Across Cultural Boundaries: Psychophysiological Responses, Absorption, and Dissociation Comparison Between Brazilian Spiritists and Advanced Meditators

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Abstract

A psychophysiological study was conducted with two Brazilian claimant mediums and two non-medium living in Recife, Brazil and 7 North American advanced meditators from the esoteric school, Ramtha’s School of Enlightenment, located in Yelm, Washington. Results revealed specific incongruence in the peripheral nervous system (PNS) and central autonomic nervous system (CNS). For Brazilians, there was a general reduction of sympathetic PNS vasoconstriction and increased muscle tension (EMG) during the imagined incorporation of spirits, and an increase in (EMG) and alpha wave percentage (EEG); both were paradoxical. Increase in frontal EMG while imagining spirit incorporation is consistent with a hypothesis of increased muscle tension possibly driven by intrusive cognitions and/or affect; however, the mediums reported feeling calm, not agitated. The non-medium control showed a large increase in EEG alpha wave percentage and decreased EMG in the eyes closed conditions. The mediums imagination condition was discrepant from what is typical during an eyes closed imagination condition, and EMG and EEG were positively correlated contrasting research findings from other studies revealing a negative correlation. This support previous findings that physiological incongruence are frequent outcomes of individual claiming "mediumistic" abilities; they are described as living episodically in two worlds (i.e., critical, rational, and practical; expansion and deepening of fantasy and emotional reactivity). As such, medium/mediumistic-like practitioners may be "at risk" for psychosomatic illnesses, but these descriptors do not particularly apply to the Brazilian control showing no noticeable incongruence. The advanced Ramtha meditators were not tested with an EEG, but also showed sympathetic activation during the meditation session and reported minimal/none negative affect. Incongruence between CNS and PNS are not unusual among spiritual practitioners, and other studies have noted sympathetic activation during meditation styles that use cognitive faculties and oxygenated breathing (voluntary hyperventilation) techniques. The findings suggest medium/mediumistic-like practitioners may need to create “buffers” to maintain physical and emotional well being.

Key Words: mediumship, channeling, psychophysiology, Umbanda, Kardecismo, Candomble’, Ramtha

Introduction

This article reports on two studies, one with “mediums claimants from the Brazilian “spiritist” traditions of Candomblé, Umbanda, Kardecismo and another with purported “advanced meditators” and their mediumistic-like leader from North America.

Mediumship in Brazil is a central component within the ritual practice of spiritistic religions of which Candomblé, Kardecismo, and Umbanda are the three major groupings (Hess, 1994). They hold a
commonality of belief in the power and efficacy of spirit agents and the ability of humans to interact with and embody these agents through ritualized methods of dissociative trance, such as voluntary “incorporation.”

In contrast, mediumship is conceptualized somewhat differently in Western thinking than “channeling.” A medium focuses on communication with the dead, whereas a channeler uses a broader scope of “entities” or purposed sources of information. Mediumship in Western thinking is typically induced during a so-called “trance,” often referred to as an altered state of consciousness (ASC).

The purpose of the above named studies was to initiate a bridge between psychological and neurobiological understandings of phenomena related to mediumship and meditation style within a tradition led by a mediumistic-like teacher. Findings were interpreted by employing the high risk model (Wickramasekera, 1991) as a theoretical framework for understanding incongruence between mind and body systems in individuals with mediumistic-like experiences.

Mediumship in Brazil

The African-derived Candomblé and Umbanda practices have stories permeating their mythologies about a "Sky God" and his intermediaries, the orixás (orishas), who symbolize the primordial forces of nature. The orixás believed to be powerful and terrifying but also “human” in that they can be talked to, pleaded with, and cajoled through special offerings. They also believe that the orixás have the ability to take hold of an individual’s mind and body through acts of spirit “incorporation.”

Practitioners of these African-based rituals believe that they gain access to paranormal power in three ways by: (1) making offerings to the orixás, (2) "divining" (i.e., foretelling the future with the help of an orixá), and, (3) being taken over by an orixá, ancestral spirit, or other entity who, if benevolent, may warn the community about possible calamities, diagnose illnesses, and prescribe cures. The mediums, through which these spirits speak typically perform their task voluntarily and usually claim to not have any remembrance of the experience. The trance (i.e., altered state of consciousness in Western terms) required for the incorporation is usually brought about by dancing, singing, and drumming, as well as by using mind-altering substances, such as strong tobacco (Villoldo and Krippner, 1987).

Of all the Brazilian spiritistic movements, Candomblé most closely resembles the original religions of Africa, retaining the original names and worship of many West African orixás (Bastide, 1960). In contrast, Umbanda gives greater emphasis to Brazil’s Christian heritage than to the African orixás. Kardecismo (a variant of 19th century spiritualism also called Espiritismo) is not to be confused with the general reference to Afro-Brazilian traditions) draws heavily from the teachings of Allen Kardec (1861; 1867), a French pedagogue and spiritualist.

Despite the widespread popularity of spiritistic traditions within Brazil, the practice of mediumship has been largely denigrated as pathological in Brazil, similar to how these phenomena are largely negatively viewed in Europe and North America (Johnson, 2007). For example, Rodrigues (1896/1935) conducted extensive research on the various types of Afro-Brazilian mediumistic practices. He interpreted these cultural practices as hysterical phenomena resulting from profoundly superstitious personalities of its African-descended practitioners. Later, Xavier de Oliveira (1931) claimed that nearly 10% of patients hospitalized during a 12-year period in the University of Rio de Janeiro suffered psychosis from engaging in spiritistic rituals. Pacheco e Silva (1936) also maintained that existing psychotic tendencies were aggravated by spiritistic traditions.

Two historical elements played a key role in these pathologizing viewpoints: (a) the attempt by Brazilian intellectuals to create a modern Eurocentric nation through suppressing spiritistic practices, and (b) the conviction that spiritism was a threat to the worldview of psychiatrists from both the Roman Catholic and materialistic perspectives (Moreira-Almeida, Silva de Almeida, and Neto, 2005).
However, Roger Bastide (1978) concluded that psychopathology may only explain a minority of the cases, and speculated that spiritism may be viewed as more normative based on social dynamics. Psychiatric theory thereafter developed more cultural sensibility and was also influenced by the development of transcultural psychiatry and ethnopsychiatry (Lewis-Fernandez and Kleinman, 1995). Within this evolving context, mediumship began to be seen by some as a skill that can empower its practitioners (e.g., women subjugated by a patriarchal culture) and provide support for community members suffering from anxiety, depression, and other afflictions (Krippner, 1997).

**Difficulty in defining terminology**

Defining some terms related to spiritistic traditions, such as “possession” and “dissociation” poses difficulties. For example, Leacock and Leacock (1972) studied the Batuque, an Afro-Brazilian tradition that used the expression “trance-possession,” but these juxtaposed terms are not synonymous in that possession is viewed as “the presence in the human body of a supernatural being” and trance is viewed as “an altered psychological state” (p.217). Bourguignon and her associates (1964; 1976; 1977) investigated the practice of “spirit possession” and differentiated it from possession and trance. In possession, a spirit has produced the changes in an individual’s behavior, health, or disposition without an accompanying shift in awareness, whereas in possession trance, an individual loses conscious awareness while the invading spirit’s own behavior, speech patterns, and body movements take over, all of which can be observed by outsiders. However, trance is defined as an ASC that includes the loss of conscious awareness but not the presence of a spirit or other outside entity.

In addition, the term “incorporation” is also used by the spiritistic groups in Brazil to describe situations in which practitioners allow themselves to be taken over by a spirit entity, exemplified by mediums that voluntarily allow the incorporation of an orixá. His term possession is often used to define the experience of an involuntary takeover, typically perceived as distressful, unwelcome, and possibly long-lasting (Negro et al., 2002, p. 65).

Possession can also occur with or without the ASC known as dissociation (a separation of awareness that may impede memory). Possession frequently requires the intervention of a religious specialist who can exorcise the offending agent, but in possession trance, the intrusive spirit may be benevolent, bringing new insights to the possessed individual by means of automatic writing, channeling, or mediumship. Sometimes the spirit even plays the role of a trickster, teaching the individual life lessons through embarrassment or humor. The results differ from cases where an invading entity takes over a victim’s body as the result of a sorcerer’s curse or ratify the spirit entity’s earthbound impulses and desires. These types of trance are extremely dissociative when the individual manifests experiences and behaviors that appear to be disconnected from the mainstream flow of conscious awareness, behavioral repertoire, and/or self-identity (Krippner, 1997).

Other difficult terminology involves differentiating the terms “medium” and “channel,” albeit both purport to receive information that supposedly does not originate from consensual reality (e.g., from living persons, media, their own memory). Mediums purportedly obtain this information from deceased persons, whereas channelers claim to obtain information from other spiritual entities (e.g., deities, Nature spirits, inhabitants of other dimensions; Hastings, 1991; Klimo, 1998). These individuals manifest dissociative trance, one entered into it voluntarily.

**Background on Ramtha’s School of Enlightenment**

Ramtha’s School of Enlightenment (RSE) claims that its teachings are based on communications from the alleged entity “Ramtha, the Enlightened One” whose messages are purportedly channeled by J. Z. Knight (2000), the school’s founder. Knight (1987) has described her spontaneous early encounters with “Ramtha” who later designed a series of exercises for RSE students, such as the Consciousness and Energy Breathe technique (C&E Breathe). This was described by Melton (1998) as a

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breathing technique used to accomplish various goals (e.g., desired life change, self-healing). This breathing technique is combined with cognitive focusing (e.g., use of repetitive phrases and visualizations) and is frequently performed in a group setting. Krippner and colleagues (1998; p. 4) referred to the RSE technique as “the alleged activation of kundalini.” Although RSE does not refer to its meditation as a kundalini meditation per se, there are varied esoteric meanings for kundalini that have parallels in many mystical traditions.

Non-esoterically, Kundalini meditation may be described as an active form of meditation that incorporates accelerated breathing (e.g., voluntary hyperventilation, as does RSE’s C&E Breathe technique). Hageman (2005; pp. 22-23) described RSE’s technique as “a ‘top-down’ cognitive, dissociative style of meditation that is a form of active meditation specifically [designed] for the RSE practice; as such, it incorporates a breathing technique similar to [voluntary] hyperventilation or to holotropic breathwork (Grof, 2000).”

**Psychophysiological Perspectives on Dissociation, Possession, and Trance**

From a psychophysiological perspective, dissociation involves the disengaging of cognitive processes from their executive, higher-order, volitional faculties (Winkelman, 2000). Generalized psychophysiological correlates of what might be described as trance with dissociative aspects involve hemispheric lateralization that favors (in right-handed people) the right cortical hemisphere of the brain (more closely associated with intuitive, emotive, non-logical, spatial, imaginative thought and perception) over the ordinarily dominant left hemisphere (associated with linguistic and rational processing).

Winkelman (1986) suggested that a wide range of culturally-patterned induction techniques lead to generalized parasympathetic dominance in which the frontal cortex exhibits high-voltage, slow-wave, synchronous electroencephalographic (EEG) patterns (e.g., theta rhythms) that originate in the limbic system and proceed to frontal regions via limbic-frontal innervations. Some ASCs, such as certain forms of meditation and hypnosis, exhibit small variances in EEG patterning, and similar differences also exist between voluntary and spontaneously induced states.

Winkelman (1986) indicated that involvement of the limbic system is an important part of the neural architecture of dissociative trance. For instance, it has been implicated in the modulation of a variety of functions including basic survival drives and hypothalamic/pituitary release of neurotransmitter and endogenous opiates. The hypothalamic action, in turn, influences, among other things, dissociation trance-related hallucinations, analgesia, and amnesia. The hypothalamus also controls sympathetic (excitatory) and parasympathetic (inhibitory) nervous systems; the latter being associated with decreased cortical excitation and increased hemispheric synchronization. Evidence shows that parasympathetic dominance can be induced through excessive sympathetic activation, such as through drumming, dancing, and chanting, all of which are common features of ritual practice and in which the homeostatic reciprocal action of the autonomic nervous system collapses.

Lex (1979; p. 144) suggested that the “raison d’être for rituals is the readjustment of dysphasic biological and social rhythms by manipulation of neurophysiological action under controlled conditions.” Rituals, like those associated with possession and mediumship [mediumistic-like trance] not only provide psychological relief from social and environmental stressors, they are also mechanisms that employ driving techniques that “tune” the nervous system through hemispheric lateralization, parasympathetic dominance, and cortical synchronization.

In a field study conducted by Don and Moura (2000), topographic brain mapping at midline scalp locations of healer-mediums revealed increased brain activity when the healer-mediums reported being incorporated by a spirit, compared to resting baseline conditions. These results suggest the presence of a hyper-aroused brain state associated with the possession trance behaviors of the mediums. In contrast, a small sample of patients monitored during
possession trance revealed no high frequency brain activity.

**Comparison of Claimant Mediums and Advanced Meditators**

To understand some of the similarities and differences between mediums and advanced meditators functioning under a mediumistic-like leader in separate cultures, we conducted two studies: Study One with three Brazilians (two claimant mediums and one control), and Study Two with seven North Americans (6 RSE meditators and their mediumistic-like leader). We then compared our findings in terms of contextual background, absorption, dissociation, and psychophysiological measurements.

**Study One: Two Brazilian Claimant Mediums and a Brazilian Control**

This study was completed when the two claimant mediums (Pai Ely age 67, Andrade age 54) and researchers attended a parapsychological conference in Recife in 1999. We use the term “claimant mediums” in a non-pejorative way to indicate these participants’ self-description. Data were collected in a quiet, comfortable hotel room.

We enlisted the cooperation of two spiritistic claimant mediums, which were held by their communities to be capable of incorporating discarnate entities. A local tour guide (E.O.S. age 54) who was not associated with any of the local spiritistic movements, served as an age-matched “control participant” from a similar culture. This strategy was selected because it is useful to make intra-cultural comparisons when working with individuals who may have special abilities, (Murphy, 1969).

One of the practitioners we tested was Pai Ely (born in 1932 as Manoel Rabelo Pereira), a *pai-de-santo* from Recife, Brazil. Krippner had visited his terreiro or temple, The Lar de Ita Center on multiple occasions (i.e., 1990, 1991, 1993, 1995, 1997, 1998) making observations and conducting interviews with him and members of his congregation. Pai Ely conducts both Candomblé and Umbanda services in the Center and is well versed in both traditions (Krippner, 1998/1999). Formerly, Pai Ely was a bank executive. In his early 40s, he told us that he began to see and hear spirits and orixás. He was uncomfortable and fought the presence of the entities, especially when they told him he was being "called" to become a healer. As a result of such incidents, Pai Ely transformed his social identity from bank executive to *pai-de-santo*.

Pai Ely reported that his teacher, Master Oascati, in his 70s at the time of our visit, lived in Benin, Africa. Master Oascati once told Pai Ely that he must constantly work on himself to obtain clearer purer information from the orixás. Master Oascati also explained to Pai Ely that it was easy for a person’s own biases, experiences, and fantasies to contaminate the spiritual message. In Pai Ely’s words, "The orixá paints only one small part of the picture; the medium must paint the rest." As a result, the client receives no "pure" information. According to Pai Ely, it is unusual for more than 25% of the orixá’s message to get through. Furthermore, many of the messages are from lesser entities who are not "illuminated beings" and who may unknowingly distort information or deliberately play tricks on the mediums and their clients. To prepare to receive the spirit, Pai Ely usually engaged in prayerful meditation or in group prayer (Krippner, 1998/1999).

The other claimant medium we tested, Jose’ Jacques Andrade, born in 1945, is active in the Kardecismo movement. During a 1998 visit to his center, the Leonardo da Vinci Salon of Mediumistic Art, Krippner observed a ceremony that culminated in Andrade purportedly incorporating several famous artists (e.g., Monet, da Vinci) and a few artists unknown to anyone including Andrade. In preparation, Andrade and his group sang hymns and prayed. Andrade, virtually deaf, did little singing as he prepared himself with prayer for the incorporation of his colleagues "on the other side." Once the spirits had been "called," Andrade dipped both of his hands into jars of paint and, with two canvasses in front of him, swiftly began to execute remarkably attractive landscapes, still-lifes, and portraits, two at a time, which he claimed were produced as “mediumistic art.” For example, with one hand, he produced a landscape signed "Monet," while with the other hand, a still-life signed...
"Cezanne." The other artists under whose influence he claimed to paint that evening included Van Gogh, Manet, Picasso, da Vinci, Degas, Portinari, and Toulouse-Lautrec. Andrade produced these works with extraordinary speed, each work taking no more than ten minutes. Each painting bore at least a passing resemblance to the style of the artist being incorporated, some more than others.

Lima (1998) collected 107 paintings by Andrade between 1994 and 1995. He looked for similarities in the process itself, in the product, and in the signatures of the purported artists. Nearly 300 different artists were represented in this collection the most frequent being Miro (3.7% of the total), Van Gogh (3.2%), and Dali (2.3%). Lima reported that before beginning to paint, Andrade hesitated for about 20 or 30 seconds; the average time spent on a painting was 6 minutes, 28 seconds. Other patterns Lima mentioned included Andrade demonstrating a preference for using his right hand, although he would frequently use both hands, producing two paintings at the same time. Luna used a three-point scale from zero to two, asking scholars familiar with the artists to rank the painting on several different variables. The higher the total score, the more likely it was to receive an appellation as a “paranormal painting.”

Our third research participant was E.O.S. (born in 1945) who was a tour guide and schoolteacher. He had assisted Krippner as a translator in 1993 and 1995 and was familiar with the spiritistic religions of the area. He was included as a control participant to explore if cultural constraints or environmental demand characteristics existed that could account, at least in part, for the results obtained from the two claimant mediums. All research participants denied being on any form of medication before or during the testing.

Measures
A Portuguese translation of the Dissociative Experiences Scale (DES; Bernstein and Putnam, 1986), and a Portuguese translation of the Tellegen Absorption Scale (TAS; McIntyre, Klein, and Gonçalves, 2001), were administered by Brazilian colleagues and scored by Krippner. The DES is used as a screening tool for both clinical and nonclinical populations to assess the frequency and intensity of dissociation in a person’s daily life. The higher the DES score, the more likely that the respondent has dissociative identity disorder; however, only 17% of those who score above 30 on the DES are later diagnosed with the disorder (Carlson and Putnam, 1993).

The TAS is used to measure an individual’s capacity for experiences that involve both narrowing and broadening of attentional focus, which are characterized by marked restructuring of a person’s phenomenal self and the world (Tellegen, 1977; Tellegen and Atkinson, 1974).

Procedure
Because data can be distorted by bodily movement, and imagery may be efficacious in both performance enhancement and rehabilitation (Appel, 1992), the two claimant mediums were instructed to imagine incorporating a spirit rather than to engage in direct incorporation. This method was guided by previous research, primarily in the field of sports psychology, that has suggested that imagery rehearsal activates virtually the same brain centers involved in actual performance (Feltz and Landers, 1983). The duration of the psychophysiological testing sessions was four minutes each and all were measured under two baseline resting conditions (eyes open, eyes closed). They were measured while imagining an incorporation of an entity from the “spirit world,” and lastly, during the return to baseline conditions (eyes open; eyes closed) which we refer to as “recovery.”

Study two: Advanced Meditators and Mediumistic-like Leader
Krippner and his colleagues (1998) were given permission to conduct testing at RSE by their mediumistic-like (i.e., “channeler”) leader, Knight. Focus was both on the leader as well as those deemed advanced meditators, a designation solely determined by the training standards developed by RSE.

Six advanced meditators who had practiced the C&E technique for at least 5 years at the time of testing and their leader, Knight, were studied. All lived in Yelm,
Washington at the time of data collection and were active in the RSE training program as teachers and instructors, or held organization responsibilities. The six meditators are referred to as M2–M7 and, along with Knight, comprised a sample of seven participants, two of whom were female (i.e., Knight, M7). Their ages ranged from 26 to 57 with a mean age of 40.

**Measures**

English versions of the same absorption and dissociation measures were used as in Study One. Psychophysiological measures included frontal electromyography (EMG), bilateral hand temperatures, heart rate, and skin conductance (SCL).

**Procedure**

Because Knight claimed to channel the alleged entity Ramtha, she agreed to be tested with the psychophysiological measures while both channeling and not channeling; however, Knight’s body movements while channeling during the psychophysiological testing prevented the inclusion of her results while channeling. Prior to psychophysiological testing, the absorption and dissociation assessments were administered in English in a group setting with all six meditators and Knight who participated while not channeling. Following the group testing, each was tested separately on the psychophysiological measures in a room on RSE’s premises conducive to accurate physiological measurement. Each meditator sat quietly for fifteen minutes prior to the psychophysiological measurements, which were administered simultaneously via 3-minute sequential sessions (i.e., baseline eyes open; baseline eyes closed; meditation eyes closed; recovery eyes open; recovery eyes closed). When the psychophysiological testing was given to Knight, she was first tested while not channeling and later while channeling. All tests were administered on the same day. The response signals were processed using Coulbourn Instruments modules and a Cyborg 91-I Integrated System for Automated Acquisition and Control interfaced with a laptop computer. Physiological measures were computed for the averaged mean score for each session.

**Results**

The following describe the results in the psychological and psychophysiological data from the two studies. In addition, more emphasis is placed upon the comparison of the RSE data and the Brazilian mediums with the Brazilian control data, in particular in comparing Pai Ely, Andrade, and Knight (medium group) to E.O.S. and the six advanced meditators (non-medium group). Attention is given to the IR specificity (a characteristic hierarchy of physiologic response by individuals).

**Dissociation and Absorption Measures**

Only one Brazilian medium (Pai Ely) tested high in absorption, five of the advanced meditators including Knight tested high in absorption. ANOVAs revealed that there was not a significant difference in mean absorption between the Brazilian group (M = 64.0) and the US advanced meditators (M = 82.29) or between the mediums (i.e., M = 76.3; Pai Ely, Andrade, Knight) and the non-medians (i.e., M = 78.0; E.O.S., 6 advanced meditators).

Both Brazilian claimant mediums and their control tested as “severely dissociative,” but only two of the advanced meditators (M5, M7) tested as severely Dissociative, namely Knight and M3. ANOVAs revealed that there was a significant difference in mean dissociation (F = 15.21, p = .01, 95CI: 22.74, 30.06, ŕ2 = .66) in that the Brazilian group (M = 72.0) dissociation was higher than the US advanced meditators (M = 28.29); however, there was not a mean significant difference between the claimant mediums (i.e., M = 64.0; Pai Ely, Andrade, Knight) and the non-medians (i.e., M = 31.71; E.O.S., 6 advanced meditators). Due to the small sample size, nonparametric statistics also confirmed the results.

**Psychophysiological Measures**

The duration of the testing sessions for the Brazilian mediums were four minutes each, but the sessions for the meditators were three minutes each, so there was some temporal variance between the two studies in the procedure. Because the advanced meditators and Knight were not tested with EEG, the EEG results are discussed separately for the Brazilian mediums and their control.
Brazilian claimant medium Andrade

Andrade had approximately a 5 degree Fahrenheit discrepancy between his left hand and right hand temperature during the baseline eyes open condition. When Andrade was asked to close his eyes and relax, there was at least a 1 degree drop in temperature in both hands, but the discrepancy between each hand was less (about 4 degrees). During the imagined fantasy of incorporating an artist session, his left hand dropped an additional degree, but his right hand temperature barely changed. When he relaxed after imagining an incorporation, his bilateral hand temperatures continued to drop an additional degree in both the recovery conditions. 4-degree discrepancy existed between both hand temperatures in comparison to the imagining session. Thus, Andrade tested with right hand temperature higher than left hand in all conditions, indicating an IR specificity for the right hand.

Andrade’s EMG baseline readings were about 5 microvolts higher than the optimal (3.1 microvolts). When instructed to close his eyes and relax, his EMG increased almost a microvolt, which was contrary to expectations. When instructed to imagine incorporating an artist, his EMG increased an additional 4 microvolts. During the eyes open recovery session, his EMG dropped over 6 microvolts, but his EMG increased over 2 microvolts during the eyes closed recovery. Again, this result was paradoxical.

Andrade’s heart rate increased modestly in the baseline eyes closed condition, and in particular during the imagining of incorporation. His heart rate dropped during both recovery sessions with little difference between the eyes open and eyes closed conditions. In general, his heart rate (59–63 bpm) in all conditions was low for a person of his age though he increased his heart rate modestly in the closed conditions.

Although the means for skin conductance are not included in detail, paradoxically, Andrade’s mean SCL dropped across the entire session independent of other conditions and instructions. Generally, there was a greater sympathetic activation in his left hand than in his right hand.

Brazilian claimant medium Pai Ely

Pai Ely reported that he had imagined incorporating a “gentle” preto velho (i.e., an old black slave). During baseline conditions before the imagination session, Pai Ely’s EMG, EEG, and SCL measures were quite normal, but his heart rate was high (90–92 BPM). His bilateral hand temperatures were discrepant during the baseline, eyes open condition with the right hand about 2 degrees higher than the left. When Pai Ely was asked to close his eyes and relax, the results were similar. Hence, even before initiating the imagination task, there were notable incongruence in Pai Ely’s data (i.e., bilateral hand temperatures, heart rate).

The first collection of data during the imagination session was confounded by motor artifacts and could not be used because he moved his hands and arms frequently. When Pai Ely was asked to restrain himself while imagining that he was incorporating a discarnate entity, both hand temperatures remained stable. His EMG, SCL, and heart rate increased during the imagination condition, and generally remained elevated relative to the baseline data.

Brazilian control E. O. S.

There were fewer discrepancies among the EEG, EMG, hand temperature, SCL, and heart rate for E.O.S. All of his scores were in the normal range and were essentially congruent.

EEG comparison among Brazilian claimant mediums and control.

Andrade’s EEG showed an increase in the percentage of theta brain waves from the eyes open to the eyes closed baseline conditions, but a drop in alpha percentage. During the imagination exercise, there was an increase in the percentage of alpha comparable to the eyes open condition. Paradoxically, the increase in the percentage of alpha was also associated with a sustained increase in beta percentage, even during recovery conditions. Pai Ely’s percentage of theta brain waves increased in both the left and right cortical hemispheres. E.O.S. showed a large increase in EEG alpha wave percentage in eyes closed conditions (Figures 1-2).
Advanced meditators

The advanced meditators did not differ significantly on their EMG (optimal muscle tension is 3.1 microvolts) across sessions, although there was considerable variation for each meditator in each session. For the EMG, only Knight displayed tension during meditation, and Knight also displayed tension during both recoveries. M7 displayed tension only during the recovery eyes open condition.

The meditators did differ significantly in the bilateral hand temperatures across sessions. For the left hand, the recovery eyes closed session was significantly higher than both meditation and the recovery eyes sessions. There were individual variations in the left hand temperatures in which Knight and M7 stayed within the optimal range (92°–96° Fahrenheit) for all sessions, whereas M3 and M5 were below optimal for all sessions.

In general, the meditators became more relaxed after meditation in terms of their bilateral hand temperatures even though some of their hand temperatures were mostly below optimal. Moreover, the left hand temperatures reflected more sympathetic reactivity for the eyes closed condition in contrast to the right hand temperature that reflected slightly more sympathetic reactivity for the eyes open condition. Overall, the meditators and Knight reflected higher temperatures in the left hand than in the right hand for all sessions.

The mean heart rate for the meditation session was significantly higher than both baseline and recovery conditions. The meditators with the exception of M2 and M5 increased heart rates over baselines during meditation, but the heart rate was within optimal functioning (59–91 bpm) for almost all meditators for each session. In terms of the comparisons between the eyes open and eyes closed conditions, all but one mediator under each condition increased sympathetic reactivity during meditation. All meditators decreased their heart rate during the recovery conditions.

Brazilian claimant mediums, control, and Knight comparisons

For the EMG measures, both claimant mediums increased muscle tension from the baseline eyes open condition to the baseline eyes closed condition, whereas Knight and E.O.S. decreased in muscle tension. During the imagining of an incorporation or in the meditation session, they increased muscle tension with the exception of Pai Ely who decreased in muscle tension. During the recovery eyes open session, all decreased muscle tension. Pai Ely and Knight’s muscle tension remained about the same for both recovery sessions, but E.O.S. and Andrade increased muscle tension in the recovery eyes closed session. Each one returned almost to baseline (eyes open) in the recovery eyes closed condition (Figure 3).
For the bilateral hand temperatures, only Knight remained within the optimal hand temperature range for each session. For the baseline conditions, both claimant mediums’ right hand temperature was greater than their left hand temperature. In contrast, Knight’s left hand temperature was higher than the right in both baseline conditions, whereas E.O.S.’s right hand temperature was higher than the left.

Each of the four decreased their left hand temperature during the imagination or the meditation session. In contrast, Knight’s and E.O.S.’s right hand temperature decreased during the imagination or the meditation session whereas the two claimant mediums increased temperature. During recovery for the eyes open conditions, only Pai Ely increased temperature in the left hand but both claimant mediums increased temperature in their right hand. Knight and E.O.S. were generally similar in that their left hand temperature increased for the recovery eyes open and closed conditions and decreased for the right hand temperature. For the recovery eyes closed condition, both mediums increased temperature in the left and right hand (Figure 4).

For the heart rate session, Andrade and Knight increased their heart rate from the baseline eyes open condition to the baseline closed condition, whereas Pai Ely and E.O.S. decreased their heart rate. Each of the four increased their heart rate during the imagining an incorporation or meditation with the exception of E.O.S. whose heart rate remained almost exactly the same from the baseline eyes closed condition to both recovery conditions. Both Pai Ely and Knight increased their heart substantially for the imagining or meditation session. However, Pai Ely, Knight, and Andrade decreased their heart rate from the imagination or meditation condition to the recovery eyes open condition. In addition, Pai Ely, Knight, and Andrade increased their heart rate from the recovery eyes open condition to the recovery closed eye condition. Both Andrade’s and E.O.S.’s heart rate changed the least, whereas Knight and Pai Ely were more similar in their heart rate fluctuations over the sessions (Figure 5).

In summary, Knight was more similar to the claimant medium Pai Ely in her EMG, bilateral hand temperatures, and heart rate fluctuations during all sessions. In contrast, the six advanced meditators (excluding Knight) were more similar to the Brazilian control E.O.S. and the Brazilian claimant medium Andrade. The Brazilians reflected IR specificity for the right hand in contrast to the advanced meditators (including Knight) reflected IR specificity for the left hand. In general, heart rate was higher for the advanced meditators (including Knight) than the Brazilians for each session. The Brazilians and the advanced meditators (including Knight) reported minimal to no discomfort even though the PNS displayed measurements indicative of stress.

Discussion
We begin our discussion with a caution about psychological research across cultures, since culture-bound beliefs and practices (e.g., idioms of expression) my influence how
individuals from differing cultures score on dissociation and absorption measures. For example, a tendency toward hyperbole may be more common among Latin Americans than among Europeans, Canadians, and individuals from the United States, which is congruent with Krippner and Weinhold’s (2001) finding that Brazilian dream reports contain high levels of emotional content and Krippner and Faith’s (2001) finding that twice as many “exotic” dream reports appear in Brazilian dream reports as compared with dreams from participants in the United States. Dissociation must also be understood through a cultural lens because certain life experiences may be adaptive to life events that are culturally related (Calof, 2002; Krippner, 1997).

**Psychological measures**
Data from the psychological measures may be more suspect in cross-cultural applications than perhaps are those from physiological measures. Consequently, we cautiously interpret some of the findings using the absorption and dissociation measures.

**Absorption**
The Brazilian participants claimed to be moved by songs that they enjoyed, to get caught up in the action while watching a movie, and liked to watch clouds take various shapes in the sky. However, only the claimant medium Pai Ely claimed to anticipate statements from other people when discussing allegedly supernatural experiences, to feel imaginary matters with such intensity that they seemed real, and for music to evoke colorful pictures in his imagination. He also claimed to think in visual images, to be able to imagine his body becoming so heavy it would not move, and to occasionally feel “suspended in air” while listening to a band or orchestra. Pai Ely’s imagination was very vivid, and he moved his hands and arms frequently when he was, from his perspective, actually incorporating discarnate entities. In this respect, Pai Ely’s behavior is consistent with his high score on the TAS.

Knight and four of the meditators were also high on absorption. It is important to note that RSE provides a standard curriculum for all of its students, one that emphasizes spiritual self-healing involving both dissociation and absorption capacities (albeit using different terminology), as well as activities that involve considerable imagery training, which suggests a similarity to Pai Ely. This point is further exemplified by two separate previous studies with RSE students. Hageman (2002) studied 108 RSE student participants in which 67% tested “high,” 31% “medium,” and only 2% “low” in absorption (as measured by the TAS), while tests before and after training sessions detected an increase in absorption in all categorical levels. In a subsequent larger study (Hageman, 2005) with 294 RSE students, 95% scored high or very high on the TAS and many noted the same experiences as Pai Ely (e.g., intense imagery that felt real; music evoked colorful pictures; body becoming heavy; lifted up by music).

It is not unusual for Brazilians to use such idioms as “I got caught up in the music,” or “I was flying during that performance.” In addition, the role of a medium may influence responses to tests of this nature. For example, when Pai Ely gave a positive response to the item regarding being “suspended in air” he may have simply been making a declaration concerning his abilities and what was expected of him as a pai de-santo.

From a broader lens, individuals who make high scores on the TAS tend to report becoming fully absorbed while they are watching a movie, television program, or theatrical performance. They also tend to be able to suspend disbelief and to become empathic (Wickramasekera and Szlyk, 2003), especially when their companion (or, at times, a complete stranger) is undergoing stress. Those scoring high on absorption have many traits in common with highly hypnotizable people, deriving meaning from body language and personal mannerisms (Fernandez, 2001). This description is especially applicable to Pai Ely who deals daily with people under stress. There are members of his congregation, as well as many outsiders, who come to him for relief of some real or imagined misfortune, interpersonal conflict, or health problem. A frequent method of treatment involves incorporating entities from the spirit world,
sometimes requesting that they give advice and aid, while at other times intervening to stop their purported malevolent actions against Pai Ely’s clients. As suggested earlier, his test scores may be influenced by his culture and role expectations.

Andrade did not score as high on absorption as Pai Ely, but he also does not have to deal as extensively or intimately with clients as does the pai-de-santo. In other words, the high score on the TAS might be related to the frequency with which the two practitioners engage in spirit incorporation. When Andrade incorporates his artistic colleagues from the spirit world, he often becomes so absorbed with the task that he claims not to recall the details when the discarnate entities leave the scene. Knight also claims to not remember the details when she channels Ramtha. This suggests that a high TAS score may represent the ability to attain rapport with clients, paying close attention to what they need and expect from the encounter, which may also apply for Knight in her leadership at RSE. However, a high DES score may also facilitate incorporation or meditation styles using cognitive schemas.

**Dissociation**

The term “severely dissociative” could be reframed as “intensively imaginative” when culture-bound beliefs and practices are taken into account. For example, all three Brazilian participants reported that they often “have the experience of sometimes remembering a past event so vividly that [it feels] as they were reliving that event,” but only the Brazilian claimant mediums reported that they often “have the experience of feeling that their body does not seem to belong to them.” Pai Ely and Andrade have practiced mediumship for several decades and scored as “severely dissociative;” however, the fact that E.O.S. also received a high dissociation score supports the likelihood that idioms of expression influenced the results obtained on his dissociation measure as well. This highlights some caution in using a strict interpretation of high absorption and high dissociation as risk factors for somatization (e.g., psychosomatic illnesses) for multicultural research.

From the perspective of cultural-bound practices at RSE in terms of dissociative experiences, Hageman’s (2002) study reported that most RSE students scored normal at the beginning of the training sessions, but slightly over 20% scored in the highly dissociative category. Most of these highly dissociative students also scored high in absorption on the TAS (p.174). In Hageman’s (2005) later study, 19% of RSE students who scored highly or severely dissociated related that they experienced vivid remembrances at least 30% of the time and 25% of them also experienced that their body did not seem to belong to them at least 30% of the time. Knight and three of the meditators also scored as either high or severely dissociative.

Another study with Kardec mediums in São Paulo, Brazil by Negro, Palladino-Negro, and Louza (2002) reported that their mediums attained high scores on dissociation (as assessed by the DES), and that there was a positive association between mediumship training and the control of the dissociated experiences. Hence, the capacity for dissociative self-experiences may play an important role in the ability to practice as a medium through differentiating and dissociating their normal identity states during their hypnotic-like procedures (Krippner, 2005).

Sociocognitive theorists of dissociation and hypnosis would probably suggest that the phenomenological experiences during mediumship are created in accordance with the previous expectancies and beliefs about the role of being a medium and other contextual variables (Lynn, Pintar, and Rhue, 1997). The sociocognitive view on dissociation thus seems to be illustrated by Pai Ely’s belief that as much as 75% of his experience during mediumship may be the result of his own biases, experiences, and fantasies. Pai Ely’s description of his process of discernment of “pure” from “contaminated” information does seem to capture the sociocognitive explanation of how a person might construct a role and personal narrative about dissociative trance experiences as a kind of “believed-in imaging” (Sarbin, 1998).

Neo-dissociation theorists of hypnosis and dissociation might look at the
importance of the hypnotic-like procedure (Krippner, 2005) itself in allowing access to the self-experience of the channeled identity state (Hilgard, 1994). A neo-dissociative or ego states explanation of mediumship would probably highlight the normal polypsychic nature of human identity (Frederick, 2005) so that it probably should not be too surprising that individuals might be able to encounter another ego state within them during a hypnotic-like procedure. Our experience of this normally inactive ego state may thus be activated by the hypnotic-like procedures of mediumship whether or not that ego state actually represents the presence of a spirit or deity. These theorists might then speculate that a simpler explanation of mediumship could be derived through focusing on the origin of the channeled identity as stemming from ego states or cognitive subsystems that are not properly integrated within the mediums normal experience of identity.

Probably everyone has some trickster-like phenomena hidden away within their self experience that they may not normally elicit but which claimant mediums seem to develop as part of their training (Krippner, 2005). This polypsychic aspect of human identity may significantly contribute along with sociocognitive factors to the difficulty Pai Ely described in the attempt to discern pure from contaminated information. However, our data merely illustrate the sociocognitive and neo-dissociative perspectives on mediumship while many other factors (including actual spirit incorporation) may play a role as well if science were to accept the possibility of actual spirit incorporation.

**Psychophysiological Measures**

In general, the psychophysiological data obtained from Andrade reveal several incongruent findings. First of all, there was a general reduction in SCL across conditions. Since SCL is a measure to sympathetic activation or withdrawal, it is paradoxical to find it associated with peripheral vasoconstriction and increased EMG during the imagination task. Both sets of data suggest increased sympathetic activation in these response systems. Secondly, the increase in muscle tension during the eyes closed imagination condition and the associated increase in the percentage of alpha activity during imagination were also paradoxical. These two measures (EMG and EEG) are typically negatively correlated. Andrade’s increase in frontal EMG while imagining an incorporation is consistent with a hypothesis of increased muscle tension that is possibly driven by intrusive cognitions and/or affect. Andrade’s heart rate data are also consistent with the hypothesis of intrusive events occurring in the eyes closed conditions.

Pai Ely also showed incongruence between major physiological response systems, particularly during the imagination condition. Although sympathetic activation was observed in the ANS, relaxation was noted in the CNS, which typically functions in a more integrated manner.

E.O.S.’s large increase in EEG alpha wave percentage in both the eyes closed conditions is consistent with his moderate score on the TAS, which was exactly the same as Andrade’s. The EEG data are probably consistent with E.O.S.’s hypnotic ability, although this was not tested. However, studies of the association of absorption with measured response to hypnosis demonstrate only a moderate relationship (Spiegel, 1990; p. 125).

We concluded that there were markedly specific incongruences in the peripheral and central physiological response systems. In other words, there were deviations during Andrade’s imagination condition that were discrepant from what is typically seen during an eyes closed imagination condition. This supports a previous finding that physiological incongruence are frequent outcomes of testing sessions with people claiming mediumistic abilities (Wickramasekera, 1991). There was incongruence between the claimant mediums’ verbal reports and behavioral observations and between their psychophysiological response systems as well.

People with incongruence between CNS and ANS responses have been described by Wickramasekera (1986a) as living episodically in two worlds, one in which they are critical, rational, and practical, and another into which their fantasy and
emotional reactivity expands and deepens. As such, they often are "at risk" for somatization. Both sets of descriptors apply to Pai Ely, the pai-de-santo in our investigation who attained a high absorption score on the TAS. Not only does Pai Ely incorporate discarnate entities, he manages a large and successful enterprise, the Lar de Ita Center.

Wickramasekera’s (1991) descriptors apply to some extent to the other claimant medium, Andrade, who also displayed CNS/ANS incongruence. Andrade’s duties at the Kardec temple are not as demanding as those of Pai Ely, nor does he spend the amount of time incorporating entities, as does the pai-de-santo. When we visited the Kardec temple, we observed a few dozen people in attendance; in contrast, Pai Ely's Candomblé/Umbanda temple was filled with several hundred people during each of our visits. In addition, we observed that Pai Ely has a team of mediums and trained assistants at his disposal at the temple. However Wickramasekera’s (1991) descriptors do not particularly apply to E.O.S. who showed no noticeable CNS/ANS incongruence.

Although the advanced meditators including Knight were not tested with EEG, they also showed sympathetic activation during the meditation session and they reported minimal to no negative affect during testing. These results may be considered atypical; however, other studies have noted sympathetic activation during meditation styles that use cognitive faculties (Lehrer et al., 1980) and/or accelerated breathing (voluntary hyperventilation) techniques (Raghuaj et al., 1998). This suggests that sympathetic activation may not always indicate true incongruence, but that breathing styles may also effect the activation.

Of some interest is the incidence of IR specificity in which psychophysiological stress markers varied bilaterally among our participants. An example of this is that all participants, with the exception of Knight, who exhibited left hand IR specificity, predominately exhibited stress in their right hand temperatures. Another example is that Andrade exhibited SCL stress predominately with his left hand, but predominately exhibited hand temperature stress in the right. The IR specificity response, as seen in our participants, is particularly important because it has implications for understanding psychosomatic disorders (Andreassi, 2000). Stern and Sison (1990) also noted a psychological factor related to IR specificity that involves the individual ability to detect changes in autonomic response. Individuals who report a high degree of autonomic response typically also show a greater autonomic reactivity than those with a lower degree of awareness. Moreover, there is the tendency for the more aware individual to exaggerate their degree of reactivity, while the lower aware individual tends to underestimate their reactivity. In this regard, IR specificity may help to clarify the participants' incongruence between verbal report and psychophysiological measures.

According to Wickramasekera (1986b; 1991), incongruence between CNS and ANS response systems are not unusual among spiritual practitioners. It is taken for granted that some practitioners, especially claimant mediums and channelers, will demonstrate incongruence between their behavioral observations and verbal reports. Claimant mediums and channelers both purport to be able to receive information that supposedly do not originate from consensual reality. Though they might appear calm and composed, while speaking of calamitous events from their clients’ “past lives,” from the lives of their clients’ deceased relatives, or from scenarios of their clients’ purported futures, physiological tests often indicate that they are under tension.

Associations between TAS and incongruence are inconclusive at this point, but this is a topic deserving additional research, especially if the TAS could be administered as part of a more extensive test battery with mediumistic practitioners. For example, it would be useful to administer other measures, such as the Creative Imagination Scale (Wilson and Barber, 1978) to test for fantasy-proneness and the Hartmann Boundaries Questionnaire (Hartmann, 1991) to evaluate thinness and thickness of psychological “boundaries.” It might also be helpful to test for other physiological variables, such as cortisol.
testing (e.g., saliva, blood), especially when IR specificity is indicated, as supportive documentation to determine cortisol level increase, which would indicate stress and help to confirm incongruence between verbal report of negative affect and psychophysiology results that point to incongruence.

**Conclusion**

Wickramasekera (1989; 1993; 1995; 1998) proposed that spiritual practitioners often are at risk for stress-related symptoms because of the noted incongruence. Among the most common incongruence are verbal reports of low negative affect while ANS data indicate otherwise: (a) profound temperature differences between the right and the left sides of the body (e.g., IR specificity), (b) “flip-flops” between a repressive cognitive style, and (c) easy access to cognitive processing (Wickramasekera, Krippner, and Wickramasekera, 2001).

The practical implications of these data involve the health status of mediumistic practitioners. Given the incongruence that often characterize their physiological response systems, they may need to voluntarily create “buffers” that will help them maintain their physical and emotional well-being (Wickramasekera, 1988; 1989). In their study of Kardec mediums, Negro, Palladino-Negro, and Louza (2002) found that research participants characterized by extensive training attained favorable scores on measures of socialization and adaptation, but pathological signs were detected among the group of younger claimant mediums with less training. In addition, they evidenced poorer social support.

The stress that accompanies mediumship can be modified by social support systems, by programs that involve voluntary control of internal states (e.g., biofeedback, meditation), and by regimens for healthy living (Krippner et al., 2000; pp. 59-60). There is some evidence that, at least in the United States, claimant mediums and channelers may be at greater risk than are other spiritual practitioners (e.g., healers, intuitives). If so, self-care needs to accompany the concern that these practitioners frequently demonstrate toward their students and clients.

Last, these studies open more questions than they resolve, but they point to the possible importance of using neurobiological data to explore extraordinary experiences, such as those experienced by individuals who strongly utilize dissociative capacities, claim to be mediums, or use mediumistic-like practices. The complicated patterns we found undoubtedly require additional research to clarify their fuller meanings.

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