now over. The journey is complete. When you are ready, you may open your eyes and sit up. (Adapted from Ingerman, 2004)

Upon completion of the experimental condition, all participants were given the post-condition questionnaire consisting of the PCI and the POMS-SF.

TABLE 1
Correlations between Total Mood Disturbance-Change and PCI Variables for Sitting Quietly
(below the Diagonal) and Drumming (above the Diagonal) Conditions

	TMD	Alt. exp.	Alt. body im.	Alt. time sense.	Alt. percep.	Alt. meaning	Alt. state	SPQ
TMD		-0.54***	-0.39*	-0.34	-0.43*	-0.63***	-0.28	-0.55**
Alt. exp.	-0.08		0.82***	0.79***	0.87***	0.81***	0.67***	0.52**
Alt. body im.	0.05	0.78***		0.53**	0.61***	0.58**	0.55**	0.44*
Alt. time sense	-0.16	0.71***	0.31		0.63***	0.51**	0.63***	0.28
Alt. percep.	-0.03	0.84***	0.69***	0.40*		0.61***	0.53**	0.58**
Alt. meaning	0.04	0.68***	0.51**	0.18	0.54***		0.54*	0.38*
Alt. state	0.09	0.61***	0.51**	0.30	0.71***	0.40*		0.28
SPQ	0.04	0.52**	0.36*	0.40*	0.36*	0.49**	0.35*	

Note: TMD = total mood disturbance-change; Alt. exp. = PCI-Altered experience; Alt. body im. = PCI-Altered body image; Alt. time sense = PCI-Altered time sense; Alt. percep. = PCI-altered perception; Alt. meaning = PCI-Altered meaning; Alt. state = PCI-Altered state of awareness; SPQ = SPQ total score.

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

3. Results

3.1 Correlations between Schizotypy, PCI Variables, and Total Mood Disturbance-Change for the Two Conditions

The following analysis examines the relationships between schizotypy, the PCI variables pertaining to altered state of awareness and altered experience (and its sub-dimensions), and total mood disturbance-change for both conditions (sitting quietly with eyes open vs. shamanic-like journeying). Differences in correlations between the conditions were assessed for significance using a series of Fisher r to z transformations. Table 1 displays correlations between the variables for both the sitting quietly condition (below the diagonal) and the shamanic-like journeying condition (above the diagonal).

TABLE 2
Fisher's r to z Analysis, Comparing Correlation Coefficients between Total Mood
Disturbance-Change and PCI Variables for the Two Conditions

	Sitting quietly ($n = 39$)	Drumming ($n = 30$)	Fisher's z (one-tailed)
Altered experience	-0.08	-0.54***	2.06*
Altered body image	0.05	-0.39*	1.81*
Altered time sense	-0.16	-0.34	0.76
Altered perception	-0.03	-0.43*	1.69*
Altered meaning	0.04	-0.63***	3.07**
Altered state of awareness	0.09	-0.28	1.48
Total SPQ	0.04	-0.55***	2.59**

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

TABLE 3
SPQ Total Score as Predictor of Total Mood Disturbance Change

	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>	<i>sr</i> ²
SPQ	-0.47	0.14	-0.55	-3.52	0.001	-0.55

Note: $R = 0.55$, $R^2 = 0.31$, Adjusted $R^2 = 0.28$.

Inspection of Table 1 indicates that the correlations between total mood disturbance-change and the schizotypy and PCI variables differ substantially between conditions. As shown in Table 2, Fisher's *r* to *z* procedure indicated significantly stronger correlations between total mood disturbance-change and schizotypy, PCI-Altered experience, PCI-Altered body image, PCI-Altered perception, and PCI-Altered meaning for the shamanic-like journeying condition relative to the sitting quietly condition.

The preceding analysis revealed a non-significant correlation between altered state of awareness and total mood disturbance-change. This result precludes the assessment of altered state of awareness as a mediator variable in the relationship between schizotypy and total mood disturbance-change. Thus, the following mediational analysis will only utilize altered experience as the mediator variable.

3.2 Altered Experience as an Intervening Variable

The following analysis examined whether altered experience significantly mediates the relationship between schizotypy and total mood disturbance-change.³ Following the procedures outlined by Frazier et al. (2004), three regression analyses were conducted: a) total mood disturbance-change was regressed onto total SPQ; b) altered experience (mediator) was regressed onto total SPQ; and c) total mood disturbance-change was regressed onto both altered experience and total SPQ.

The analysis examined whether the relationship between SPQ and total mood disturbance-change reduced in magnitude when controlling for altered experience. As shown in Table 3, initially, there was a significant predictive relationship between SPQ and total mood disturbance-change ($\beta = -0.55$). Additionally, Table 4 shows that there was a significant predictive relationship between SPQ and altered experience ($\beta = 0.52$). However, inspection of Table 5

TABLE 4
SPQ Total Score as Predictor of Altered Experience

	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>	<i>sr</i> ²
SPQ	0.04	0.01	0.52	3.23	0.003	0.52

Note: $R = 0.52$, $R^2 = 0.27$, Adjusted $R^2 = 0.25$.

TABLE 5
Altered Experience and SPQ Total Score as Predictors of Total Mood Disturbance Change

	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>	<i>sr</i> ²
Alt. exp.	-4.19	2.07	-0.34	-2.00	0.043	-0.29
SPQ	-0.32	0.15	-0.37	-2.13	0.027	-0.32

Note: $R = 0.63$, $R^2 = 0.39$, Adjusted $R^2 = 0.35$.

indicates that the association between SPQ and total mood disturbance-change reduced when altered experience was included in the model ($\beta = -0.37$). This mediational effect was tested for significance using bias-corrected bootstrap re-sampling (Shrout & Bolger, 2002), tested through AMOSTM. The analysis revealed that altered experience was a significant mediator of the SPQ – total mood disturbance-change path (indirect effect = -0.18 , $p < 0.01$, see Figure 1).

4. Discussion

The present study was the first to examine the relationship between schizotypy and total mood disturbance-change during shamanic-like journeying and whether altered experience mediates this relationship. The results contain two primary points of interest. First, it was found that total mood disturbance-change was significantly negatively correlated with schizotypy and altered experience, and these correlations were significantly stronger for the shamanic-like journeying condition relative to the control condition. Specifically, in line with predictions, significantly stronger correlations between total mood disturbance-change and schizotypy, PCI-Altered experience, PCI-Altered body

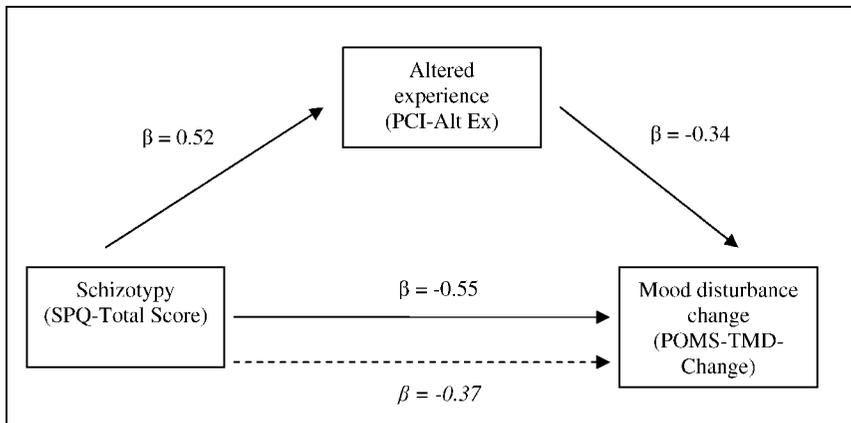


Fig. 1. Graphical illustration of the significant mediational pathway between schizotypy, altered experience, and total mood disturbance-change ($p < 0.01$). Note: dotted line indicates direct effect when controlling for altered experience.

image, PCI-Altered perception, and PCI-Altered meaning were found for the shamanic-like journeying condition. Thus, it might be argued that a constituent of shamanic-like journeying experiences is the inverse relationship between various sub-dimensions of PCI-Altered experience and total mood disturbance-change. Interestingly, significantly stronger correlations between total mood disturbance-change and PCI-Altered state of awareness and PCI-Altered time sense for the shamanic-like journeying condition were not found. However, it is noteworthy that there was an inverse correlation between PCI-Altered state of awareness and total mood disturbance-change, suggesting that as one's subjective sense of an altered state of awareness intensifies, one's total mood disturbance decreases. The direction of this relationship is consistent with our proposal that the therapeutic potential (e.g., reduction in mood disturbance) of shamanic-like techniques may only be experienced by those who have the capacity to cultivate altered states of awareness. Similarly, the relationship between altered time sense and total mood disturbance-change for the shamanic-like journeying condition was in the hypothesized direction and approaching statistical significance. It is arguable that a larger sample size and, thus, greater statistical power may have yielded a statistically significant result.

Second, in line with our predictions, the relationship between schizotypy and total mood disturbance-change was mediated by altered experience. This finding extends previous research (e.g., Rock et al., 2008b) that examined the relationship between personality and total mood disturbance in the context of shamanic-like conditions but neglected to assess mediating variables and, thus, indirect effects. In the present study, altered experience appears to contribute to the inverse association between schizotypy and total mood disturbance-change during exposure to shamanic-like journeying conditions. This result suggests that higher levels of trait schizotypy promote increased rates of altered experience, which might then facilitate reductions in mood disturbance following exposure to shamanic-like stimuli. This interpretation is consistent with: (1) the fact that the schizotypy construct consists of a cognitive-perceptual factor pertaining to one's predisposition to have unusual perceptual experiences (Raine, et al, 1994); (2) previous studies that have found a relationship between schizotypy and altered experiences (e.g., OBEs; McCreery & Claridge, 1996, 2002; Wolfradt & Watzke, 1999); and (3) our contention that cultivating an altered experience during shamanic-like journeying should reduce mood disturbance. Thus, one may extrapolate from the findings of this study that shamanic-like techniques could be a useful technique to employ in psychological therapy for highly schizotypal clients. Consequently, one implication of this finding for personality theory is the therapeutic potential associated with the schizotypy construct in the context of exposure to certain stimulus conditions (e.g., shamanic-like journeying with drumming). Indeed, it may prove prudent for psychotherapists to "screen" clients for levels of schizotypy, as this should, according to the results of the present study, influence the ability to cultivate altered experiences and, thus, fluctuations in mood states. Moreover, given that

schizotypy is considered to be the mild, non-psychotic end of the schizophrenia spectrum (Claridge et al., 1997), perhaps this technique would be useful as part of therapy or counselling for persons with schizophrenia. Certainly, the prospect of research using this technique with schizophrenia samples is potentially useful as persons from this population are relatively likely to be attending therapy or counselling sessions for (among other things) mood-related issues.

One limitation of this study is that participants in the shamanic-like condition were instructed – in accordance with previous studies (e.g., Rock et al., 2006, 2008a) – to place their right forearm over their eyes and many stated that this was uncomfortable (e.g., “numbness,” “tingling”). Consequently, this body posture may have compromised participants’ total engagement with the shamanic-like journeying condition and, thus, reduced the intensity of PCI-Altered state of awareness and altered experience scores and exacerbated mood disturbance (e.g., fatigue). Future research could partially replicate the present study using a more comfortable body posture in the shamanic-like journeying condition.

The present study utilized a non-shaman-only sample in order to investigate whether the therapeutic potential of shamanism (Krippner, 2002) could be actualized by individuals who had not undergone shamanic training. However, there is a need to examine the schizotypy, altered experience, and mood disturbance constructs in experienced shamanic practitioners. Indeed, it would be edifying to investigate whether the mediational effect of altered experience is replicated using shamanic practitioners or whether other constructs (e.g., altered state of awareness) are more significant intervening variables. Furthermore, it is noteworthy that indigenous shamanic practitioners observed in a field setting might respond to shamanic techniques quite differently (e.g., phenomenologically, behaviorally) compared to volunteer students studied in a laboratory setting.

It will also be prudent to replicate and extend the current findings by examining other personality constructs (e.g., ego boundaries, transliminality, absorption) that may predict mood disturbance during shamanic-like journeying. Such research will be crucial in identifying which personality types are most likely to gain therapeutic benefit from shamanic-like techniques and are, thus, ideal candidates for shamanic training.

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Notes

- ¹ An altered states of consciousness is typically defined as “a mental state which can be subjectively recognized by an individual (or by an objective observer of the individual) as representing a *difference* in psychological functioning from the individual’s ‘normal’ alert state” (Krippner, 1972: 1).
- ² Monotonous drumming at 8 beats-per-second for 15 minutes was used in the present study because Rock et al. (2005) found that that it was associated with a statistically significantly higher number of shamanic-like experiences compared to a control condition (i.e., sitting quietly with eyes closed), whereas, for example, 4 beats-per-second for 10 or 15 minutes and 8 beats-per-second for 10 minutes were not.
- ³ If one wishes to investigate whether altered experience mediates the relationship between schizotypy and total mood disturbance-change during shamanic-like journeying, then fluctuations in altered experience must occur temporally prior to changes in total mood disturbance. This temporal sequence is maintained despite the fact that we administered both the POMS-SF and the PCI directly after exposure to the stimulus conditions because the total mood disturbance variable pertains to how one feels “now” (i.e., directly after the stimulus), while the PCI assessment of altered experience is retrospective (i.e., it pertains to how the participant felt *during* exposure to the stimulus). That is, the POMS-SF quantifies mood disturbance *subsequent* to the PCI-assessed altered experience, thus satisfying the temporal sequence required for the proposed mediational analysis. In other words, we are arguing that the actual assessment of the phenomena in time is independent of, or at least, does not reflect, the temporal sequence in which they were experienced. Therefore, the rationale for the mediational analysis stems not from the “assessment” sequence but from the theoretical reasoning that altered experiences during shamanic-like journeying “produce” the fluctuations in total mood disturbance measured immediately following journeying.