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RESEARCH ARTICLE

A Test of an Occult-Themed Séance: Examining Anomalous Events, Psychosomatic Symptoms, Transliminality, and Electromagnetic Fields

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Abstract—This paper reports on an Owen and Sparrow (1976) genre séance study to examine the relationships among transliminality, psychokinesis (PK), general subjective and external anomalous experiences, contagion effects, and small variations in electromagnetic field activity. Eleven participants in two series of séance sessions were observed and recorded for anomalous, subjective, and somatic experiences. No verifiable PK or video-captured anomalous activity occurred, but relationships were found between geomagnetic and electromagnetic field activity during the reporting of subjective anomalous experiences. Electromagnetic fields were found to vary significantly across sessions. Contagion effects were found in the types of reports issued by participants. Transliminality and related measures were unrelated to subjective reports of anomalous phenomena. Implications of electromagnetic and geomagnetic fields associated in time with anomalous somatic reports and future research are discussed.

Introduction

In the world of parapsychology, micro-psychokinesis (micro-PK) seems to be the preferred field of study (e.g., Bösch, Steinkamp, & Boller 2006, Radin & Nelson 2000), while macro-PK appears neglected. There are, however, exceptions. William Roll spent decades in his study of people (mostly children) who were the focus of RSPK effects (Recurrent Spontaneous Psychokinesis) (Roll 1972). Outside of the laboratory, there are the historical and more modern accounts of Poltergeists and hauntings provided by Gauld and Cornell (1979). Psychical research is also known for a series of "séance" sitter studies for which Kenneth Batcheldor and others are famous (Batcheldor 1966, 1984, Owen & Sparrow 1976). These researchers proposed that participants joined in a sitter group can produce macro-PK phenomena over time (Batcheldor 1966, 1984, Owen & Sparrow 1976). More recently, Wilson, Williams, Harte, and Roll (2010) conducted a sitter group while demonstrating an increase in electromagnetic fields (EMF) during a particular séance session. Previous psychical research has reported PK events in séances and sitter sessions (see Solomon & Solomon 2000, Storm & Mitchell 2003, Williams & Lang 2002 for examples). However, the Wilson, Williams, Harte, and Roll (2010) study appears first to report measured changes in EM fields specifically in the séance environment (although see Batcheldor 1984 for a mention of EMF/PK associations).

We were inspired by Wilson, Williams, Harte, and Roll's (2010) research as it relates to the variety of phenomena reported and observed within purportedly haunted environments. Thus, we define haunt phenomena and séance phenomena to include EVP, apportation, light anomalies, as well as PK as externally documentable events via camera or audio recorder. We also wanted to examine the subjective symptoms of haunting, which can represent a variety of somatic features. This distinction between external and internal anomalous phenomena is not new. Storm and Mitchell (2003) in their sitter group work with "Spenser" used a Jungian classification for séance phenomena. Phenomena were classified as either endo-psychic (i.e. somatic and internal) or exo-psychic (i.e. originating in the environment). We wish to maintain this distinction, but further define exo-psychic events as phenomena that are not only externally observed, but vetted (i.e. compared and examined in terms of alternate explanations and quality via multiple digital recordings of either audio or video). To further understand endo-psychic phenomena, we examined several contextual variables and the role of psychological contagion that may provide a more holistic approach to the laboratory séance setting.

We were also interested in the generation of EMF from Wilson, Williams, Harte, and Roll (2010). A sizeable body of research has examined GMF/EMF changes associated with psychic phenomena (i.e. Ryan 2015). However, these associations were very broad in scope, represented delayed readings, and often contained large amounts of aggregated EMF data over time. Readings were taken from areas, in some cases hundreds of miles away (but also see Braithewaite [2008] for a critique of EMF collection procedures and psychic phenomena). We deem the relationship between EMF and exo-psychic (hereinafter, external) and endo-psychic (hereinafter, subjective) phenomena of importance in the examination of macro-PK in a séance setting. Essentially, brief magnitude changes in laboratory-collected EMF that are associated in time with either type of reported event provide evidence of a known and externally measurable energy associated with potentially psychic paranormal phenomena. As such, the ability to replicate this relationship in a séance environment as opposed to a haunted environment (e.g., Laythe & Owen 2013) lends validation to the argument that these phenomena are not necessarily a product of psychosis or a psychological state (see Irwin 2009 for a review of the ***psychodynamic functions hypothesis*** of paranormal belief). We explore all of these components in more detail below.

Previous Work with Séances and Macro-Psychokinesis

Work with macro-PK in the laboratory is sparse in modern settings but more common in the earlier history of parapsychology. Work by Sir William Crookes with D. D. Home was conducted under the best laboratory conditions of the time. Home, under excellent controls, produced a staggering variety of paranormal phenomena. Crookes' ultimate validation of Home's myriad phenomena was one of the impelling forces toward the formation of the Society for Psychical Research (Braude 1997, 2015). Similarly, Eugene Osty's examination of Rudi Schneider under experimental conditions in the early 1930s used an infrared motion detector to detect fraud for Schneider's PK ability. Eusapia Palladino, despite being caught in trickery, produced macro-PK in highly controlled conditions on several occasions (Braude 1997).

Research trends in the last several decades have been influenced by the work of Kenneth Batcheldor. Batcheldor's (1984) studies of sitter groups resulted in the formulation of three conditions in which sitter sessions were most likely to produce PK: a high degree of belief in the phenomena, low ownership resistance, and low witness inhibition. Essentially, what matters most for success is the amount of ***belief over doubt*** when a macro-PK event takes place. It appears essential that the participant is not inclined to believe that the anomalous movement came from himself or herself (i.e. ***ownership resistance***). This tendency prompted others (e.g., Owen & Sparrow 1976) to involve spirits in sitter groups, so that outside entities could be blamed for the phenomena. Likewise, Batcheldor (1984) claimed that any witnessed PK, due to its shocking nature, could inhibit future PK (i.e. ***witness inhibition***). As such, Batcheldor found that both cameras and bright lighting conditions reduced any PK (Batcheldor 1966). In support of these principles, Batcheldor (1966, 1984) would often facilitate a false initial macro-PK event to facilitate belief and generate more PK success during the sittings.

Other research on macro-PK includes William Roll (1972). Roll documented poltergeist cases for several decades and recorded a series of event evidence for the movement of objects without physical contact. More recently, Laythe and Owen (2013) also documented vetted anomalous events in purportedly haunted locations while examining the EMF/GMF associated in time with these events. Roll and Joines (2013) examined previous poltergeist cases in relation to the distance of the RSPK focus and possible EM fields produced. Although speculative, Roll and Joines (2013) found that the distance and frequency of RSPK in these cases mimicked the qualities of EMF decay.

As previously mentioned, work by Wilson, Williams, Harte, and Roll (2010) set up séance settings while focusing on participants who claimed to have psychic abilities. The goal of this research was primarily associated with the manipulation of random number generators. However, these researchers also conducted one session where a Multi-Energy Sensor Array (MESA) was used to examine if environmental differences would co-vary with any phenomena that occurred during the session. MESA included meters for detecting electromagnetic fields, changes in ambient light, and vibration-acceleration. MESA demonstrated notable changes in visible light, magnetic field strength, and infrared light, but at a more general level over the entire session. Yet, Wilson, Williams, Harte, and Roll (2010) did not attempt to associate general increases or decreases of any of these physical variables to particular times of reported events during a séance session.

The Potential Effects of Social Contagion in the Séance Environment

In a comprehensive approach to examining the séance environment, it is relevant to examine not only external anomalous experiences, but also subjective sensations and experiences.

The social nature of the séance environment provides a rich field in which to examine psychosomatic contagion as a primary (but not exclusive) explanation for subjective paranormal phenomena. Psychosomatic contagion represents a natural tendency in human nature to be unconsciously susceptible to both environmental and human elements of suggestion, and is considered a common cognitive heuristic dependent on belief and attention to the contagion stimulus (Rosen & Neneroff 2002).

Contagion research also provides an experimental framework for the fundamental aspect of belief, which Batcheldor (1984) deemed imperative in the production of anomalous effects such as PK. Related to peer pressure or conformity studies (e.g., Asch 1956), contagion effects in research represent the unconscious mimicry of behaviors, emotions, or somatic experiences from one individual to another or to a group (e.g., Freedman, Birsky, & Cavoukian 1980, Gump & Kulik, 1997, Lorber, Mazzoni, & Kirsch 2007). For instance, marketing research and psychologists have demonstrated across multiple studies that emotions will unconsciously transfer from one person to another (Bruder, Dosmukhambetova, Nerb, & Manstead 2012, Howard & Gengler 2001, Levy 2001, Neumann & Strack 2000, Parkinson & Simons, 2012). Contagion can create or alter goals and produce changes in behavior (Leander & Shah 2013). In direct laboratory studies, contagion created substantial physical psychosomatic effects (Lorber, Mazzoni, & Kirsch 2007). In relation to the former, work by Lorber, Mazzoni, and Kirsch (2007) demonstrated strong psychosomatic effects from modeling a placebo toxin and inferring that participants could manifest certain side effects from its exposure. Results showed that participants who inhaled a placebo toxin displayed more symptoms than the control group and displayed physical symptoms in excess of what was suggested.

Transliminality

In the context of belief in the paranormal and haunting/PK phenomena, some literature has focused on a measure of mental functioning defined as ***transliminality*** (Lange, Thalbourne, Houran, & Storm 2000, Thalbourne & Delin 1994, Thalbourne & Houran 2000). Transliminality has been described as "a hypothesized tendency for psychological material to cross thresholds into or out of consciousness" (Lange, Thalbourne, Houran, & Storm 2000:591). For instance, Thalbourne and Delin (1999), while researching transliminality, found that those with belief in the paranormal were more likely to have creative personalities, mystical experiences, depression, manic episodes, and hypomania. Results showed that those high in transliminality recalled more of their dreams, engaged in more dream interpretation, were more prone to esoteric religions, and scored highly on both paranormal belief and experiences. Houran, Kumar, Thalbourne, and Lavertue (2002) found that heightened hypochondriacal and somatic tendencies, transliminality, and paranormal belief significantly predicted self-reported haunt and poltergeist activity. Other theories relate transliminality to hypnotizability and suggestibility, as well as psychosomatic manifestations and mystical experience (Kelley 2010a, 2010b, 2011, Thalbourne & Delin 1999, Thalbourne & Houran 2000). Thus, one theoretical explanation for anomalous phenomena is that individuals high in transliminality are sensitive to psychosomatic effects created by contagion.

Work in transliminality might also define most haunting experiences as mass psychogenic illness (MPI) (Ryan & Morrow 1992). MPI is often examined by the medical community for mass outbreaks of disease such as epilepsy (e.g., Radford & Bartholomew 2001) that have no biological explanation, or multiple cases of disease within a confined area that have no biological explanation (e.g., Powell et al. 2007). Specifically, Ryan and Morrow (1992) classified four types of MPI. Of particular interest to transliminality, MPI is thought to share features from the three other disorders (i.e. sick building syndrome, building-related illness, and neurotoxic disorders). Each of these conditions begin with a believed environmental trigger-contagion, not unlike an environmental stimulus interpreted as a haunting. Unlike the other classifications, MPI can easily spread across social groups and is triggered by high levels of stress and heightened levels of arousal (Ryan & Morrow 1992). Other research by Jawer (2005) has noted certain demographic variables common to a range of environmental sensitivities or "boundary thinness" that may account for some of the function of mass psychogenic illness.

Whereas other research has demonstrated that MPI and transliminality cannot account for all haunting or macro-PK effects (e.g., Braude 2015, Laythe & Owen 2013, Wilson, Williams, Harte, & Roll 2010), the role of contagion seems present in any séance setting as a partial explanation for subjectively experienced phenomena. Dark rooms, mixed with an expectation of supernatural occurrence, have been shown to create a bevy of sensations, feelings, and perceptions that are interpreted as paranormal (Lange, Houran, Harte, & Havens 1996, Lange & Houran 1997). The séance environment is no exception. Research by Wiseman, Greening, and Smith (2003) found that the suggestion of PK effects, while fake, facilitated belief in the events as genuine. These authors found that belief in PK was a function of higher degrees of paranormal belief. The meditations, invocations, and attempts to contact a spirit serve to create a series of environmental stimuli that facilitate a participant's belief in the paranormal. Ergo, participants become prone to contagion and psychosomatic suggestion. Similarly, other participants' reported sensations and observations provide a direct person-to-person scenario for a contagion effect.

From a more macrocosmic perspective, the process of multiple séance sessions themselves can serve as a form of contagion effect similar to the cases reported of MPI (Powell et al. 2007, Radford & Bartholomew 2001) or can be alternatively considered in the context of the ***experiential source hypothesis*** (Hufford 1982, McClenon 1994, 2002). Essentially, these authors explain haunting (or séance) phenomena as a meaning-making process, where percipients are believed to interpret stimulus in the context of their beliefs and social context. Subjects who actively participate over several weeks expose themselves to repeated subjective experiences about ghosts and spirits that are collectively shared. These experiences, through collective interpretation, serve as the reinforcement of the "reality of ghosts."

The goal of the current study was to keep track of perceptions and feelings experienced by individual participants of the group within a séance session, as well as the immediate perceptions reported by other participants as a result of that initial report. It was hypothesized that the initial participant's report of a sensation would serve as a natural form of contagion stimulus. Thus, we expected reports of subjective phenomena to be more likely to occur in clusters as opposed to single reports. Similarly, transliminality has been previously associated with these types of subjective paranormal experiences (i.e. Thalbourne & Delin 1999, Thalbourne & Houran 2000). We expected participants high in transliminality to be more susceptible to contagion, and thus more likely to report larger numbers of subjective experiences compared with those with lower transliminality scores.

Although not the focus of the current work, we note that there is the possibility that potential distant intention phenomena (DMILS) could theoretically occur. DMILS effects could confound either MPI, general contagion, or transliminal tendency (see Schmidt 2015, for a review). We recognize this possibility, but wish to look first at more conventional (and perhaps higher order) suggestion and contagion effects that can occur from the séance environment.

Anomalous Phenomena and Electromagnetic Fields

Aside from research validating PK and other associated haunt-poltergeist phenomena, another area of research concerns the role of EMF and its relationship to said phenomena. Previous researchers have examined locations that are the source of reports of PK, anomalous lights, EVP, apparitions, and, in bulk, a wide variety of somatic perceptions. Previous work has demonstrated significantly different amounts of EMF strength and variation between reportedly haunted and non-haunted locales (Braithwaite 2004, 2006, Braithwaite, Perez-Aquino, & Townsend 2004, Braithwaite & Townsend 2005, Nichols & Roll 1998, Roll & Persinger 2001, Wiseman, Watt, Greening, Stevens, & O'Keeffe 2002, Wiseman, Watt, Stevens, Greening, & O'Keeffe 2003) with some research showing a lack of relation between EMF and phenomena (i.e. Maher 2000).

Whereas EMF variability in purportedly haunted locales has been established, EMF's relationship to PK effects has two non-quantum physics theoretical explanations. Persinger and his colleagues have conducted the more commonly known (but contested, see below) line of work. Their laboratory research demonstrated low-level magnetic fields that create perceived "anomalous phenomena" (St.-Pierre & Persinger 2006). These laboratory studies demonstrated that the projection of low-hertz magnetic fields applied to the parietal-temporal lobes creates a "sensed presence" for approximately four-fifths of subjects (Booth, Koren, & Persinger 2005). As a result of these studies, other researchers have suggested that geomagnetic fields in purportedly haunted locations create hallucinations that are misinterpreted as haunting phenomena. Persinger's work demonstrated that GMF can have hallucinatory effects on the temporal lobe that would explain the residents' reports of auditory and visual hallucinations. In one study, Persinger and Cameron (1986) collected seismic and EMF/GMF data over 15 nights in a reportedly haunted location to support the hypothesis that some haunting activity is the product of geomagnetic fields (GMF) that spur from the Earth's crust. Likewise, Gearhart and Persinger (1986) also found an association between geomagnetic increases associated with what were classified as poltergeist episodes. However, Persinger's claims with geomagnetic fields and the sensed presence are controversial. Other researchers (Granqvist et al. 2005) have critiqued this work and proposed suggestion as the actual source of these effects. Persinger and colleagues have debated the validity of the suggestion interpretation (e.g., Persinger & Koren 2005, Larsson, Larhammar, Fredrikson, & Granqvist 2005).

Externally Vetted Anomalous Phenomena

More recent research suggests an interesting association between EMF and phenomena that is external to the person, captured on audio and video (i.e. recordable), and subsequently vetted (i.e. compared for quality, alternative explanations, and compared against multiple other video sources and audio sources of the location). In terms of Belz and Fach's recently published model of Exceptional Experiences (ExE) (Belz & Fach 2015), our operationalization of external phenomena would be classified as a conditional attempt to separate both what is ***ordinary phenomenon*** from ***anomalistic phenomenon***. Our vetting process using the EMPE (see Methods section) serves as a further classification-verification model for separating events from ***internal anomalous phenomena*** (e.g., subjective in terms of experience) from ***external phenomena*** (e.g., veridical stimulus, which is subsequently interpreted). We would theoretically add that external phenomena as defined by Belz and Fach (2015) would subsequently fall under Hufford's (1982) ***experiential source hypothesis***. That is, phenomenologically veridical phenomena that are subsequently interpreted by their percipients in the context of culture and environment.

Wilson, Williams, Harte, and Roll (2010) noted some physical as well as external phenomena and recorded an overall increase of mains frequency (i.e. EMF from human-made electrical sources) EM fields during their séance session. In a somewhat similar vein, Laythe and Owen (2013) demonstrated a strong and significant relationship between EMF spikes and the occurrence in time of vetted audio and video recorded phenomena at a haunted location. Related to both Wilson, Williams, Harte, and Roll (2010) and Laythe and Owen (2013), work by Roll and Joines (2013) shows that in three cases the amount of RSPK produced as a function of distance conforms to the inverse square of an exponential decay function. This relationship lends observational (but not formally tested) support to a physical energy model of RSPK. These authors also found residual magnetic field readings with some objects that had been moved with RSPK. Although sparse, these studies suggest that Gearheart and Persinger's (1986) explanation of poltergeist phenomena is certainly viable, but it fails to account for the entirety of an EMF anomalous phenomena relationship. Finally, distant relationships between GMF and success in various psychic tasks in the laboratory strongly suggest at least a distant relationship between EMF/GMF and the psychic-anomalous phenomena process (Ryan 2015).

We propose several exploratory hypotheses regarding the nature of séance phenomena and whether the relationship between vetted anomalous phenomena and EMF might also occur in a séance environment. First, can contagion be shown with single and group reports of phenomena? We would expect that phenomena reports under the auspice of contagion would foster similar reports between participants, as opposed to differing accounts during a contagion scenario. Second, we would expect those who score high in transliminality to be subject to greater amounts of contagion, and thus greater numbers of reports. Third, as a more general question, should recordable phenomena occur, will a similar series of time-dependent EMF spikes be associated with them? Fourth, although the weak complex magnetic fields used by Persinger and colleagues may create the phenomena of a sensed presence (e.g., Booth, Koren, & Persinger 2005), there is no indication that brief time-dependent spikes should be associated with subjective perceptions of paranormal phenomena evoked during a séance. Thus, we examine if brief EMF spikes may potentially be associated in time with subjective sensations of anomalous phenomena.

Methods

Participants

For the current research, 11 participants (7 females, 4 males) from a small college in the midwest participated in one of two series of séance sessions.

Recruitment of participants was selective due to the time commitment and nature of the study, which may have seemed excessive to some students. Announcements for participation were given to students who had previously taken parapsychology classes and students active in the investigation of allegedly haunted locations. All students were informed of the goal of the study, which was to genuinely conduct a séance over a period of multiple sessions. Participants accepted these goals and appeared genuine both in their belief in the séance and their desire to elicit effects from the experience. Participants were also warned (per IRB consent and face-to-face briefing) that somatic sensations or negative emotions could possibly result from these activities. Series 1 had 5 participants (3 females, 2 males) who completed 10 sessions. Mean age for the Series 1 group was 23 (range = 21–28, *SD* = 3.39). Series 2 had 6 participants (4 females, 2 males) who completed 9 sessions. Mean age for the Series 2 group was 29 (range = 19–45, *SD* = 11.15). Ethnicity among the participants was predominantly Caucasian (90.9%), but participants represented a diverse group of religious beliefs (18.1% Protestant, 45% other, 8.9% Pagan, 18.1% none). The current research voluntarily recruited subjects with full knowledge of the goals and aims of the study. As such, overall paranormal belief was above the median score, as measured by Tobacyk's (2004) paranormal belief scale (i.e. average was in 60th percentile, M = 112.36, *SD* = 18.97). Series 1 contained two students with previous experience of paranormal investigations from previous work with the first author. Series 2 contained one participant who was both familiar with paganism and occult practice as well as having previous experience investigating purportedly haunted locations. Another participant was also a professed pagan, who had ceased practicing occult ritual for some time. In both series, approximately half of the students were personally familiar (and friendly) with each other outside of meeting for sessions. Finally, one participant left the study at session 6 due to a vision of an entity she professed to see. Two other participants ceased participating later in the series for reasons unexplained to the researchers.

Measures

All participants first completed a paranormal belief scale, a measure of transliminality, and an anomalous perceptions scale. Participants also completed background measures, including general demographic information such as age, sex, and socioeconomic status, etc. Standardized measures are described below.

The Cardiff Anomalous Perceptions Scale (CAPS: Bell, Halligan, & Ellis 2006). A 32-item self-report measure of perceptual anomalies. The scale reportedly demonstrated high content validity in a clinical population and included subscales that measure distress, intrusiveness, and frequency of anomalous experience. A principal components analysis of the general population data revealed three components: "clinical psychosis" (largely Schneiderian first-rank symptoms), "temporal lobe disturbance" (largely related to temporal lobe epilepsy and related seizure-like disturbances), and "chemosensation" (largely olfactory and gustatory experiences). Sample items included "Do you ever feel that someone is touching you, but when you look no one is there?" and "Do you ever hear voices saying words or sentences when there is no one around that might account for it?" The mean score for this measure was 8.27 (*SD* = 4.83); reliability for this measure in the current study was .91 (KR-20).

The Revised Paranormal Beliefs Scale (Tobacyk 2004). A 26-item self-report inventory measured the degree of belief in each of seven dimensions of mysticism: Traditional Religious Belief, Psi, Witchcraft, Superstition, Spiritualism, Extraordinary Life Forms, and Precognition. Sample items included "The soul continues to exist though the body may die," "Some individuals are able to levitate (lift) objects through mental forces," and "Black magic really exists." Mean scores on the current measure were 112.36 (*SD* = 18.97), and reliability was .99 (Cronbach's α).

The Revised Transliminality Scale (Lange, Thalbourne, Houran & Storm 2000). A 17-item self-report measure that defines a probabilistic hierarchy of items addressing magical ideation, mystical experience, absorption, hyperesthesia, manic experience, dream interpretation, and fantasy proneness. Sample items included "Sometimes I experience things as if they were doubly real" and "I have felt that I had received special wisdom, to be communicated to the rest of humanity." The revised scale corrects for age and gender biases and is unidimensional by a Rasch criterion. Mean scores in the current study were 12 (*SD* = 2.56) with a reliability of α = .87 (KR-20).

Equipment

The use of equipment for the proposed study closely followed the protocols of Laythe and Owen (2013). Individual equipment is described below.

DVR Camera System. This equipment included a four-camera DVR system that was placed within the controlled séance environment. The infrared cameras were located to record multiple angles in the room, including under the table and outside of the laboratory space, to prevent fraud, to account for random noises, and to record any possible anomalous phenomena.

EMF Meters and Placement. Four meters were placed in the séance environment to record magnitude changes in EM fields that might occur.

Specifically, two Alpha Lab Tri-Field 100XE meters (measuring 60 Hz EMF) and two Alpha Lab Natural EM meters (measuring 0–8 Hz GMF) with output jacks were placed in pairs into two curtained walls of the séance space. Magnifying coils were placed on EMF meters making them more sensitive to 60-Hz magnitude changes. Thus, 60-Hz EMF meters measured changes in the 0–1 mG range, while GMF meters measured 0–8 Hz EMF in the 0–100 mG range. We emphasize here that EMF readings from the Tri-Field meters represent very small fluctuations due to the use of coils to magnify sensitivity. Data were logged from these meters with the use of a DATAQ data-logger and computer system at 20 samples per meter, per second. Previous field tests of the meters demonstrated an 8-ft diameter range in detecting a 100 mG + field. Footsteps did not affect readings on the meter, and human presence also did not register when the meters were in magnetic mode. Furthermore, all recording equipment was approximately 5–7 feet away from the meters, wiring which led to the data-logging equipment was shielded, and meters were placed at least 3 feet from power sources (outlets in the walls). From both experience and the inverse power law regarding EMF magnitude, these steps inhibited direct interference from mains frequency (60 Hz) electrical EMF sources directly within the laboratory. Direct tests of the meters capacity had been previously conducted, and computers or power outlets (if unshielded or bleeding) did not register on the meters (including coiled meters) beyond 2 feet. No magnetic shielding was employed as our analysis process accounts for environmental sources of EMF/GMF.

Procedure

Séance Content and Rationale. One of the goals of the study was to see if a séance-like environment would create genuine macro-PK phenomena. We borrowed from Batcheldor (1966, 1984), the work of Owen & Sparrow (1976), modern occultism (e.g., Regardie 2010), and research in contagion (e.g., Lorber, Mazzoni, & Kirsch 2007) to create a hybrid approach to generating 19 macro-PK events. Our rationale was that more environmental cues (i.e. curtains and darkness) and practices (i.e. an occult summoning ritual) would facilitate the belief component emphasized in Batcheldor (1966, 1984). We recognize that Batcheldor recommended a light-hearted atmosphere, and, as such, this focus on a more traditional occult-séance environment is a deviation from previous séance studies. As Mass Psychogenic Illness is a function of location and belief in the particular somatic disease (Powell et al. 2007, Ryan & Morrow 1992), we eschewed Batcheldor's (1966, 1984) exact procedures while keeping the spirit of Batcheldor's conditions for producing PK. Thus, by creating an environment for a séance, a ritual for a séance, darkness, and individuals who have higher paranormal belief and experience with haunted locations, we attempted to create the strongest manipulation for the contagion of not only anomalous belief but also belief in PK.

For both groups, we initially, per Bachledor (1966, 1984) and Owen and Sparrow (1976), offered a fictitious entity (complete with background and history) for participants to focus on. In both series, neither set of participants wanted to use the fictitious entity and were more enthusiastic to invite whatever spirit was available for the session. We felt that insisting on the protocol might inhibit participants' motivation (and thus effectiveness) and abandoned that component of the procedure after the first session of both séance series.

Conducted at the university at 6 p.m. during the fall, and then during winter and early spring, the experiment had a designated, specific laboratory room. The times were expedient for both participants and researchers. The room was shrouded in heavy black curtains. Placement of cameras was situated to minimize their physical appearance, and thus minimize reminders of being recorded. A standard 2′ × 2′ 4-legged card table (weighing ~8 pounds) was covered with a tablecloth, and one electric candle was placed at the center of the table. All lights were extinguished in the room, producing near pitch-dark conditions except for the very minimal light of said candle. Our hope was to minimize witness inhibition (Batcheldor 1984) by keeping the room dark. Cameras were able to record all activity using infrared mode.

In order to facilitate the most genuine experience possible, materials from existing western esoteric occult systems were integrated into the séance procedure in the form of an opening meditation involving the middle pillar. This is a common western esoteric technique taken originally from the ***Golden Dawn*** (Regardie 1996, 2010). Participants' rituals for this study involved invoking the visualization of a circle of blue light around the séance table, and visualization of a barred door with the symbol of the moon. While repeating ritual phrases, participants subsequently visualized the door opening and the invitation of a spirit or spirits to enter through. In closing the session, the opening ritual was reversed, while telling participants that this procedure would remove any spiritual influence directly from them.[1] As meditative breathing was used in both rituals, controlled breathing was also used to alleviate any psychosomatic effects created by the session. All participants were checked after each session for their wellness and emotional health. No lasting effects beyond psychosomatic effects within the sessions themselves were reported to the researchers.

Session Procedure. All sessions (10 in the first series, 9 in the second series) were recorded using digital media. One audio recorder was used as additional documentation. Before any session began, the researchers checked all equipment and logged a common time stamp from the DVR display to compare reported events against EMF readings as well as camera footage.

The team of participants were then allowed into the séance setting and directed to sit at a small lightweight table surrounded by black curtains. Researchers were posted in a separate room outside these curtains. All participants were clearly reminded at each session to verbally speak any sensation or event that they felt or witnessed as it happened. Participants were then verbally cued by the researchers to begin their five-minute opening meditation, which was guided by the investigator reading each step to the participants. After the opening meditation was completed, the séance session commenced, which varied between 25 and 50 minutes. Variation in session length occurred because participant investment in the session was critical to the experiment. In some cases, despite multiple efforts, participants could not get any feelings or signs of "activity," and would ask the research assistants to cease the session. During each séance session, two researchers time-logged any type of event vocalized by participants and monitored the laboratory for odd occurrences captured on video camera (including underneath the table for signs of trickery). Time stamps were written manually by one of the two researchers posted via the DVR-provided time. As a potential lag in accuracy could occur due to writing times by hand, our analysis incorporates the second before the event was spoken (and accounts for the added probability due to the additional period of time). Participants during this period were encouraged to facilitate interaction with a summoned "spirit" (of varying nature), by engaging in attempts of knocking or rapping response in the room, levitation or movement of the table or candle (with hands fully visible on table or in laps), or general requests for a sign of presence.[2]

Distributional and Time Dependent Binomial Coding of EMF/GMF. Although we have previously used this method for analysis in Laythe and Owen (2013), binomial probability modeling is not often applied in the social sciences, and certainly less so to physical variables such as EMF. Thus, we wish to spend a brief amount of space clarifying the nature of this type of mathematical modeling so that the reader can see the appropriateness of its use. We have also provided an Appendix to this work for those who prefer a more detailed explanation of the modeling process (see Appendix B).

For any analysis of this type, there are actually two layers of data aggregation. The first is the collection of the raw EMF/GMF data across séance sessions and the creation of their distribution(s). The second (and safely analyzable layer) is built off of the means and standard deviations from the raw data itself. For the current study, EMF/GMF data was collected as raw volt input (see Laythe and Owen [2013] for reasons why millivolt to milligauss conversion is not viable). EMF generally forms a normal distribution when magnitude scores are collected over time (Braithwaite 2004, 2006; see Appendix B). We operationally defined a spike as the presence of three 2 *SD* ± EMF/GMF readings present out of 20 readings sampled within one second. From this operational definition of a "spike," data are binomially coded as either a miss (any series of scores within one second that fail to achieve fewer than three 2 *SD* magnitude readings) or a success (any series of 20 scores within one second that do contain more than three 2 *SD* magnitude readings). We emphasize that coding in this manner makes the analysis inherently time-dependent (i.e. a hit or miss contained within a set period of time).

One benefit from using this approach is that concern over EMF contamination is mathematically accounted for. Potentially contaminating EMF/GMF sources all become absorbed into the raw EMF/GMF distribution. Extraneous EMF/GMF ***will expand or contract the overall standard deviation***, given sufficient variability. In turn, the magnitude required for a reading to be deemed a "spike" adjusts accordingly. Likewise, more potential contamination will adjust the probabilistic odds of the amount of operationally defined binomial "spikes" needed to obtain a significant finding. As such, the current study did not employ magnetic shielding to guarantee a lack of EMF/GMF contamination from outside of the laboratory. Potential contamination from outside the laboratory is captured in the distributions of the data, and thus adjusts the probability of a success according to the degree of hypothetical EMF/GMF contamination. This process is also more applicable to field environments, where it is often not practical to erect electromagnetic shielding. Due to this two-step process of binomial modeling, very small perturbations in EMF/GMF (as is the case here) or potentially large perturbations can be realistically modeled out of the actual EMF/GMF field data from any location. Any changes in the environment of EMF/GMF, for practically any setting, will be accounted for because the binomial trial's success is ultimately determined by the variance within the distribution.

Another benefit from a binomial approach is that independence of observed data is not necessary. Binomial coding in this manner allows the researcher to obtain the probability of complex events that may be dependent on each other. This is a regular use of binomial modeling, and literal textbook examples can easily be found in graduate or undergraduate textbooks. One example (see Rice 1995) involves the probability of seeing a car pass by a window, which is not by any means a truly random or independent variable. As one reviewer of this manuscript and Maher (2015, 2016) have thoughtfully pointed out, EMF/GMF readings are similar to the car example, as readings of magnitude can be dependent on each other, and EMF/GMF can be affected by many environmental variables. We do not contest this statement, but note that previous work has applied *t*-tests and other inferential statistics where the independence of observation is assumed in the EMF/GMF data.

Luckily, binomial analysis relies on the *n* number of selected samples (in this case, defined as one-second intervals) collected from the dataset, which are assumed to be independently/randomly selected. Our current study meets this criterion, as we realistically have no knowledge of when participants will verbally report an observation. Their participation serves as a "random" selection from which we can gather our overall series of trials to test against the dataset-driven probabilities.

Most importantly, once EMF/GMF data are operationally defined as binomial trials in the above way, the analysis becomes a test of association between the expected number of random EMF/GMF successes for *n* number of trials selected by participant observation. Thus, a significant binomial test indicates a significantly greater or lesser amount of EMF/GMF occurring ***at the same time*** as the time-dependent phenomena being studied (for the current work, participant verbal reports). Our assumption of EMF behavior, regardless of its source, is that it should be completely unassociated or influenced by participants, their actions, or their intuition. Thus, the null hypothesis for this test is the presence of EMF/GMF at distribution-determined chance levels for any *n* selected binomial trials. The alternative is an association between participant and EMF/GMF, which by common physics should not occur.

Our data, while generally demonstrating a normal curve, showed substantially greater than 5% readings at either tail. Binomial trials based on normal distribution probabilities proved to be an inaccurate estimation of how many spikes we could expect when analyzing the data for this particular study. Furthermore, when associating a spike, as described above, with a report from a participant, we had to account for two meters, each for EMF/GMF, and allow for a two-second window for each report. This two-second window represented the second of the logged report, and the second before to account for time lag in reporting and writing the event. We emphasize to the reader that this allows for a potential binomial "success" (i.e. a spike second) to occur in either of two meters (EMF/GMF) in either of two seconds (the second of the event, or the second before). The "normal distribution model" for binomial trials depends on extreme scores in the dataset being less than 5%. As a result, we directly aggregated binomial successes and failure across all sessions within both series to obtain an accurate random probability of a success-spike. Thus, within each series, the sum of successes divided by the total amount of seconds in all of the sessions served as an expected random probability for obtaining a spike at any given second during a session (see Appendix B, for mathematical verification of this process). We describe exact coding and the resulting actual random probabilities for EMF/GMF in the Results section.

Classifying Objective Anomalous Events. In terms of evaluation, potentially anomalous events were rated with the Evaluative Model for Paranormal Evidence (EMPE) as described in Laythe and Owen (2013). The EMPE system is used only with events that have been captured by audio or video means and does not involve the evaluation of somatic or internal phenomena. Each rating from 1 to 3 represents an estimate of the likelihood of an anomalous event. Ratings are generally assigned as Class 1, likely to be environmental due to audio, video, or simple physical environmental factors that can explain the event; Class 2, possibly environmental, but also possibly anomalous, which represents an event that goes above Class 1 explanations, but has some unverifiable environmental factors that could account for the event; and Class 3, more likely to be anomalous, an event that cannot be clarified or explained by either participants or the environment using all available video–audio sources. The principal of the EMPE is guided by the Popperian (e.g., Popper 1934) philosophy of science. Essentially, a phenomenon can never be accounted as paranormal, but only more likely to be so as alternate explanations are ruled out.

As an example of the application of the EMPE, "table levitation" would be rated Class 3 only if the table itself were levitating without anyone touching the table (as verified by the cameras above and underneath the table). A Class 2 example would involve the table lifting, with only one participant touching the table, thus leaving the possibility of a very clever hoax or ideomotor action. A Class 1 scenario would represent the table "levitating" while all participants touched it from underneath the table. We recognize that in some situations, an anomalous event can be both objective and subjective. However, the classification of objective versus subjective maintains a strict boundary of recordable evidence, which can then be compared against additional video or the event space itself can be inspected, versus subjective events, which have no external supporting video or audio evidence to substantiate the internal claim.

Coding Reported Events

Events were classified into one of two categories: objective events (operationalized as an event captured by camera, not obviously created by participants, and of a potentially anomalous origin) and subjective events (operationalized as a report of a feeling, mood, or perception, which had no supporting external evidence). In other words, an objective event mandated camera or audio evidence that demonstrated no obvious means of tampering or human interference. Events where external phenomena were perceived by participants but were not verified by camera remained classified as a subjective event (e.g., participants' hands were on the table, felt the table lift, but the cameras recorded no movement). All events (objective or subjective) were logged by the researchers using a common time stamp when participants verbally reported any event or sensation.

In order to examine subjective events from a contagion perspective, we parsed events as single (i.e. only one participant reported it) or multiple (i.e. more than one person reported it within a 30-second time frame). All events were coded in a way that ensured only one category was selected for any particular event. We describe each category below.

Single Event: These events represented one occurrence of a verbal report of a physical sensation (e.g., hot, cold, prickles, being touched) by any participant. Single Events also included a single report of a participant perceiving some type of phenomenon outside themselves. Examples included touch (e.g., I felt the table move), vision (e.g., I saw a candle or curtain move), or auditory (e.g., I heard a noise, bump, or groan) reports during a particular séance session.

Multiple Event (Contagion): These events represented any series of single events that were reported within 30 seconds of a previous person reporting a subjective event. A multiple event was also coded when multiple people reported sensations, perceived movement, or some perceived events outside of themselves (e.g., a shadow, knock, or light anomaly) at approximately the same time. For contagion analysis, we separately coded this variable in terms of whether subsequent reports were similar in nature (e.g., both participants reported prickles) or different in nature (e.g., one participant reported prickles, but the second reported being hot).

Results

We first note to the reader that all external events reported in the analysis failed to meet EMPE criteria that could possibly allow a classification of an event as Class 3: ***likely to be anomalous***. In other words, throughout sessions, there was never an occurrence of phenomena on video camera that could not be attributed, at least in part or majority, to the environment or participants. Likewise, no apparitions or light anomalies appeared on camera. No potential PK events were noted in either series and the current study failed to reproduce the previously reported effects of levitation of any object in the laboratory space.

This is not to say that a variety of subjective events were not reported. Indeed, almost every participant reported a variety of movements of the table. Participants reported multiple occurrences of slight vibrations and movement as well as the table being lighter or heavier as they tried to lift it with one finger, or the table tipping or moving in one direction. Participants reported multiple events of the candle placed in the middle of the table moving. However, in all of these cases, either participant ideomotor action could not reliably be ruled out, or movement was not notable enough to be captured on video camera.

In terms of subjective sensations, participants reported a variety of somatic sensations from mild (e.g., feeling watched, touched, or poked) to severe (e.g., nausea, vertigo, exhaustion, and fear). Similarly, many participants reported both visual and auditory reports of phenomena (e.g., growls, shadows, movement around the curtains, knocks, and light anomalies). We note again that none of these visual and auditory events, beyond a few unexplained flashes of light, and numerous orbs (i.e. dust particles) were captured in any way on camera. Some knocks and thumps were reported and captured on audio and video, but with no consistency (i.e. were not repeated in response to questions enough times to be statistically analyzed), nor were we able to reliably determine their source of origin as anomalous.

As participants through both series reported an abundance of subjective occurrences, a narrative style for describing them all in detail would be too lengthy for the current work. Instead, we provide a summary of sensations and experiences of the participants in Table 1. Please note that counts are higher as all events were counted as single events (i.e. collapsing contagion counts and treating all reports as single events). As can be seen in Table 1, the most frequent events reported included various types of uncomfortable feelings (18%) followed by subjective reports of the table moving (13%), and chills or hot/cold flashes (11% each).

Description and Analysis of Events and Percentage of EMF and GMF Spikes by Session

The raw count of single and multiple reports are presented in Table 1. However, because session times varied within series, we adjusted the

TABLE 1
Reported Phenomena by Participants Across All Séance Sessions

Experience Type	Counts Series 1	Series 1 Percent-age	Counts Series 2	Series 2 Percent-age	Counts Com-bined	Combined Percent-age
Somatic phenomena						
Chills	35	0.18	16	0.06	51	0.11
Uncomfortable feelings *	32	0.16	52	0.19	84	0.18
Table lifting/shaking/ moving/feeling heavier	25	0.13	33	0.12	58	0.13
Chair moving/shifting	2	0.01	2	0.01	4	0.01
Being touched **	26	0.13	16	0.06	42	0.09
Feeling watched/feeling presence	16	0.08	8	0.03	24	0.05
Feeling tingles	14	0.07	4	0.01	18	0.04
Cold/hot all over	8	0.04	44	0.16	52	0.11
Breeze felt	0	0	11	0.04	11	0.02
Auditory phenomena						
Taps, bumps, knocks	14	0.07	22	0.08	36	0.08
Growls, whispers, barking, rustling, whistling	6	0.03	5	0.02	11	0.02
Undifferentiated noise	3	0.02	3	0.01	6	0.01
Visual phenomena						
Curtains moving	5	0.03	4	0.01	9	0.02
Objects on table moving (candle, recorder)	4	0.02	37	0.14	41	0.09
Seeing something (shadow, apparitional, light)	4	0.02	10	0.04	14	0.03
Olfactory phenomenon						
General smells	0	0.00	3	0.01	3	0.01

Note: None of the above-reported phenomena were evident on 4 videocameras or audiorecorder. Counts are higher as contagion group effects were counted as the multiple of people who had them.
* Included nausea, pain, headache, ears ringing/pressure, tight chest, confined/awkward/weird/confused/troubled/creepy/bad/sick/vulnerable, itchiness, dizziness/lightheadedness, tunnel vision, face pressure, heaviness, numbness, something attached to person/feeding, heartbeat felt in hands.
** Included feeling pushed, stinging, general pain, hair brushed/pulled, burning, and feeling poked.

TABLE 2
Descriptive Statistics and Chi-Square Analysis of Participant-Reported Séance Events and 2 *SD* EMF and GMF Spikes by Series of Séance Session

	Séance Session Series 1												
Variable	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	χ^2	***df***	***p***
Single	2	22	3	8	15	6	19	16	22	3	50.55	9	.0000
Multiple	0	4	5	3	5	4	4	8	12	0	25.00	9	.0029
Single Adj. *	2	28	5	11	22	9	19	23	23	7	49.80	9	.0000
Multiple Adj. *	0	5	8	4	7	6	4	11	13	0	27.06	9	.0013
Meter 1T Spikes Adj.*	1	254	371	406	77	224	51	465	384	180	1089.11	9	.0000
Meter 2G Spikes Adj. *	264	470	153	164	546	415	553	501	342	134	733.54	9	.0000
Meter 3T Spikes Adj. *	16	126	233	494	90	101	46	86	130	213	1314.68	9	.0000
Meter 4G Spikes Adj. *	463	596	692	594	705	509	688	581	296	95	668.20	9	.0000
Session Minutes	46.96	42.46	32.86	38.95	37.06	38.65	54.68	38.33	51.60	24.86			

	Séance Session Series 2											
Variable	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	χ^2	***df***	***p***
Single	10	12	6	17	12	11	18	22	29	26.26	8	.0010
Multiple	10	12	2	10	15	11	5	4	12	16.66	8	.0337
Single Adj. *	11	12	11	17	12	12	20	22	32	24.50	8	.0018
Multiple Adj. *	11	12	4	10	15	12	5	4	13	14.40	8	.0719
Meter 1T Spikes Adj.*	96	289	53	98	22	283	437	105	13	1105.49	8	.0000
Meter 2G Spikes Adj. *	372	195	278	134	267	138	304	75	276	327.11	8	.0000
Meter 3T Spikes Adj. *	57	49	47	35	49	179	146	174	67	314.17	8	.0000
Meter 4G Spikes Adj. *	204	189	162	157	302	183	169	140	321	163.76	8	.0000
Session Minutes	33.88	38.31	21.80	37.93	37.46	36.18	34.86	37.63	35.08		8	

Single = single-participant reported event; Multiple = multiple-participant reported event; Meter designation T = mains frequency EMF, Meter designation G = geomagnetic frequency.
* Data adjusted to longest session within series.

counts of our categories and spikes by the longest session in the series and extrapolated counts for sessions that were shorter than other sessions. Adjusting shorter sessions to the longest time period data, in essence, holds time constant, and thus removes the effect of time differences as a source of variance in our reported events between sessions. However, for transparency, we also performed analysis on the unadjusted counts of reports. Finally, we note for the reader that report numbers are pooled across participants for the following analysis.

Main Analyses

In order to examine the degree of variation with phenomena types (i.e. single and multiple) between sessions, a series of chi-squares was conducted. Tests were performed on both the unadjusted and adjusted counts of each type of phenomena against the average of adjusted counts across sessions. Results can be seen in Table 2. Our analysis shows that with the exception of the multiple adjusted counts in Series Two, significant variability existed in single and multiple reports across sessions ($\chi^2 = 24.50$ to 55.00, $p < .05$). Essentially, results indicate significant report variability across sessions where some sessions produced a greater amount or lesser amount of reports compared with the average of reports across sessions.

In order to examine if the overall amount of EMF and GMF spikes differed across sessions, a chi-square analysis was conducted for each series of séance sessions. The adjusted count of spikes was compared against the average amount of adjusted spikes from all sessions in the series. Results indicated that the number of spikes detected by all meters for both series significantly differed from the average ($\chi^2 = 163.76$ to 1314.68, $p < .0001$). Thus, despite laboratory-controlled sources of EMF, including natural fluctuation of the geomagnetic field, the presence of 2 *SD* EMF/GMF spikes was highly inconsistent across sessions and contrary to the typical normal distribution that occurs with collecting EMF/GMF over time (see Appendix B).

Finally, we examined our hypothesis that multiple reports of phenomena would be more prevalent than single isolated reports. A series of chi-square tests were conducted with the non-adjusted counts, as time did not confound the total counts of events. For Series 1, single events were more common than multiple events (single events = 109; multiple events = 52; $\chi^2 = 49.29$, $p < .0001$). Series Two replicated the effect (single events = 137; multiple events = 81; $\chi^2 = 14.38$, $p < .0001$). Thus, our hypothesis was not supported. Despite the presence of many multiple phenomena perceptions, single reports of phenomena were the more common.

However, secondary analysis was conducted with multiple reports

TABLE 3
Spearman's Rho Correlations by Séance Session for Events and EMF

Variable	1	2	3	4	5	6
1. Session						
2. Single reports	.41					
3. Multiple reports	−.03	.33				
4. Meter 1T % spikes	.12	.07	.24			
5. Meter 2G % spikes	−.01	.36	.14	−.10		
6. Meter 3T % spikes	.33	.03	−.03	**.58**	**−.46**	
7. Meter 4G % spikes	−.15	−.08	−.19	−.10	**.57**	−.20

Single reports = single-participant reported event; Multiple reports = multiple-participant reported event; Meter designation T = mains frequency EMF, Meter designation G = geomagnetic frequency.
Bold indicates significance at the $p < .05$ level.

to determine if common reports (i.e. the same group perception) were significantly different in number from multiple different reports (i.e. multiple people reporting different perceptions). We used this coding as a test for general contagion, where one participant will report experiences similar to another. Chi-square analysis for Series 1 (multiple same = 34, multiple different = 18; $\chi^2 = 5.67$, $p < .05$) and Series 2 (multiple same = 64, multiple different = 17; $\chi^2 = 27.27$, $p < .0001$) indicated that similar reports were significantly more common than different reports. This finding supports a classic contagion effect when multiple reports occurred, although single accounts remain more common in the overall dataset.

Recorded Events, EMF and GMF Spikes by Session

In order to examine any associations between logged single or multiple reports, and overall collected EMF spikes, Spearman's Rho correlations were conducted using the individual séance session as the unit of analysis in combining both series of séance sessions in order to increase power. We note that skew or ceiling effects are somewhat negated by use of a rank-order correlation. Results can be seen in Table 3.

Results indicated no relationships between either single or multiple reports, and the raw amount of EMF spikes present per séance session ($r = -.19$ to .36, n.s.) or to session number ($r = -.15$ to .33, n.s.). However, EMF meter readings were significantly related to each other ($r = .58$, $p < .05$) and GMF meter readings were also significantly related to each other by session ($r = .57$, $p < .05$). Notably, one EMF meter was significantly and inversely related to one of the GMF meters ($r = -.46$, $p < .05$). Thus, the above findings support that both types of meters were logging similar frequency fields, and that for one EMF meter, increases in a particular GMF meter were predictive of lower EMF scores when compared on a session-to-session basis. We emphasize that within-session relationships of EMF and GMF may be substantially different.

Examination of Individual EMF and GMF Spikes Present During Reported Events

We could not entirely rely on normal distribution modeling to determine the true random probability of EMF/GMF spikes for our time-dependent binomial trials (see Methods above). Sessions varied where EMF spike percentages ranged from 0% to 11%, and GMF spikes within sessions ranged from 4% to 18%. This is in contrast to what we typically find in non-anomalous environments, where EMF/GMF data closely adheres to a normal distribution (i.e. approximately 2.5% "spikes" from either tail, see Appendix B: Table 7, Figures 1 and 2).

Thus, the entire sample of sessions within series of spikes and no spikes was used to model the random probability of obtaining a success/spike within any given second for each of our meters. However, our method of counting a spike as associated with a participant report involved spikes from either meter (e.g., EMF Meter 1 or EMF Meter 2) in one of two second opportunities (e.g., the first second or the previous second). This joint probability (EMF meters had approximately the same binomial probability, but GMF meters did not) created some problems as we were forced to fit a probability formula to field data. As joint probability models involving correlated EMF data can be inaccurate (see Appendix B), we used VBA programming to code EMF/GMF spikes in our data so that a second of time containing a success from either meter (e.g., GMF or EMF) was counted as one success. Thus, as the time periods for both series of meters were the same, we counted a hit in either meter as a hit and left the remaining failures in the dataset. This process created a hybrid series of binomial trials that represented the exact probability of a hit in either meter (i.e. $n = 1$ $k = 1$, p = success of either meter, q = failure of both meters). We then applied these joint probabilities to a binomial trial representing two trials (i.e. the second during and the second before; binomial = $n = 2$, $k = 1$), which allowed us to derive an exact data-driven expected random probability of EMF spikes associated with n observed events.

As we stated previously, this process allows us to examine the probabilistically expected amount of EMF perturbations (albeit, small

TABLE 4
Binomial Analysis of EMF Spikes Associated with Phenomena Reports by Time

	Experiment			Control				Binomial
	% Spike	Spike	No Spike	% Spike	Spike	No Spike	Sum	*p*
Tri-Field								
Series One								
Single	0.11	12	97	0.16	17	92	109	**.020**
Multiple	0.12	6	46	0.16	08	44	52	.110
Series Two								
Single	0.12	16	121	0.16	22	115	137	**.037**
Multiple	0.11	9	72	0.16	13	68	81	.060
Geomagnetic								
Series One								
Single	0.39	43	66	0.32	35	74	109	**.020**
Multiple	0.21	11	41	0.32	17	35	52	**.020**
Series Two								
Single	0.18	24	113	0.26	36	101	137	**.005**
Multiple	0.17	14	67	0.26	21	60	81	**.020**

Single = single-participant reported event; Multiple = multiple-participant reported event; %Spike = percentage of events associated with EMF or GMF spike; Spike = raw count of events associated with spike; No Spike = raw count of events not associated with spike. Experiment = obtained data; Control = calculated expected binomial probability of EMF/GMF spikes.

perturbations) as a function of time and the dataset of EMF itself. As complex magnetic fields are always present, this method does not concern itself with the source of EMF. Instead, it allows us to test if more EMF is occurring in conjunction with a behavior or action as a function of time. Significance using this method can also infer brief moments of either EMF variance suppression (i.e. fewer extreme readings than should be occurring by chance or variance expansion (i.e. more extreme readings than should be occurring by chance). Practically speaking, statistical significance of either represents a period of EMF conjoined with events that, by the nature of the significant finding, is probabilistically unlikely to have occurred as a function of the existing EMF dataset for the period, and thus from the standard complex EMF of the room itself.

For Series 1, there was a combined random probability of a spike in either EMF Meter 1 or 3 in either the second or second previous at 16%. The random expected percentage for GMF in Series 1 was 32%. For Series 2, the EMF expected probability of a random spike was 16%, and for GMF 25.9%. These percentages were applied toward the counts of spikes-hits of single and multiple events in Series 1 and 2 to serve as an expected random probability to test against on a binomial probability model. Results can be seen in Table 4.

Results using binomial tests indicate for EMF/GMF associated reports that all single event reports were significant (binomial $p < .05$), and two out of four multiple report spike counts were significant (binomial $p < .05$) However, the majority of these significant counts demonstrated significantly fewer numbers of associated spikes than would be expected by chance. Only single reports in Series 2 showed a significantly greater amount of spikes associated with reported phenomena ($p = .02$). Regardless of direction, EMF/GMF counts associated with phenomena were outside of chance occurrence in six out of eight analyses. We also wish to emphasize that all GMF readings were significant, whereas only two of the four EMF tests were significant. Thus, smaller perturbations captured by the EMF coils appear to show more conservative effects of the association in time between EMF and somatic reports compared with the non-coiled GMF distributions collected in the current study.

Transliminality, Psychosis, Paranormal Belief, and Reported Séance Phenomena

In order to examine the role of personality and attitudes on the séance experience, single and multiple reports were summed across sessions for each participant in both séance series. We then divided the sum of these experiences by the number of sessions in which the participant was present. This method was used to prevent artificial deflation of the scores due to session attrition, which occurred for three participants. We then placed these adjusted counts, along with participant scores of paranormal belief, CAPS, and transliminality, into a Spearman's Rho correlation matrix. Thus, findings reported below represent a participant-level analysis of how personality, paranormal belief, and transliminality might predict participants reporting different types of our coded perceptions in the séance environment. The use of rank order correlation minimizes any skew or ceiling effects in the data. Results can be seen in Table 5; however, we caution the reader that sample size for this analysis is low ($n = 11$).

Results indicate that for participants, self-reports of single events were correlated with reports of multiple events ($r = .63$, $p < .05$). Thus, those who

TABLE 5

Spearman's Rho Correlations of Transliminality, Paranormal Belief, Psychosis, and Participant Séance Experiences

Variable	1	2	3	4
Single				
Multiple	**.63**			
Transliminality	.09	.33		
CAPS	.39	−.16	.02	
Paranormal belief	.02	−.15	−.05	.22

Single = single-participant reported event; Multiple = multiple-participant reported event.
Bold indicates significance at the $p < .05$ level.

were likely to report single events were also likely to participate in a report during a multiple event. Personality measures were not significantly related to any type of reported events ($r = -.16$ to .39, n.s.).

Discussion

Our goal in the current study was to contextually examine the séance environment, both in its ability to produce anomalous (PK) phenomena, and also psychological factors such as contagion and transliminality. Although we failed to witness or create any clear cases of PK, our findings indicated that participants had a variety of subjective experiences. Likewise, we were able to demonstrate that contagion effects are evident in the séance setting. The current research also provides a more detailed examination of the role of EMF and GMF in the context of anomalous phenomena. Our findings demonstrated significant variability of EMF and GMF across sessions and exceeded what we would expect an undisturbed distribution of EMF/GMF to produce. Similar to the external haunting phenomena associated with EMF/GMF in Laythe and Owen (2013), EMF/GMF spikes were significantly associated in time with the participant's reported experiences. But the majority of significant findings showed that fewer EMF/GMF were present than chance would expect. The significant absence of EMF/GMF occurred despite higher amounts of spikes in the overall dataset. Each of these findings will be addressed in greater detail below.

Contagion Effects and Traits in the Séance Environment

The roles of contagion and peer pressure appear to be complex intermediary factors in the séance environment. Our findings first demonstrated several contagion events per session, as measured by our multiple report variable. Opposite to expectations, single reports of subjective phenomena occurred significantly more frequently than reports of closely paired subjective or simultaneous group reporting events. However, examination of multiple event reports did show that similar somatic perceptions of participants were significantly more frequent than multiple reports that had dissimilar somatic symptoms. Previous work has generally demonstrated that somatic symptoms of participants matched the symptoms of the initiator (e.g., Ryan & Morrow 1992). Thus, in the current study, single reported events were more frequent. Yet, when multiple events did occur, they were more likely to mimic classic contagion effects.

Why were there more single reports of phenomena compared to contagion? Several possibilities are likely. Examining the séance from the perspective of the ***experiential source hypothesis*** (Hufford 1982, McClenon 1994, 2002) may provide some insight. This research suggests that raw experiences along with stimuli that participants receive always are interpreted and given meaning in the context of personal beliefs as well as social context. Applying this theory, we thus have the social and physical environment itself along with the individual's personal beliefs as cues to interpret somatic sensations or perceived events. Our séance environment is unlike previous environments in contagion research because of its naturalistic setting, which allows environment and multiple participants to induce suggestion and/or contagion. Previous research (e.g., Asch 1956, Lorber, Mazzoni, & Kirsch 2007) employed exclusive experimental controls, where only a single source of contagion (e.g., another participant, or the environment alone) could account for a contagion effect. Even in other séance-suggestion related studies (i.e. Wiseman et al. 2003), only a specific stimulus (in this particular case, table movement) served as the experimental suggestion stimulus. In cases where contagion is not studied in the laboratory, researchers use individual case reports after the fact, or media reporting without analysis (e.g., Radford & Bartholomew 2001).

In the current study, the environment was decorated to look like a séance room. Multiple participants were providing stimuli by voicing their own experiences, along with their previous experience and/or beliefs influencing their interpretation. Given these multiple contagion influences, it is not surprising that more single experiences were reported. Simply put, there were multiple sources of contagion and suggestion for participants to draw from. As previous research in contagion, suggestion, and confirmation bias show (Bruder, Dosmukhambetova, Nerb, & Manstead 2012, Freedman, Birsky, & Cavoukian 1980, Lorber, Mazzoni, & Kirsch 2007), very slight degrees of stimulus are necessary to create potential suggestion or contagion (e.g., Lorber, Mazzoni, & Kirsch 2007). As Batcheldor (1984) himself states, "Some may find it difficult to adopt the necessary relaxed informal approach in what purports to be an experiment" (p. 120). Given the relaxed environment recommended by Batcheldor, multiple contagion sources, and the variety of events reported, it would be reasonable to expect both single accounts fostered by suggestion and group contagion. The séance environment may represent a "perfect storm" from which to create both.

Our examination of the relationship between an individual's reporting of different types of experiences, their scores in transliminality, tendency toward exhibiting psychotic symptoms, and paranormal belief were not significantly related to either type of event reporting. Essentially, transliminality, paranormal belief, and the CAPS measure shared little variance with single and/or multiple event reports. However, sample size for this analysis prevents us from making any definitive claim.

Failure to Produce Macro PK

If we accept what Batcheldor (1984), Owen & Sparrow (1976), and psi research suggests (e.g., Lawrence 1993, Schmeidler & Murphy 1946), belief does play a large role in producing anomalous phenomena. Our failure to produce initial PK-like events to facilitate belief, by either faked or genuine means, may have been one of the reasons why PK did not occur in the current study. However, Batcheldor (1984) stated that his view "is nevertheless compatible with evidence that PK can occur without any immediate feedback" (p. 116). Thus, while we chose to not engage in trickery to facilitate PK, we do not believe that it is the sole reason PK did not occur. What is obvious is that participants within this setting will report a substantial amount of perceptions along with feelings that relate directly to the presence of a "spirit," regardless of actual anomalous phenomena.

It is also the case that our choice to use an occult-themed ritual for the séance environment may have led to a deficit in PK. Mediums of the past often employed some form of ritual, and darkened conditions could produce a spooky atmosphere. Yet, Batcheldor (1984) stated that a lighthearted atmosphere was conducive to producing PK. In our intent to produce environmental cues to facilitate both contagion and PK, we may have inadvertently reduced our chances of producing such phenomena. Spooky does seem to be a relevant adjective for participants' experiences, as our description of participants' reports shows a host of uncomfortable or unpleasant experiences during the series.

EMF, GMF, and Somatic Perception of Anomalous Phenomena

As a partial replication of Wilson, Williams, Harte, and Roll (2010), we decided to examine the overall variability of EMF and GMF in context of the séance environment. We used analysis methods similar to Laythe and Owen (2013) to determine if EMF or GMF were specifically associated with subjective reports of participants in the séance environment. We believe the findings produced by the current study lead to several theoretical questions. First, our findings did show significant variability of EMF and GMF across séance sessions. In terms of these fields, it appears in some séance sessions that abnormally high amounts of EMF/GMF were present, in contrast to our experience of collecting EMF/GMF readings in this manner for the last several years. This is in contrast to the normal distribution that EMF generally adheres to in field environments, when not interfered with by additional EMF/GMF fields (see Appendix B: Table 6, Figures 1 & 2). The laboratory spaces (and meters) were placed in a fixed position, and ambient sources of EMF from the building typically would have presented themselves as either periodic or constant interference during séance sessions. Thus, we have no easy explanation for why the amount of spikes in some sessions rose above 18%. As we have argued previously (i.e. Laythe and Owen 2013, Laythe 2016), EMF/GMF variation must be a function of either the placement of the meters, a change in reflective or absorptive materials, or the generation or change in the field(s) of EMF/GMF itself. The first two are partially controlled for in our current study (albeit without magnetic shielding), leaving the latter as a more viable explanation. However, because EMF shielding was not employed, we can make no definitive claim that the change in EMF/GMF at the time of participant reports are "emanations" from either the participants or alleged paranormal entities. We only claim that the relationship in time between somatic accounts and small perturbations in EMF/GMF is present and similar to previous work with different paranormal phenomena under study (Laythe & Owen 2013).

Batcheldor (1984) claimed, with his greater experience in these matters, that "physical side effects which sometimes accompany PK, such as electrical or magnetic effects, may not necessarily be essential features of the PK process (and thus clues to its nature) but may themselves be created by PK through overt or covert expectation" (Batcheldor 1984:107). Thus, it seems that in conjunction with Wilson, Williams, Harte, and Roll (2010), these EMF/GMF readings may have been a side effect of our séance process.

When individual reports of phenomena were examined for spikes of EMF/GMF, results showed that the majority of events contained significantly less EMF/GMF spikes than expected by chance. The exception to this finding was single reports from Series 1, where significantly greater amounts of EMF/GMF spikes were associated with single reported events. One way to look at this finding is that EMF/GMF magnitude was somehow dampened during these report periods. This explanation seems particularly likely with GMF readings. Spikes were abundant and substantially greater than what GMF typically generates as a normal distribution (i.e. 1% to 5%, Appendix B).

To our knowledge, this is the first research demonstrating any type of relationship between specific EMF–GMF spikes and subjective experience. There is no reason currently known to expect a physical environmental variable such as GMF (or EMF) to change as a function of a participant's perception or experience. It is also the case that the sustained fields necessary to create a "sensed presence" (e.g., St.-Pierre & Persinger 2006) do not appear likely given the abundance of individual spikes (but highly varied GMF) from session to session. We can exclude a mundane explanation, which would involve a person outside the laboratory repeatedly creating a relatively powerful magnetic field on the days and times of our study. Thus, we indulge in two potential explanations.

From a traditional parapsychology perspective, a simple explanation is that some of our members had some psychic ability. Thus, similar to RSPK cases (i.e. Roll & Joines), a byproduct of these somatic perceptions or psychic influence is the (albeit weak) production or dampening of EMF/GMF. As we mentioned previously, both Batcheldor's (1984) and Wilson, Williams, Harte, and Roll's (2010) findings might bolster that interpretation.

On the other hand, previous work has associated three standard deviation EMF and GMF spikes with anomalous haunting phenomena that was external to the participant, and vetted against multiple camera and audio sources under controlled conditions (Laythe & Owen 2013). In other words, vetted paranormal phenomena appear to be associated with EMF/GMF spikes as well. However, our previous findings with external phenomena showed significantly greater amounts of EMF/GMF, and not significantly less. Regardless, some of what would be explained as purely internal psychological experiences may somehow be entwined with the "survival hypothesis." Ergo, paranormal sources are possibly giving off small perturbations of EMF/GMF as some type of physical condition of their existence. Although this theory is highly speculative, the design of the study was the attempt to contact the dead. Given our previous findings, and the apparent intelligent behavior of some of the evidence collected by Laythe and Owen (2013), we posit that the "survival hypothesis" is also a potential explanation for the extreme variability in EMF/GMF and time associations with EMF/GMF spikes. As three-fourths of our tests for reports were significantly different from chance association with EMF/GMF spikes, replication of these findings may serve as evidence that some spiritual processes may be physically measurable in the form of small time-synced variation in electromagnetic fields.

However, both of the above explanations for the EMF/GMF and subjective experience relationship are speculative, and independent replication is very much warranted. What is important is that these findings represent a growing body of research that demonstrates a relationship between a known physical variable (EMF) and perceived anomalous experience. Although externally captured PK was not produced in the current research, the association of EMF/GMF with somatic events suggests that other physical variables may influence what we would psychologically interpret as psychosomatic or contagion events. As such, we hope the current work spurs other researchers to replicate and extend this work with further methodological rigor.

Limitations and Future Work

There were several limitations to the current research. First, only 9–10 sessions were run in each series, unlike Batcheldor (1984), Wilson, Williams, Harte, and Roll (2010), and Storm and Mitchell (2003), who ran at least fifteen (or many more sessions) in their individual groups. The limited number of sessions may have contributed to the unsuccessful production of PK. Although Batcheldor (1966, 1984) emphasizes belief as the primary variable in PK production, familiarity and repetition were indicated as important variables that facilitated belief. Nine to ten sessions may not have been enough time to create the belief and familiarity for PK effects. The power of analysis between sessions or within participants was limited because of our small sample size. Thus, findings for our correlations should be considered suggestive only. Hopefully, in future research enough séance series and sessions can be conducted to obtain a more powerful analysis between subjective events and personality. We would also like to include more participant measures to capture potential traits, personality, or attitudes that might correlate with reporting subjective events. Although we were interested in transliminality, other researchers would be right to insist on broader measures such as cognitive style, absorption, social cognition, empathy, and suggestibility. However, running sufficient sessions of this design, with enough participants to have enough power to reliably conduct correlations, would be a massive undertaking. We might also suggest pre- and post-survey assessment after each session to determine the psychological impact of each session, and the subjective events personally experienced by the participant.

Our study was not a strict replication of the Batcheldor (1966,

1984) style sitter groups and should be considered more of a replication of Wilson, Williams, Harte, and Roll's (2010) and Owen and Sparrow's (1976) accounts of séance groups. It is also the case that while some of our participants were experienced with the paranormal, others were relatively naive about the paranormal. Batcheldor warned readers in his works that doubts, and both belief in the participant creating PK and the witnessing of PK, can inhibit the production of PK phenomena (Batcheldor 1966, 1984). We hoped that by creating a dark, séance-decorated environment, as well as creating a common ritual to facilitate the mood of a séance, at least ownership resistance would be minimized. Whereas several of our participants were previously experienced with PK or anomalous events, it seems possible that some members maintained secret doubts about the process. The current research did not try to facilitate fake events, although true to Batcheldor's suggestions individual sessions were friendly and rapport was quickly created among group members. We would suggest that the presence of contagion surrounding each session represents some proof that our environment created a unified belief-perspective for participants witnessing anomalous events. On the other hand, multiple verbal reports may have at the same time created witness inhibition, despite a congenial environment.

Although a fictitious spirit was prepared for participants, both groups chose to abandon this fictitious spirit for a general open séance visitation policy of bringing forth anything or anyone who wished to communicate. As reported previously, there was no shortage of reported subjective phenomena from this technique, but also no camera-recorded evidence of external PK phenomena that would meet skeptical muster. Thus, future workers in this area may want to work with participants more beforehand to create a unified "spirit guide" or "contact" that participants can work with throughout the sessions.

We did not employ magicians to examine the sessions. We openly admit this is a potential risk; however, the likelihood of participants (i.e. known, pro-paranormal students, and naive college students) conducting fraud was limited by camera placement under the table. Unfortunately, none of the events that occurred over both series were anomalous enough to possibly mandate the use of a stage magician.

Previous accounts by Batcheldor (1966, 1984) have suggested that the mere presence of cameras and recording devices inhibits the production of anomalous events. This is a double-edged sword, as better recording of the laboratory environment is the only way to verify these phenomena. Although the laboratory was dark, and the cameras were placed unobtrusively, we may not have obtained genuine PK because of the presence of these devices. We have no suggestions to get around this problem, save future research creating a laboratory space with completely hidden devices, and using subterfuge with participants regarding their recording. As we did find what we believe to be several significant effects within the current research, we believe that continued monitoring of these phenomena is warranted psychologically.

Finally, some controversy may remain around our method for analyzing EMF (Laythe 2016, Maher 2016). Previous researchers have questioned our procedure, namely focusing on potential sources that could produce EMF spikes, or the relatively small EMF perturbations that the current study and Laythe and Owen (2013) show. Questions have also arisen over our purposeful choice not to use baseline readings to compare EMF against (e.g., Maher 2015, but also see Laythe 2016, Maher 2016). We hope our explanation here and in Appendix B clears up some of these misunderstandings.

The essence of our mathematical process is not really about EMF specific magnitude or source, but the mathematical conjunction of a behavior plus probabilistically unlikely amounts of EMF at a discrete point in time. Aside from weaknesses in baseline tests with field EMF due to receptive meters, we humbly posit that the complexity of the field, or the source of a perturbation is accounted for in this binomial/distributional method. Separating individual sources of EMF/GMF ***may*** account for where small or large EMF perturbations come from. They fail, however, to explain why EMF suppression or expansion is ***significantly*** occurring in conjunction with a behavior associated within a discrete period of time. While the current research was conducted in a complex series of fields, Laythe and Owen (2013) was not, and they had similar findings.

As one thoughtful reviewer suggested, perturbations in EMF/GMF increase as the degree of sensitivity for the measuring device is increased. In other words, more EMF/GMF spikes are likely to occur as the metric of measurement becomes smaller. We do not disagree, and again emphasize that the measurement of EMF in particular (but not GMF) was restricted to the 0–1mg range due to the coils used. However, our binomial method can account for any degree of successes or failures in the data to create an accurate probability to test against (see Appendix B). A more practical point from the existing data is that the uncoiled GMF meters, which were not restricted to only small perturbations, duplicated the restricted meters' findings (and had greater, not less, variability in terms of spikes). The restricted meters were less successful in terms of statistical significance, not more.

In our view, EMF magnitude changes, whether small or large, should not change as a function of subjective reports in a séance at a specific time.

EMF should not, in theory, change as a function of anomalous captured phenomena in an electricity-free zone at specified times (Laythe & Owen 2013). There should be no time-dependent relationship present with this known and extensively studied energy. Yet in the present research, previous research, as well as research we are currently in the process of writing up, there are time-dependent significant relationships of phenomena and EMF. Our best theory is that "something" is minutely perturbing the EM field to either suppress or expand EMF variability beyond chance. We agree with others that this source, as of yet, is unknown and the meaning of these associations is not yet clear. But we would be remiss to not remind readers that previous research (i.e. Joines, Baumann, & Kruth 2012) has made a case that small amounts of energy in the EM-field can potentially contain a large degree of information.

Finally, a growing trend of research (see Palmer & Millar 2015 for a review) focuses on potential PSI-related experimenter effects. Whereas the principal investigators were aware of reports of somatic events, neither the researchers nor participants were aware of specific EMF readings during the experimental data-collection process. As the current protocols were not fully blind, there remains the possibility that the investigators unconsciously affected EMF or GMF readings post hoc. Thus, in future studies, we hope to create randomly generated time-stamps to add to participant reports, and let blind coders associate EM readings with both real and bogus reports. However, even with these protocols in place, the true metric of these findings, given the recent experimenter effect findings, is independent replication of these types of studies.

Conclusion

Despite the above weaknesses, the current study represents the first series of séance data to demonstrate contagion and suggestion effects within the séance environment. More importantly, this is the first research to our knowledge that shows a significant relationship between time-dependent electromagnetic fields and reports of personally subjective perceptions of anomalous phenomena. While by no means definitive, the current research adds to a body of growing literature where electromagnetic fields are associated with what is perceived as paranormal activity.

Notes

[1] We would also note that purported divine names (in this instance, Judaic names of God, or archangels), or as referenced in grimoires, "barbarous names of power," were removed from these rituals, in order to not offend

or disturb individual religious sensibilities (see Regardie [2010] for a contextual description).

[2] We allowed variability in these exercises, in that some sessions allowed participants to try lifting the table with one or two fingers, whereas in other sessions requests for rocking the table were the focus.

[3] We would add that previous reviewers have suggested random sampling of the EMF data to create a sample probability to test against. We engaged in this process in the research above as one preliminary method for creating a viable accurate random probability. After running several series of approximately 600 trials, it became apparent that the random sample always closely varied around the random binomial probability of the entire dataset, thus validating the use of the overall sample probability as an accurate random probability.

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APPENDIX A: Meditation and Séance Guide

Opening Meditative Exercise

1. Close your eyes.
2. Slowly start to take deep breaths. Find a rhythm that is comfortable for you.
3. Imagine as you exhale that your muscles are relaxing. With each exhale, imagine yourself becoming more and more relaxed.

For the next exercises, students need to visualize themselves or the room in their mind. This may take some practice, but allow yourself to use your imagination. See the images described below as clearly as possible in your mind.

Establishing the Pillar

1. For our exercise we will visualize each sphere as white but you can practice at home using the colors.
2. Kether (White Sphere above Head). After a few minutes of relaxation, imagine a sphere of brilliant white light just above your head. Then imagine a shaft of light descending from the white sphere above your head to a black sphere at the nape of the neck.
3. Tiphareth (Golden Sun Colored Sphere over the heart). Bring a shaft of light down from your neck center to the center around your heart. Form a sphere of brilliant sunshine there.
4. Yesod (Light Purple Sphere over genitals). See the shaft of light descending from the heart into the Yesod center in the genital region. Imagine a sphere of light purple light formed there.
5. Malkuth (Green Sphere over the feet). Visualize the shaft of light descending from the genital region into a sphere at the center of the feet and ankles.
6. Visualize all four spheres in your mind and the Middle Pillar complete. See a body of white light surround you.

Opening The Door

1. Join hands with other participants.
2. Everyone says together, "Create the circle." In your mind, see a circle of bright

electric blue light surround the room. Focus on this for 30 seconds. When you are done, open your eyes and wait for the other members to open their eyes. When all eyes are open, say the words together, "The circle is formed."

3. Everyone says together "Create the Door." In your mind, see a large wooden door, its frame is old, but the wood is sturdy. In the middle of the door is a symbol of ***the crescent moon and it is silver***. See that the door has a bar across it and is closed. Locked. Focus on this door in your mind. When you have clearly visualized the door, open your eyes. Wait for other members to open their eyes as well. When everyone has opened their eyes, say together, "The door is formed."

4. Everyone says together, "Open the door so that others may visit." Close your eyes. See the locked closed door in your mind, the symbol of the moon on the door. In your imagination, see the door becoming unbarred, and unlocked. Then see the wooden door opening slowly. In the doorway is fog filled with light purple light. In your mind, understand that this is the door that your spirit will come through to visit. When you have done this and see the door open and filled with fog and purple light, open your eyes. Wait until all members have opened their eyes. Say together, "The door is open."

5. Everyone says together, "Let our visitation begin."

Closing Meditation

1. Everyone holds hands, and says "We now end our visitation."

2. Everyone says together, "We close the door together, let there be peace between us all." Everyone closes their eyes, and sees the open door. With your imagination, you slowly close the door, lock it, and place a bar across it. When you are done seeing this, open your eyes. When everyone's eyes are open, say "We have closed the door, the visit is over."

3. Everyone says together, "We open the circle." Everyone closes their eyes, and sees the circle of electric blue light expand and grow so that the entire room is filled with electric blue light. Then see this light expand and dissipate into the distance beyond the room. When you have done so, open your eyes. When everyone has opened their eyes, say together "The circle has dissipated."

4. Separate hands. Close your eyes and see the spheres within your body. Focus on your breathing. With each exhale, feel yourself being more and more relaxed. Do this for two or three minutes and open your eyes. When everyone has opened their eyes, say "Our session is concluded."

APPENDIX B: A Mathematical and Conceptual Verification of Binomial/Distributional Modeling for Physical Variables

In our other work (this article before the appendices), we have used a novel mathematical approach to examining the relationship between electromagnetic fields (EMF), geomagnetic fields (GMF), and anomalous phenomena. The method that we have used in this research and in previous work (Laythe & Owen 2013) has been the result of several years of experience in our attempt to collect EMF/GMF readings in the context of paranormal phenomena in the field. One concern we had early on was our inability to completely control incoming sources of EMF/GMF. Magnetic shielding is simply not practical for collecting data in the field over many hundreds of square feet. After consulting physicists and verifying our modeling with mathematicians, we developed a simple binomial model that has its successes and failures based on the distribution of EMF/GMF scores, which in turn becomes time-dependent. By use of this model, we are able to mathematically account for contaminating sources of EMF/GMF, and apply statistical tests that are securely grounded in the actual collected data.

However, several reviewers (rightfully so) as well as other social scientists have had concerns over the viability of this model for making inferential statistical claims. The majority of these claims involve the nature of collecting field data as opposed to single-source, laboratory-controlled data of EMF/GMF magnitude. Concerns over the source of the EMF/GMF also are often a point of contention. We provide this Appendix B with some data to prove the applicability, and in some cases superiority, of this modeling technique.

There are three datasets of EMF from which we verify the claims in the current work and that serve as proof of the methods employed. EMF data were collected in two locations: a residential location our organization was asked to investigate (although no evidence of anomalous activity was found), and a (to our knowledge) regular residential location from which two sets of data were collected. Data was collected with the use of 3-axis magnetometers constructed by the author using microprocessors and data-logging components of Arduino design. These meters collect EMF data at the 0 to 8 Hz range (GMF) at a rate of two samples per second, on three axes, and were collected as raw volt input on a range of −10,000 to 10,000. The resulting data provide 9 datasets (3 separate sets of data with 3 axes each: x, y, z), to analyze for the purpose of the current work. We would state that the data presented here are typical of our experience in the collection of many EMF/GMF datasets over the last several years.

The Behavior of EMF in the Field

For several reasons, the practical meaning of EMF magnitude readings and statistical tests of such are very limited and highly prone to erroneous statistical significance in the field. Most of these issues are a function of several misunderstandings about EMF field data and the equipment used to collect it. First, EMF meters are receptive meters. They register a particular EMF reading at the exact location the meter is placed as a function of the EMF received at that location. Second, EM fields decay at an exponential rate. Essentially, this translates to a 1,000 mg field registering 100 at a1-foot distance, 10 at 2 feet, and 1 at 3 feet (Thide 2004, Tipler 1987). This is an important aspect of EM fields that is often misunderstood. A power line carrying 10^{15} kilowatts of power, when converted to gauss, will typically register less than one gauss within 30 feet or so of distance, and one milligauss with three additional feet. Third, most meters, even when very sensitive, have a detection diameter of about 8–10 feet (i.e. 5 ft. in any direction from the meter). Fourth, interference in EMF readings from EM waves (projected as transmissions of energy, as opposed to a field) have their magnetic component greatly reduced.

The electrical force compared with the magnetic force of a carrier wave is a ratio upward of more than 200 to 1 (Thide 2004). As such, transmission waves (aside from the fact that commercial EM-spectrum transmissions are at a much higher frequency in the EM spectrum) create little to no magnetic interference for the average receptive EMF meter (Thide 2004, Tipler 1987, World Health Organization 2016). Most carrier wave interference is so magnetically weak it simply forms the EM background noise within a measured area.

The Distribution of EMF over Time as Approximately Normal and Use Toward Creating Binomial Probabilities

In contrast to controlled environments of engineering or physics, a precise value of EMF is relatively meaningless without the context of the distribution of EMF/GMF collected in field environments. In our current state of affairs, social scientists examining anomalous phenomena are not attempting to solve a single equation or determine a specific vector of EMF inside a laboratory.

To make this case, several facts must be posited. First and foremost, EMF, when collected over time, naturally varies around a central magnitude value. EMF readings are typically averaged by most meters to approximate an accurate reading. Thus, most datasets of EMF will typically form a normal distribution (i.e. Open Stax College 2013). Although Braithewaite (2004, 2006) demonstrated the EMF-normal distribution claim, we wish to conclusively demonstrate that EMF data collected over time forms an approximate normal distribution. Thus, we provide *p–p* plots of EMF data collected for the purposes of this paper (see Figures 1 & 2). Means, standard deviations, skew, and kurtosis data are provided in Table 6.

Per Table 6 and Figure 1, it can be seen that the vast majority of our EMF distributions show an approximately normal curve. However, per Figure 2, skew (e.g., movement away from central tendency) was significant (>1.96) in 2 out of 9 datasets (one exceptionally so). Kurtosis (e.g., greater area than expected in the tails per a normal distribution) was significant (>1.96) in 3 out of 9 datasets (two were extreme readings, z_1 = 13,503 and x_3 = 6,775). Examination of Figure 2 shows that the z_1 dataset has outlier readings in the right tail, and x_3 has extremely narrow variability. While generally normal, it should also be apparent that the variance of a particular series of collected EMF readings can be radically different from other distributions of EMF. These distributional differences can occur both from the same meter or a different meter in a nearby location (i.e. another room in the same house).

This leads us to our first primary point. Our method for modeling EMF in a time-dependent binomial fashion rests first on the distribution created by EMF/GMF collected over a series of time. From the data provided here, one can see that additional interference from theoretical additional B-fields will adjust variability in the distribution, typically expanding it in one tail or both. As our binomial modeling uses standard deviations to determine a success or failure (previously in Laythe & Owen 2013, ±3 standard deviations, and ±2 *SD* in the current work), the probability of success in a binomial model will increase or decrease as a direct function of variability in an EMF/GMF distribution. As such, large amounts of variation create more successes and higher random dataset probabilities; lower variability creates fewer successes and smaller random dataset probabilities to test against.

Second, the probabilities generated from binomial coding in this manner do not rely on hypothetical models or distributions. Binomial coding of success and failure

TABLE 6
Descriptive Statistics for Three Sets of EMF Data

	Axis	*n*	Average	Low	High	*SD*	2 *SD* High	2 *SD* Low	Kurfosis	Skew
Meter 1										
	x	24909	223.31	217	230	1.60	226.50	220.12	−0.03	−0.05
	y	24909	−277.17	−283	−271	1.57	−274.04	−280.30	−0.04	−0.02
	z	24909	−478.79	−487	−467	1.82	−475.16	−482.42	13503.16	99.71
Meter 2										
	x	21136	19.73	13	26	1.56	22.85	16.60	0.01	−0.03
	y	21136	−120.00	−127	−111	1.65	−116.69	−123.30	0.27	0.17
	z	21136	−554.81	−562	−542	1.74	−551.32	−558.29	3.02	0.85
Meter 3										
	x	26593	5.24	−253	12.00	2.23	9.69	0.78	6775.38	−58.48
	y	26593	−205.47	−212	−199.00	1.63	−202.21	−208.72	0.00	−0.03
	z	26593	−546.88	−557	−535.00	1.71	−543.45	−550.30	1.04	0.16

from any distribution (normal or otherwise) creates an accurate testing probability based purely on the data itself.[3]

Skew or kurtosis becomes irrelevant as greater successes above the *SD* demarcation add to the overall random probability of a defined spike occurring.

Finally, even if measurement errors occur from the type of meter used, the number of axes examined, or as suggested by some an examination of small perturbations (which we do account for), so long as the data are collected in the same manner (i.e. with the same meter types in the same way), the dataset will reflect a consistently measured body of EMF data. So long as the laws of probability hold, one may see an increase or a decrease in successes to test against per the defined demarcation. Logically, a data-driven probability is a data-driven probability. So long as testing relies on the data collected, measurement type or specificity will not affect the test against randomness itself. This type of statistical assumption is no different from any assumptions made from a dataset of personality traits, rainfall, or really any other set of readings. At a fundamental level, the measurement of variables dictates the outcome of the results.

Binomial Time-Dependent Coding

The goal of the remainder of this Appendix B is to demonstrate how researchers can test time-dependent readings of EMF (or any other time-dependent environmental variables, e.g., temperature, gravity, infrared light, and so on) with participant

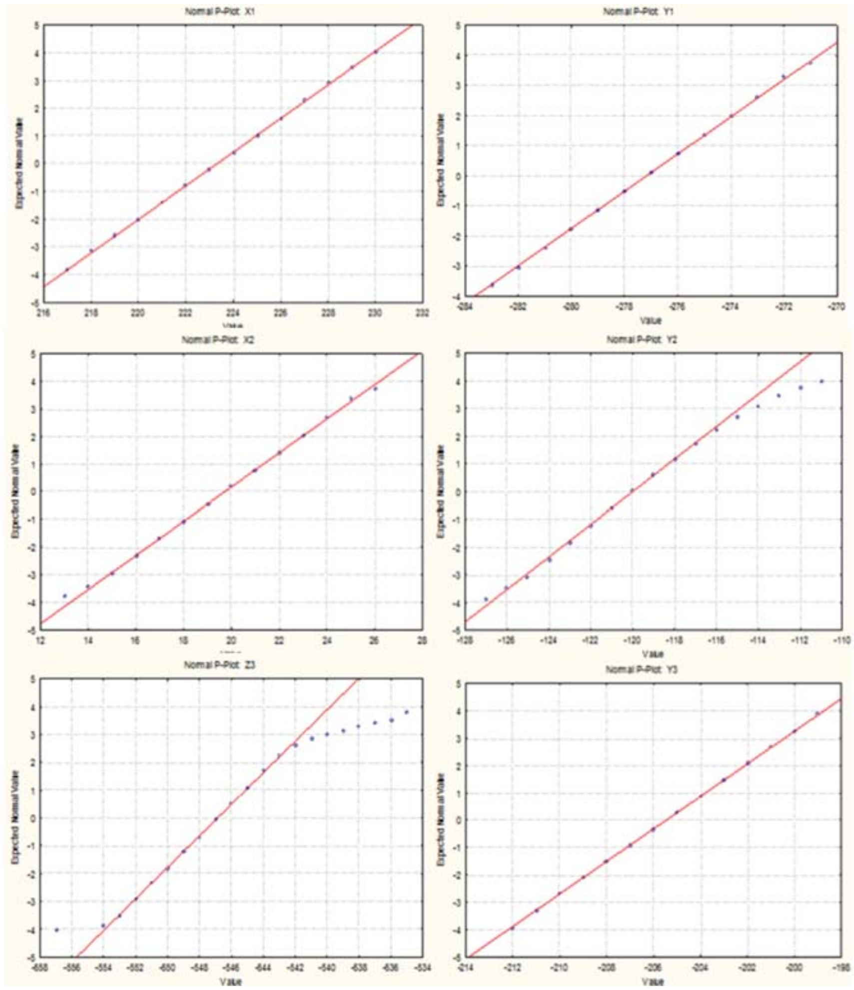

Figure 1. Six probability plots of a normal distribution of EM field data.

behaviors. This method can be applied to any observed event that has been time-stamped with a collected EMF distribution. The procedure described takes the initial probability from the raw distribution of EMF, and subsequently remodels that distribution into successes and failures. Thus, an initial binomial trial (for clarity, often referred to as Bernoulli trials [Rice 1995]) based on the EMF distribution is created. We then subsequently assign–divide a set amount of EMF readings within a set period of time as a series of time-dependent binomial trials. We provide a generic example below using the existing data from the *x*-axis of Meter 1 to take the reader systematically through the process.

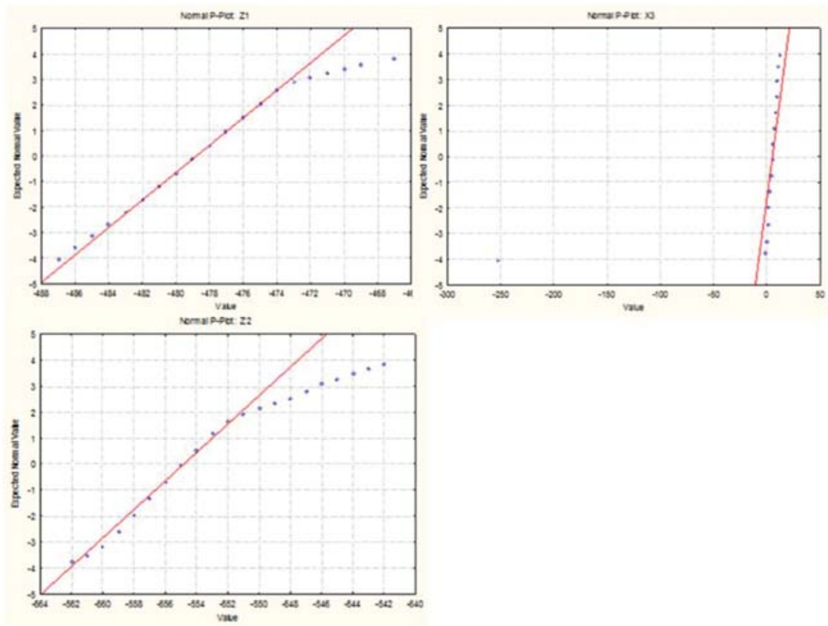

Figure 2. Three probability plots showing high skew and kurtosis for EMF data.

EXAMPLE: A researcher desires to examine whether sufficiently high EMF occur at the specific times a participant reports an experience. An EMF meter is placed in a room with data-logging capacity, sampling EMF at 2 samples per second. Data are then collected for 3.45 hours (n = 24,909). An EMF spike is defined as any EMF score above or below two standard deviations. Approximately 1.05% of scores meet this criterion (n = 262). 80 subjective experiences are reported by the participant, and their time logged in correspondence with the scores of EMF received at the time. The researcher wishes to know (a) what is the random expected amount of associations that would occur with 80 experiences, and (b) how does the researcher test for a non-random association (i.e. greater than chance occurrence with EMF experiences).

The very first step in testing time-dependent trials is to obtain a binomial probability from the initial distribution of EMF scores. This is done by assigning a critical value regarding what score in the distribution will count as an abnormally high reading in the context of the distribution. We have previously used both ±2 *SD* in the current work, and ±3 *SD* (Laythe & Owen 2013) as critical value criteria. Once this cutoff criterion has been established, the data from the EMF distribution are converted into a nominal variable by coding scores above and below the cutoff as 1 (e.g., spike), and scores within the demarcations as 0 (e.g., not spike). It is important to include at this point that the shape of the distribution of data is now irrelevant. By nominally coding the data, an exact percentage of random successes or failures is obtained.

Conversion to Binomial Distribution

The binomial probability distribution provides a means of testing a series of successes or failures where a probability is desired for *k* successes out of *n* number of trials (Myers & Well 1995). The mass probability function of the binomial distribution is provided below:

$$f(k;n,p) = \Pr(X = k) = \binom{n}{k} p^k (1-p)^{n-k} \tag{1.1}$$

k = the probability of obtaining a set amount of successes out of *n* trials (e.g., 3/10 successes)
n = the number of trials
p = the established probability of obtaining a single success
q (1 – *p*) = the probability of obtaining a single failure

Although not traditionally thought of in this way, by coding our original EMF distribution to isolate cutoff scores (per the example 2 *SD* scores), the approximately normal EMF distribution (using x_1 as an example) can be accurately remodeled into 24,909 time-dependent binomial trials, where $k = 1$, $n = 1$, $p = .01$, and $q = .99$. As there is only one sample selected at a time, the odds of obtaining a spike from only one selection is exactly .0105.

Can EMF Safely Be Modeled Binomially and Are Probabilities Reliable?

Previous concerns have rightfully been raised that EMF/GMF scores are not truly independent of each other. We completely agree. Because EMF/GMF is a wave function, current readings may be related to upcoming readings. Similarly, contamination from other EMF sources can occur, and other environmental variables will affect readings as well. Luckily, binomial testing does not require independent data. An examination of any mathematics textbook will provide examples of complex dependent behaviors (i.e. seeing a car pass by a window [Rice 1995]) being tested with binomial probabilities. For binomial tests, independence is placed in the testing sample, and not as an assumption of the independence of the data being observed to derive an initial population or sample probability (see Myers & Well 1995 and Solomon 1987 for similar examples).

In theory, any behavior or action can have a probability placed on it, given sufficient sampling of the observed behavior. The theoretical assumption is that the probability is reliable only if a researcher randomly samples the trial under the same conditions. In the case of time-dependent binomial trials, so long as the time periods are not pre-selected by researchers, or predetermined in another manner, the sample of trials that a researcher wishes to test is considered a valid sample to test against the population random probability.

This is a crucially important point for two reasons. First, the binomial tests we have employed can only tell us if a probabilistically unlikely number of successes (i.e. defined EMF spikes) or lack of successes have occurred for a given series of observed behaviors. It serves as a general test of association, where statistical significance indicates more or less EMF than there ought to be by reasonable chance. Related to this point, although our method mathematically accounts for all incoming EMF sources, our tests can say nothing of the origin of the EMF/GMF collected. We have to rely on common sense, the exponential decay rate, and the environment that data are collected in to make assumptions or claims in this regard. Second, our binomial method alleviates any violation of assumptions of independence in EMF. Yet conventional statistics used in previous work with EMF are also held to the independence assumption of data.

As such, this condition has been violated multiple times across multiple authors by the use of conventional *t*-tests or means tests.

Proof of a Reliable Random Probability from EMF/GMF Data

Obtaining a probability for a binomial trial in this manner assumes that the overall dataset of EMF, appropriately coded, serves as an approximate population random probability. This overall probability for obtaining a success–failure is then suitable to use as a population probability for any given series of time-dependent trials selected by the researcher. In case the use of the overall dataset as a population probability for trials is questioned, we provide 300 random trials (with use of the Excel RAND function) of 3,000 and 6,000 data points taken from each set of EMF data, where $n = 1$ and $k = 1$. Results can be seen in Table 7. All sets of randomly selected data taken from each EMF dataset closely approximates–varies around the original datasets of EMF, and the probability obtained from said datasets. Specifically, the averaged difference from the random sampled probabilities and the original EMF datasets is .2% for the 3,000 samples, and .3% for the 6,000 samples. This demonstration serves as evidence that the initial probabilities for binomial trials should be taken from the datasets themselves. Given enough samples, random sampling to obtain probabilities will eventually mimic the probability of the original EMF dataset.

Expanding the Binomial Model to Create Binomial Trials Dependent on Larger Periods of Time

In order to model a series of time-dependent, binomial trials, we have to take into account time and readings collected by second. This is done by taking the amount of samples collected per second, and then determining the duration of each EMF trial so that a distinct period of time is associated with the occurrence of events being collected.

For the purposes of the example presented previously, let us set a 5-second window in which an observed event does or does not occur. As 10 readings are taken over a period of 5 seconds, per our example, the binomial coding of EMF data is now nested into binomial trials. Using x_1 as an example, $n = 10$ (10 success–failure opportunities), $k = 1$ (the amount of successes required by the researcher given n trials), p converts to .104 (representing the inflated probability accounting for 10

TABLE 7
Random Samples from EMF Data Demonstrating Probabilities from Original EMF Sample

		Original Data Binomial Conversion $n = 1$, $k = 1$ (2 *SD* score)			Random Samples Binomial Conversion $n = 1$, $k = 1$ (2 *SD* score)			(2 *SD* score)		
		n	Success	Binomial *p*	Total *n*	Success	Binomial *p*	Total *n*	Success	Binomial *p*
Meter 1										
	x	24909	262	0.0105	3000	30	0.010	6000	57	0.0095
	y	24909	591	0.0237	3000	63	0.021	6000	110	0.0183
	z	24909	716	0.0287	3000	74	0.025	6000	139	0.0232
Meter 2										
	x	21136	542	0.0256	3000	53	0.018	6000	128	0.0213
	y	21136	667	0.0316	3000	83	0.028	6000	142	0.0237
	z	21136	575	0.0272	3000	72	0.024	6000	136	0.0227
Meter 3										
	x	26593	12	0.0005	3000	2	0.001	6000	1	0.0002
	y	26593	329	0.0124	3000	32	0.011	6000	63	0.0105
	z	26593	582	0.0219	3000	59	0.020	6000	105	0.0175

n = samples at 500 ms; Success = number of obtained 2 *SD* successes; Binomial *p* = binomial probability derived by successes divided by sample.

opportunities for a success), and *q* becomes .896. As we have now nested every 10 readings into one binomial trial, the total EMF dataset is divided by trial *n* to provide the total number of 5-second trials (i.e. 2,490.9 5-second trials where each trial has a random $k = 1$ success probability of .104).

From the above, it should be apparent once the probability of our time-dependent binomial trials are determined, that the probability of obtaining a success from one binomial trial determines the probability of obtaining success for *n* number of binomial trials randomly selected from the dataset. We know for this particular trial the odds of success (in the case of x_1 $n = 10$, $p = .104$). This probability can now be used for ***any n number of 5-second trials*** where we wish to test the random occurrence of EMF in association with time-synced events.

EXAMPLE: As above, our researcher has found 80 events that have occurred concurrently within five seconds of his or her EMF dataset. He or she wishes to know the probability of an EMF "spike" in any 5-second interval corresponding to the events recorded. An EMF spike is defined as one 2 *SD* reading per 10 readings ($n = 10$, $k =$

1). Using $p = .104$, from our x_1 Meter 1 dataset, the expected random amount of EMF spike periods should be approximately 8 trials out of 80.

Thus, once the initial distribution is divided into periods of time representing *n* independent binomial trials, the probability of success from one trial can be multiplied across *x* trials (representing the amount of time-synced observations you have). Successes within those selected 5-second trials, if random, ***should not significantly differ*** from the number of trials times the binomial probability of success of one 5-second trial.

Deriving an Expected Probability from Multiple Sets of EMF/GMF Data

In some cases, we have examined events associated with EMF that were collected across several meters (Laythe & Owen 2013). We have also had to account for successes that occurred from more than one EMF meter in a small enclosed area. Regarding the former, it is often the case in field settings that observed phenomena or participant behaviors may occur in different metered locations, and thus be dependent on different meters' distributions of EMF data.

With regard to the latter, the issue of allowing more than one meter in the same space creates a mathematically complex issue. As was the case in the current work, two separate distributions of meters were used against one set of observations. As such, the joint probability of success within a binomial trial of either meter has to be determined (*p* Meter 1 + *p* Meter 2).

Unfortunately, meters in close proximity tend to significantly correlate with one another, creating potential dependence. Yet, correlation coefficients are an estimate of shared variance and do not necessarily lend themselves to calculating the exact degree of dependence between the meters. It is likewise the case that an approximate model guess of the joint probability does not create a sense of certainty with the resulting binomial tests.

Thus, the solution is to recode success and failures of two datasets into one dataset of binomial trials, where a success of Meter 1 or Meter 2 is counted within one dataset (provided that *n* for both samples is synced). By combining the 1s for any given binomial trial as a single success, while maintaining failures (all cases where neither meter was a success), researchers can divide the newly operationalized counts of success by the sample *n* to determine the actual random probability of a success for either meter in a given time period (i.e., $n = 1$, $k = 1$, p = success of Meter 1 or Meter 2 q = failure of both meters).

Once an $n = 1$, $k = 1$, probability for two meters has been determined, you can expand the time period by increasing *n* to include a wider range of time for any trials (i.e. $n = 2$ or 3, $k = 1$) to allow a success, if so desired. For clarity, what has been described above functions no differently from our example presented earlier in the paper, where successes and failures are remodeled into 5-second or 10-second trials. The only difference is that the initial $n = 1$, $k = 1$ probability is an amalgam of the successes of two meters, and not just one. We would also note that this process could be used theoretically to obtain the true random probability of more than two meters. While this method is tedious until the combined binomial $n = 1$, $k = 1$ probability is obtained, it is exact, and generates the genuine probability of a success from either meter given *n* trials.

Testing against Binomial Expected Probabilities to Determine Non-Random Association

The use of a binomial test is by far the most precise method of analyzing this type of time-dependent data. The mean of the binomial distribution is expressed as the following:

$$np. \tag{1.2}$$

In addition, variance of the binomial distribution is defined as

$$np(1 - p). \tag{1.3}$$

Dividing the original EMF dataset into a series of binomial trials creates a higher-level dataset where the odds of success are derived from a binomial distribution (i.e. from x_1, $n = 2490.9$ trials, with a p of success = .104). Per our example, it can be seen that, for any given n trials, the probability of .104 remains constant in terms of obtaining successes–hits. Only the number of trials changes, as each sample is an independent binomial trial as a function of selection. Thus, by using the probability of this trial (.104) multiplied by the number of observations you are comparing (from above 80), we obtain the mean (8.35) expected chance associations in time. Multiplying the mean times q (.896) provides the variance. The square root of the variance can be used to create the standard deviation (2.72), and thus a 95% confidence interval to test against (i.e. 2.88 to 13.76, or 2 to 14). As such, more than 14 occurrences of EMF with 80 observations has less than 5% chance occurring for n number of randomly selected trials. It can be easier by simply calculating the probability directly with a binomial calculation.

To demonstrate that randomly chosen moments in time adhere to the model described above, we remodeled the original random sample data into 5-second and 10-second periods, representing 300 random samples of $n = 10$ and $n = 20$ trials. We then tested the number of successes obtained against the expected amount of successes, which was based on the probabilities obtained from the EMF binomial data. Results can be seen in Table 8.

Using random samples as an approximation of n selected observations of relevant behavior associated with EMF nested as 5- or 10-second trials, it can be seen that across all but one random sample (x_2 produced significantly lower successes in the $n = 10$, $k = 1$ condition, binomial $p < .01$), the obtained random successes fall within the confidence interval generated by the collected EMF binomial data. In fact, the averaged z-scores for the differences between these random trials, compared with the expected EMF successes from the actual data, are very small ($n = 10$, $k = 1$ samples; average z of difference = .29; $n = 20$, $k = 1$ samples; average z of differences = .06). Thus (as the events were truly randomly selected without any type of compared variable) the randomly sampled trial successes closely mimicked the expected random successes determined by the dataset binomial probabilities.

In closing, we hope that this extended explanation clarifies applicability, strengths, and limits of this binomial modeling method. Through the sample data presented here, textbook application of binomial models, and determining successes

TABLE 8
Binomial Random Time-Dependent Samples with 5-Second and 10-Second Intervals
Binomial Random Samples of 300 from Original Data (*n* denotes trials)

		Samples $n = 10, k = 1$ (5 seconds)						Samples $n = 20, k = 10$ (10 seconds)					
		Trial p*	Obtained Successes	Expected Success 300 Trials*	*SD* Expected Successes*	95% CI Success* Min	95% CI Success* Max	Trial p*	Obtained Success	Expected Success 300 Trials*	*SD* Expected Success*	95% CI Successes* Min	95% CI Successes* Max
Meter 1													
	x	0.104	30	31.20	5.29	20.63	41.77	0.198	57	59.4	5.29	48.83	69.97
	y	0.215	63	64.50	7.12	50.27	78.73	0.384	110	115.2	8.42	98.35	132.05
	z	0.255	74	76.47	7.55	61.37	91.57	0.444	139	133.2	8.61	115.99	150.41
Meter 2													
	x	0.228	53**	68.40	7.27	53.87	82.93	0.405	128	121.38	8.50	104.38	138.38
	y	0.275	83	82.38	7.73	66.92	97.84	0.474	142	142.14	8.65	124.84	159.44
	z	0.241	72	72.30	7.41	57.48	87.12	0.424	136	127.7	8.56	110.05	144.29
Meter 3													
	x	0.004	2	1.17	1.08	–0.99	3.33	0.008	1	2.37	1.53	–0.70	5.44
	y	0.117	32	35.19	5.57	24.04	46.34	0.221	63	66.24	7.18	51.87	80.61
	z	0.199	59	59.58	6.91	45.76	73.40	0.358	105	107.34	8.30	90.73	123.95

* Trial and Expected Success derived from binomial probabilities of EMF dataset. ** Exact binomial test $p < .01$. Trial $p = 1, n = 1, k = 1$ base binomial probability multiplied by the number of samples of selected data at a time. Obtained Successes = the amount of random 2 *SD* successes obtained. Expected Success = multipication of Trial p times number of trials. 95% CI Success = the confidence interval derived around the expected amount of random successses.

and failures as the function of the original EMF/GMF distribution(s), we believe this method is applicable (with appropriate understanding of limitations of findings) to many parapsychological subjects. As controversy over parapsychological phenomena continues, any association of anomalous phenomena with known measurable energy cannot help but strengthen the validity of parapsychological research.

Criticism in psychical research has long centered around the inability to measure a mechanism by which ESP or PK occurs (e.g., Hines 2003). We hope others in future research will independently replicate these findings, and perhaps look at other spectra and types of energy for additional associations.