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Perceptual-Personality Characteristics Associated with Naturalistic Haunt Experiences

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Abstract: Motivated by previous suggestions in the literature, we addressed the relation between haunt experiences and Paranormal Belief (New Age Philosophy and Traditional Paranormal Beliefs), Participant Expectation, Transliminality, Hypochondriasis, Synesthesia, and Hyperesthesia in a substantial subset of participants (N =134) who visited Edinburgh's reportedly haunted South Bridge Vaults during a recent field study of this commercially-oriented site. The seven perceptual-personality variables significantly distinguished experients and non-experients. Multiple regression analyses indicated that scores on Participant Expectation and New Age Philosophy weakly but significantly predicted the number of reported experiences, whereas Participant Expectation and Hyperesthesia weakly but significantly predicted the number of different categories of experience. Post hoc analyses suggested that Transliminality facilitated both of these processes. Our findings are consistent with the notion that some haunts comprise two distinct classes of phenomena that may have different sources—Psychological Experiences that are grounded partly in psychophysiological mechanisms, and Physical Changes which are perceived in part due to cognitive and motivational biases on the part of the experient. We speculate that the two classes of haunt experience yield a unidimensional Rasch hierarchy due to a cognitive labeling process regulated by belief in the paranormal. It can be argued that the generally weak effects suggest that perceptual-personality variables play only a minor mediating role in the detection and perception of haunt stimuli or that they reflect the methodological shortcomings of the present study. Accordingly, the limitations and weaknesses of this study are discussed and an improved research design is outlined.

Many people worldwide report inexplicable experiences of apparitions, sounds, smells, sensed presences, bodily sensations, and physical manifestations in the environment (Haraldsson, 1985; Ross & Joshi, 1992). Parapsychologists refer to these phenomena as a *haunt* when they are site-specific, although cultural names and theories for these outbreaks vary widely given that experients often interpret these experiences according to their beliefs and prevailing worldview (see e.g., Puhle, 2001). Indeed, most authorities agree that haunts involve a complex mosaic of sociocultural, physical, and psychological variables (for an overview, see Houran & Lange, 2001b). What is not known, however, is the extent to which these variables explain haunt experiences. Detailed studies are needed in order to make progress in

this respect. Cases that are easily accessible and seem promising for study are therefore given priority by field researchers, regardless if the site has been highly publicized by folklore or media attention.

Three basic methodologies define much of the empirical literature on haunts: (1) large-scale studies of the psychological background of experients and the content of their experiences, (2) participant-observation studies that test whether experimentally-blind participants and objective instrumentation corroborate witness reports, and (3) attempts to induce haunt experiences in experimental subjects under laboratory conditions or in naturalistic settings. Recently, Wiseman, Watt, Stevens, Greening, and O'Keefe (in press) integrated these three methodological approaches within a single design to systematically investigate physical and psychological variables involved in haunt experiences. Consistent with Lange and Houran's (2001) psychophysiological model derived from attribution theory, Wiseman et al. (in press) concluded that the haunts they studied did not represent evidence for paranormal activity, but were instead the result of people responding to and interpreting conventional stimuli in their surroundings. These findings advance the notion that these experiences are not purely imagination. Rather, haunts may reflect an interaction between external factors in the environment and the experient's psychological structure and/or perceptual biases and needs.

Psychical research has traditionally focused on defining the external factors (paranormal vs. conventional stimuli) to which experients are responding, but it is also important to isolate what psychological characteristics facilitate the perception of these stimuli. In this way, we may gain insight into what is stimulating haunt experiences—at least in some cases. Accordingly, this paper complements the report by Wiseman et al. (in press, Experiment Two). Additional psychological data on a substantial subset of their participants was obtained, enabling us to examine posited relationships between naturalistic haunt experiences and specific perceptual-personality variables that are hypothesized to facilitate people's sensitivity to internally and externally-generated stimuli—and hence—anomalous experiences.

Perceptual-Personality Variables and Haunt Experiences

Haynes (1986) suggested that people have different thresholds for experiencing apparitions, similar to differences in pain thresholds. Recent research on the concept of transliminality provides some support for this basic view. Transliminality is the "hypothesized tendency for psychological material to cross thresholds into or out of consciousness" (Lange, Thalbourne, Houran, & Storm, 2000b, p. 594). This construct was already anticipated as early as William James (1902/1982) and Myers (1903), but it was only recently given empirical definition and measurement by Thalbourne (1998) in terms of a 29-item true/false scale. The psychological material crossing into conscious awareness involves large amounts of imagery, ideation, and affect which might derive from enhanced interconnectedness among primary and secondary sensory areas and/or sensory association cortices and frontal-cortical loops (Thalbourne, Houran, Alias, & Brugger, 2001).

High scores on transliminality consistently correlate with experiences of apparitions and kindred phenomena (Houran, Ashe, & Thalbourne, in press; Houran &

Thalbourne, 2001a; Thalbourne, 1998), which suggests that experients possess an "encounter-prone" trait. However, transliminality may function as a state variable as well, particularly when the situational context is conducive to the production and experience of large amounts of imagery, ideation, and affect (Houran & Thalbourne, 2001b).

One such powerful situational context is expectation. For instance, approximately one hundred years ago, Slosson (1899) studied the spatial-temporal spreading of ambiguous perceptions among groups of observers. During a classroom demonstration Slosson poured perfectly odorless distilled water over a cotton ball and led students to believe that it was a chemical with a strong odor which nobody had ever smelled before. He asked them to raise their hands as soon as they got aware of the odor. Slosson described how, within fifteen seconds, most persons sitting in the front row had raised their hands. Whether as a consequence of peer pressure or of genuine olfactory hallucinations (or both), students sitting towards the back of the room gradually indicated awareness of the odor, and within a minute about three quarters of the observers had raised their hands.

More recently, O'Mahony (1978), in the course of a television program about the chemical senses, told viewers that recent research would allow smells to be transmitted by sound and that on sending a particular tone viewers would be able to "synesthetically" experience an odor. Because the television program (along with a parallel radio version) was broadcast in the late evening, viewers were told that the tone chosen would not correspond to any smell typically present in average households at that time of day. Rather, they were lead to expect a "pleasant country smell." Viewers were asked to communicate their experiences by phone or in writing, irrespective of whether the transmission was successful. After sending a tone (a standard Dolby tuning sound) of ten seconds duration, a total of 179 listener reports were received within the next 24 hours. While 24 individuals reported that they had not smelled anything, 155 people reported a variety of odors, mostly of hay, grass, leaves or fruit. In addition, some attributed one or more of the following effects to the experimental sound: sneezing, sudden clearing of the nose, attacks of hay fever, vibrations across the bridge of the nose. Similar mechanisms may play a role in some haunts. In particular, the suggestion that a particular environment is associated with unusual experiences has likewise been shown to induce physical complaints, physiological alterations, and hallucinations (Lange & Houran, 1997; Orne, 1962). Furthermore, there is evidence that hallucinatory experiences occur more frequently under periods of stress or when people are exposed to environments that either are lacking in stimuli or are noisy (Slade & Bentall, 1988). The work of Bentall (1990, 2000) should be consulted for more detailed discussions of these issues.

Priming people to expect paranormal phenomena may be one way of inducing an attentional bias to kinesthetic or psychosomatic phenomena, but Windholz and Diamant (1974) were among the first to report that believers in the paranormal tend to score highly on measures of hypochondriasis and neuroticism (i.e., propensities toward a subjective state of suffering). Others have since reported similar associations between paranormal belief/experience and neuroticism (e.g., Sebastian & Mathew, 2001; Thalbourne, Dunbar, & Delin, 1995), somatic complaints (Sebastian & Mathew, 2001; Wickramasekera, 1986, 1989), and even panic attacks (Thalbourne & Fox,

1999). These findings sit well with Lester, Thinschmidt, and Trautman (1987) who found that paranormal belief is stronger in those who emphasize feeling over thinking, perceiving over judging, and intuition over perception (for similar findings related to experients of psychomanteum apparitions see: Arcangel, 1997). Consequently, it is not surprising that some authors have likened haunts and poltergeists to episodes of contagious psychogenic illness (Lange, Kumar, Thalbourne, & Lavertue, 2002; Lange & Houran, 1998, 1999) or so-called environmental illnesses (Jawer, 2000) such as "sick building syndrome." Either of these views might predict that haunt experiences are positively related to hyperesthesia, a heightened sensitivity to environmental stimuli. This prediction recently received some support from Houran et al. (in press) who found a significant positive relationship between hyperesthesia [as measured by the Sensitivity subscale of Hartmann's (1991) Boundary Questionnaire] and self-reported apparitional experiences.

Interestingly, the study of apparitions led to the concept of waking dreams and metachoric experiences (Green, 1990), which Werner (1948) regarded as examples of syncretic cognition. Syncretic cognition entails an undifferentiation of perceptual qualities in subjective experience, such as synesthesia (cross-modal experiencing), structural eidetic imagery, and psychological absorption. Therefore, apparitions might represent the experiential blending together of sensations, cognitions and emotions. Anthropologists Ember and Ember (1988) envisioned such a process to account for ghosts:

> There are many cues in everyday experience that are associated with a loved one, and even after...death those cues might arouse the feeling that the dead person is still somehow present. The opening of a door, the smell of tobacco or cologne in a room, may evoke the idea that the person is still present, if only for a moment. Then, too, loved ones live on in dreams. Small wonder, then, that most societies believe in ghosts (p. 420).

Consistent with this view, Glicksohn and colleagues (Glicksohn, Salinger, & Roychman, 1992; Glicksohn, Steinbach, & Elimalach-Malmilyan, 1999) have repeatedly found that synesthesia is related to eidetic imagery, which in turn has been implicated in some apparitional experiences (e.g., Martin, 1915; Osis, 1986). Similarly, Jacome (1999) reported in a recent case study that a woman diagnosed with multiple sclerosis and temporal lobe epilepsy experienced general hallucinations and Lilliputian imagery with synesthetic components. However, discussions of synesthetic-like experience in the context of psi phenomena have appeared infrequently in the literature (e.g., Alvarado, 1994; Irwin, 1985a, Chapt. 8; Irwin, 1999, pp. 238-240; Hunt, 1995; Irwin, 2000; Ring & Cooper, 1999; Sako & Homma, 1997; Zingrone & Alvarado, 1997).

Lastly, it is important to mention that belief in the paranormal can also be conceptualized as a perceptual-personality variable. There are at least two explanations for how this accounts for the positive relationship (Houran, 2000; Houran & Thalbourne, 2001a; Kumar & Pekala, 2001) between paranormal belief and actual haunt and poltergeist experiences. Kumar and Pekala's (2001) review of the literature indicates paranormal belief is associated with a myriad of hypnosis-related attitudes and behaviors. Perhaps this means, as found by Irwin (1985b), that experients have a

marked need for psychological absorption. These findings may also underscore the role of paranormal belief as a cognitive or motivational bias in individuals who are faced with information or situations that are ambiguous or uncertain (Lange & Houran, 2001). Indeed, Lange and Houran's (1998, 1999) path analyses consistently suggested that - contrary to the model reported by Lawrence, Edwards, Barraclough, Church, and Hetherington (1995) - paranormal beliefs elicit paranormal experiences, rather than vice versa.

It follows from this view that some believers in the paranormal tend to interpret paranormal phenomena and information only in the context in which they are presented (Snel, van der Sijde, & Wiegant; 1995; Wiseman, Greening, & Smith, submitted). For example, curious things happen when naïve subjects observe staged 'paranormal' demonstrations. Proponents of psychic phenomena ("sheep") tend to rate the demonstrations as more paranormal than disbelievers ("goats"), and these beliefs can persist even *after* debriefing (French, 1992; Smith, 1992; Wiseman & Morris, 1995). Apparently for some people, the paranormal is the preferred explanation even when such beliefs conflict with the empirical evidence that is available (Krippner & Hastings, 1961).

However, the consistently strong relationship between paranormal belief and paranormal experience can be interpreted in other ways. Gertrude Schmeidler (Schmeidler, 1952; Schmeidler & McConnell, 1958) demonstrated that attitudes affect putative psi performance. In particular, she established the trend for "sheep" to score above mean chance expectation on ESP tests and for "goats" to score significantly below chance level. Schmeidler (Maher & Schmeidler, 1975; Moss & Schmeidler, 1968; Schmeidler, 1966) later applied this basic idea to investigations of haunts. She had experimentally-blind "sensitives" and later control groups visit reportedly haunted sites and mark floorplans where they perceived anomalous phenomena. Significant relationships were obtained between the areas marked by the sensitives and the areas indicated by previous witnesses. Additional studies using this methodology have similarly yielded robust effects (for a review see: Maher, 1999).

In summary, psychological and parapsychological studies suggest that Expectation, Transliminality, Hypochondriacal-Somatic Tendencies, Hyperesthesia, Synesthesia, and Belief in the Paranormal should facilitate self-reported haunt experiences. Testing this hypothesis was the main objective of this research, although we were also interested in replicating Houran and Lange's (2001a) finding that haunt and poltergeist-like phenomena form a unidimensional hierarchy of events.

Background on "The Edinburgh Ghost Project" and the Aims of the Present Research

Experiment Two from Wiseman et al. (in press) was conducted in part of the South Bridge Vaults in Edinburgh, Scotland. Edinburgh's South Bridge was constructed in the late eighteenth century to ease transportation problems in the city. The Bridge consisted of nineteen huge stone arches supporting a wide road lined with several three-story buildings. A series of "Vaults" (small chambers, rooms, and corridors) were built into the Bridge's arches to house workshops, storage areas, and accommodation for the poor (Henderson, 1999). However, ineffective water proofing

and overcrowding meant that by the mid-nineteenth century the Vaults had degenerated into a disease-ridden slum. The area was abandoned during the late nineteenth century, but rediscovered and opened for public tours in 1997. Today, the Vaults may be described as having variable lighting (some areas have dim but electric lighting while others are only illuminated with candlelight), musty and/or damp in areas, uneven dirt flooring, generally cool in temperature, and with minimal ventilation (see Fig. 1 and 2).

Figure 1. Test Vault #1, a large area with a relatively high ceiling and illuminated with both electric and candle light. The authors learned after the study that this Vault was ranked as the third "most haunted" area of the test sites. (Photograph by J. Houran)

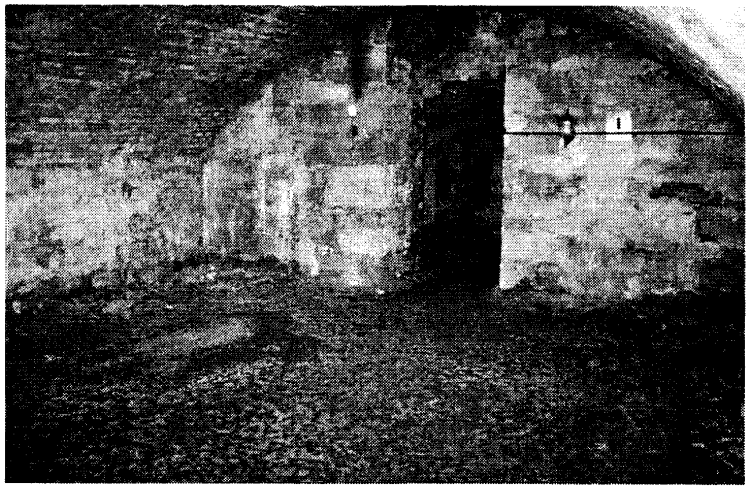
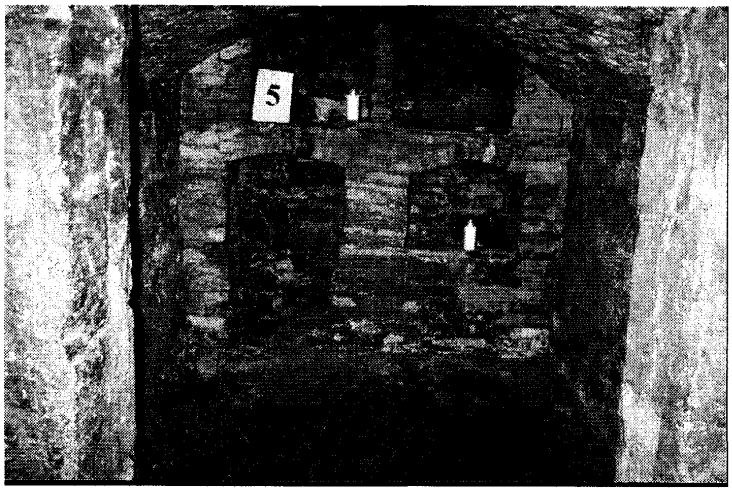


Figure 2. Test Vault #5, a small room with a relatively low ceiling and illuminated only with candlelight. This test area was typical of the other chambers in the Vaults, and the authors learned after the study that it was ranked as the third "least haunted" area of the test sites. (Photograph by J. Houran)



During some of the tours, both members of the public and tour guides have experienced many unusual phenomena, including a strong sense of presence, visual apparitions, and phantom footsteps (Wilson, Brogan, & Hollinrake, 1999). Popular books and television documentaries have disseminated these accounts potentially worldwide. As a result, the Vaults have acquired a local and perhaps international reputation for being one of the most haunted parts of Scotland's capital city. This fact might call into question the legitimacy of this case or any experiences subsequently reported by those exposed to these initial reports. Nevertheless, the second author was impressed with the sincerity of the first-hand testimony from the tour guides. Thus, this site was deemed worthy of investigation even though it could be argued that this case is too new to warrant being regarded as a haunt with typical features, such as a long history of similar experiences (shared by two or more people simultaneously) reported by independent parties with no advance knowledge of the case.

"The Edinburgh Ghost Project" was part of the International Edinburgh Science Festival (April, 2001). The project was advertised in the festival's program and in many local newspapers. Those interested in participating in the study telephoned the festival's box office to purchase tickets for a certain time. These self-selected participants took part in one of six daily sessions held over the course of four days (two separate weekends). Each session involved a maximum of ten people.

The first part took place in a private function room close to the Vaults. Participants arrived at the time predetermined by the box office, sat down on a row of chairs, and listened to a brief introduction. Face Sheets asking about demographics (age, gender) were attached to clipboards that were randomly arranged on these chairs, and participants were allowed to choose their own seats. The Face Sheet also contained a number that corresponded to a specific Vault the participant would later visit. Thus, this procedure was meant to randomize the participants in each session across the ten Vaults. The ten Vaults were ranked according to the number of previous experiences associated with them as reported by tour guides and visitors (this ranking is later referred to as the 'haunted order'). Accordingly, there were five "active" or target Vaults and five "inactive" or control Vaults. The Mercat Tours company operates the South Bridge Vaults, and one of their senior employees performed this ranking. We were blind to this ranking, and all experimenters were blind as to the participants' responses on the Face Sheet.

At the start of the experiment, the second author briefly outlined the purpose of the study, and then asked participants to complete the questions on the Face Sheet. Among these questions was an index of the participants' expectations of having an experience during the session: "Do you expect to experience any unusual phenomena in The South Bridge Vaults today?" This index of Participant Expectation had five response options: Definitely Yes (scored 2), Probably Yes (scored 1), Uncertain (scored 0), Probably No (scored -1), and Definitely No (scored –2). We also asked participants to rate their Prior Knowledge about the South Bridge Vaults before taking part in the session: "Have you heard (e.g., from acquaintances, television programs or newspaper articles), *where* in The South Bridge Vaults people have reported experiencing unusual phenomena?" This question had three response options: Yes (scored 1), Uncertain (scored 0), and No (scored –1). Participants were informed in writing that their responses were confidential.

As part of the participants' informed consent, it was made clear that anyone could terminate their participation in the study at any time without penalty. Indeed, several people declined to participate further after the second author outlined the protocol due to their apprehension about having an experience in the Vaults. The Face Sheet data from these individuals and those few who did not show up for the study were excluded from the database. There was no difference in the distribution of active/inactive sites between participants and drop-outs. For those participants who remained to complete the study, several experimenters were available for assistance and counseling in the event that participants became anxious or otherwise upset during the proceedings.

Mercat Tours required that one of their employees facilitate the basic operation of the sessions due to safety and legal issues. This assistant experimenter was blind to the participants' responses on the Face Sheet, but it must be pointed out that this assistant experimenter had extended contact with the participants as well as detailed knowledge of the previous haunt reports. Thus, there is a serious risk of verbal or nonverbal cueing from this assistant experimenter to our participants. Possible advance (if unconscious) knowledge, including other forms of cueing, is always a serious concern in investigations of publicized cases. This is a severe limitation of our protocol, and one that exists to one degree or another in other published investigations (see e.g., Maher, 2000; Maher & Hansen, 1995). The second author and this assistant experimenter discussed the issue of cueing, and it was agreed that the assistant experimenter would neither provide any information to the participants or other experimenters nor allow participants to talk among themselves throughout the study.

The assistant experimenter escorted each participant individually to his or her assigned Vault, while other assistant experimenters monitored these actions to help guard against cueing. Participants were given exactly ten minutes to spend alone in their assigned Vault, during which the participants were instructed to spend a few minutes quietly standing in their area, and then document in narrative form any unusual experiences no matter how faint they might be. The assistant experimenter then escorted the participant from the Vault. After returning their Face Sheets to the assistant experimenter, participants were given a packet containing additional instruments to complete and mail back to the second author, who subsequently collated the packets for the first author to analyze. Most packets were returned within two weeks, and all were returned within four weeks.

Validity issues with post hoc testing are always a concern, but we want to emphasize the possible advantages of this approach in relation to the present study. Time restrictions prevented us from administering all of the measures (described below) at the same time. However, the strong context effects associated with our procedure could have significantly distorted participants' responses to these psychological tests if we had done so. For instance, skeptically-minded participants could have over-endorsed items that entailed a conventional explanation for anomalous experiences, whereas strong believers in the paranormal might have under-endorsed the same items for similar reasons.

Furthermore, state factors imposed by our proceedings likely would have influenced the participants' responses to some of the psychological tests, such as the Revised Transliminality Scale (for a discussion of this, see Houran & Thalbourne,

2001b). Therefore, administering the tests in a large group format either immediately prior to or immediately after the experimental sessions could have encouraged serious response biases. To minimize these artifacts we opted to have participants complete the psychological tests on their own and return them as promptly as possible. This approach had the added benefit of allowing participants to take their time answering the tests in a private setting, thereby further insulating respondents from experimenter expectations (Bickman & Rog, 1998).

Still, we note that our post-hoc approach was not ideal and thus limits the conclusions we can draw from this study. Accordingly, we outline a better protocol studies later in this paper for use in replicative studies.

Method

Participants

Wiseman et al.'s (in press, Experiment Two) original sample comprised 218 participants (M_{age} = 35.3, SD = 13.2, range = 11-77 yrs.; 58% women) who completed the experimental protocol described above. Of this sample, 142 packets were returned (65 % return rate), but eight of these had to be discarded due to missing information. This left the responses of 134 participants (61% of original sample; M_{age} = 34.6, SD = 12.2, range = 16-74 yrs.; 62% women) for analysis. This return rate is considered good by most standards in the social sciences (Bickman & Rog, 1998), but it is possible that there could have been a marked tendency for people to return their packet only if their experiences were consonant with their expectations. Such biases could side with either a skeptical or non-skeptical response style on the questionnaires, as we noted above. However, Table 2 below shows that the present sample can be characterized as having an average level of paranormal belief measured via Lange, Irwin, and Houran's (2000a) Rasch scaled version of the Revised Paranormal Belief Scale (Tobacyk, 1988), a low expectation of experiencing anomalies in the South Bridge Vaults, and apparently little if any conscious prior knowledge about details concerning the Vaults [M = -.81, SD = .51; Index of Prior Knowledge scores range from –1 to 1).

Materials

In addition to the Face Sheet noted above, the participants completed five measures arranged in counterbalanced order:

Revised Paranormal Belief Scale (RPBS: Tobacyk, 1988). The RPBS consists of 26 statements that are to be rated on seven-point Likert-type scales, and it is arguably the most widely used measure of paranormal belief (Goulding & Parker, 2001). This scale has been severely criticized (e.g., Hartman, 1999; Lawrence, 1995; Lawrence & De Cicco, 1997) and has acquired a terrible reputation in some circles. However, Lange et al. (2000a) showed that the long-standing controversy surrounding the RPBS' factor structure was partly due to differential item functioning, that is, sex and age bias. Once these psychometric issues are remedied via a statistical Rasch (1960) "top-down purification" procedure (Lange et al., 2000a) to properly assess the scaling properties and dimensionality of the test items, we find the RPBS comprises only two, moderately correlated belief subscales that appear to reflect different types of control

issues. Lange et al. (2000a) interpreted one as "New Age Philosophy" (NAP; beliefs that seem to instill more a sense of control over interpersonal and external events and therefore benefit individuals, e.g., psi, reincarnation, astrology) and the other was interpreted as "Traditional Paranormal Beliefs" (TPB; beliefs that are more culturally transmitted and socially beneficial, e.g., the devil, Heaven and Hell, witchcraft).

This Rasch version of the RPBS is currently the most psychometrically sound measure of paranormal belief, and several studies (Houran, Irwin, & Lange, 2001; Houran & Lange, 2001c; Houran, Thalbourne, & Ashe, 2000) provide initial support for the construct validity of two new subscales. We also note that Lange and Thalbourne (2002) recently found that the Australian Sheep-Goat Scale (ASGS: Thalbourne & Delin, 1993) is Rasch scalable as well. Moreover, belief items preceded items referring to paranormal experiences in the ASGS' Rasch item hierarchy, while the items' fit patterns provided additional support for the existence of Traditional Paranormal Beliefs and New Age Philosophy related factors.

Rasch-Revised Transliminality Scale (Lange et al., 2000b). This is a top-down purified version of Thalbourne's (1998) original 29-item, true/false scale (Form B). Twelve items from the original scale are excluded from the scoring of the test due to age and gender biases. However, the remaining seventeen test items constitute a unidimensional Rasch (1960) scale. These 17-test items, which share a common underlying dimension, span seven domains: hyperesthesia, (fleeting) hypomanic or manic experience, fantasy-proneness, absorption, positive (and perhaps obsessional) attitude towards dream interpretation, mystical experience, and magical thinking. Thalbourne (2000) recently published a comprehensive review of the correlates of transliminality, and additional data are given in Lange et al. (2000b).

Synesthesia. This index consists of seven true/false items constructed by Tellegen as a result of factor analysis of his Absorption Scale (Tellegen & Atkinson, 1974). The alpha was .68 in a study of 295 students (further analysis of Thalbourne, 1998), and .76 in another study of 115 people from the general population (further analysis of Thalbourne, Bartemucci, Delin, Fox, & Nofi, 1997, Study 5). Representative items include, "Different colors have distinctive and special meanings for me", "Sometimes I can change a noise into music by the way I listen to it", and "I find that different odors have different colors." We cautioned elsewhere (Thalbourne et al., 2001) that rather than measuring synesthesia as defined in rigid neurological terms, this scale likely addresses forms of "pseudosynesthesia" as well, e.g., artistic metaphor and experiencing synesthesia through drug use. However, some authors (e.g., da Costa, 1996; van Campen, 1999) argue that synesthetic-like experience can include strong emotional components, and similar to Ember and Ember's (1988) view of ghosts, there is evidence that imagery contextualizes emotion (Kunzendorf, Hartmann, Thomas, & Berensen, 1999-2000). That is, symbolic imagery stands for objects of emotion that are no longer present but are not necessarily unconscious. Therefore, Tellegen's Synesthesia Scale is perhaps best regarded as a measure of "weak" synesthesia, which pertains to cross-sensory correspondences expressed through language, perceptual similarity, and perceptual interactions during information processing (Martino & Marks, 2001).

Hyperesthesia. This measure is taken from Thalbourne (1996) and consists of six true/false items. These items reflect strong reactions to environmental stimuli and were chosen mainly from the MMPI and the Perceptual Aberration Scale. The alpha was .63 in one study of 99 students (further analysis of Thalbourne, 1996), and .62 in another study of 298 students (further analysis of Thalbourne, 1998). Three of the test items overlap with items on the Revised Transliminality Scale, so we excluded these items from the scoring of the present scale. Thus, hyperesthesia was indexed by the following three questions: "Ordinary colors sometimes seem much too bright to me (without taking drugs)", "My hearing is sometimes so sensitive that ordinary sounds become uncomfortable", and "At times I hear so well it bothers me." We note that these questions are limited to aspects of visual and acoustic hyperesthesia, but these varieties are well recognized in the field of neuroscience (see e.g., Bohnen, Twijmstra, Wijnen, & Jolles, 1992).

Whiteley Index (Pilowsky, 1967). This 14-item true/false test is one of the most commonly used and psychometrically-sound self-rating scales for hypochondriacal tendencies. Representative items include, "Are you bothered by many pains and aches?", "Do you find that you are often aware of various things happening in your body?", and "Do you find that you are bothered by many different symptoms?".

Results

Patterns in the Reported Haunt Experiences

None of the assistant experimenters reported any anomalous experiences during their extensive time in the Vaults, which totaled approximately twenty-four, non-continuous hours. This included both private time before the participants arrived and after they had left, as well as during the actual experimental proceedings. By contrast, 66 participants (49%) had at least one anomalous experience during the session, with the mean number of experiences for this group being 2.36 (SD = 1.58, range = 1-8) and the mean number of different categories of experiences (cf. Table 1: temperature changes, auditory perceptions, bodily sensations, physical manifestations, visual apparitions/imagery, emotional responses, olfactory perceptions, and sensed presence) being 1.76 (SD =.88, range = 1-5). The incidence of experiences is higher than the mean of .71 (SD = 1.17, range 0-7) that Houran and Lange (2001a) observed for their sample of 865 people who completed the eight-item 'Poltergeist' subscale of the Anomalous Experiences Inventory (Kumar & Pekala, 2001) during a survey. Our present sample also averaged more experiences than Lange and Houran's (1997, p. 1457) sample of 11 people who toured a reputedly haunted location for approximately 30 minutes and whose anomalous experiences were facilitated via expectation and suggestion effects.

Table 1 gives the distribution of the various categories of experience reported by our sample. These categories were predefined in light of the original classification system proposed by Lange, Houran, Harte, and Havens (1996; cf. Houran, 2000). By far, most experiences involved a perceived change in temperature, sounds, or

physiological alterations, but there were a few reports of dramatic experiences such as visual apparitions or the inexplicable onset of strong emotions. One woman in particular had to be counseled by the first author while she was in her assigned Vault in order to end her session and leave the site. The woman was literally engrossed in her experiences and needed to be eased back into a normal waking state of consciousness. The first author spent some time with her afterwards as well to ensure her welfare. This particular woman regarded her session over all as a wonderfully positive experience. Other participants commented about the profound negative and positive effects of even subtle experiences[1].

As in Houran and Lange (2001a), Rasch scaling was used to obtain a linear measure of the experiences' occurrence. Specifically, the frequency with which each experience was reported was modeled as the outcome of a Poisson process. Rather than just an analysis of the categories of experience in terms of their observed frequencies, Rasch scaling assesses the psychometric scaling properties and dimensionality of a set of items (in this case the reported categories of experiences). The fit statistics shown in Table 1 indicate that this approach is a suitable one, as the infit and outfit statistics of all items fall inside the range 0.7 to 1.3. Further, as is customary in Rasch scaling (Linacre & Wright, 2000), the items' Poisson parameters were rescaled to obtain an average person measure of 0 and the adjusted δ values are shown in column 3 of Table 1. These results indicate that the experiences reported at the South Bridge vaults constituted a probabilistic hierarchy of events which was not confounded by gender bias ($\chi^2 = 7.4$, df = 16, *ns*).

The hierarchy of experiences associated with the South Bridge Vaults does not agree with the Rasch order of four other items that share similar thematic content that we reported previously (Houran & Lange, 2001a). There are many possible reasons for this discrepancy. Differences between the two studies in terms of instruments, environments, instructional sets, and implicit demands could be confounds. The discrepancy could also imply that a probabilistic hierarchy of haunt perceptions is idiosyncratic to specific environments. Nevertheless, there does appear to be some agreement regarding the sequence of general *themes* common to the two hierarchies. In both hierarchies, experiences of a more subjective nature tend to be endorsed more easily, followed by perceptions of physical manifestations, and finally the most extreme types of experiences revert back again to a subjective nature.

We cannot push comparisons and contrasts between the two hierarchies too far given the caveats noted above. Still, research is planned to test the idea that hierarchies vary according to the environment in which the experiences occur. Interesting theoretical and methodological benefits would follow from this inquiry. For example, different Rasch hierarchies might differentiate cases based on fraud, imagination, or electromagnetic activity. Thus, future work in this area might eventually yield a heuristic to guide field researchers in determining the likely cause of a given case. In this way, investigators will have a valuable tool to screen initial reports and

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[1] Readers are referred to the work of Arthur Hastings (1983; Targ & Hastings, 1987) for a discussion of how to approach paranormal experiences within a clinical context. See also Coly and McMahon (1993).

subsequently better allocate resources to the study of those cases with likely evidential value.

Table 1. Item Locations and Fit Statistics for the Rasch Analysis of the Reported Haunt Experiences ($N = 134$).

	%	Item Location (in logits, δ)	SE	Infit	Outfit
Temperature Changes	67.6	0.57	0.15	0.7	0.7
Auditory Perceptions	54.4	0.79	0.16	1.3	1.1
Bodily Sensations	36.8	1.18	0.20	1.1	1.0
Physical Manifestations	20.6	1.76	0.27	1.1	0.7
Visual Apparitions and Imagery	19.1	1.83	0.28	1.3	1.1
Emotional Responses	16.2	2.00	0.30	1.0	1.2
Olfactory Perceptions	11.8	2.32	0.35	0.9	1.1
Sensed Presence	8.8	2.60	0.41	1.2	0.8

Experients vs Non-Experients

Descriptive statistics (mean and standard deviation) for the independent variables are given in Table 2.

Table 2. Descriptive Statistics on the Research Measures for the Complete Sample ($N = 134$), Haunt Experients ($N = 66$), and Non-Experients ($N = 68$).

	Full Sample		Experients		Non-Experients	
Variable	***M***	***SD***	***M***	***SD***	***M***	***SD***
Transliminality	22.61	3.71	23.35	3.74	21.89	3.56
Somaticism	3.27	2.39	3.36	2.26	3.18	2.53
Synesthesia	3.46	1.98	3.83	2.08	3.10	1.83
Hyperesthesia	.87	1.12	1.18	1.29	.56	.82
New Age Philosophy	26.19	15.65	31.41	15.19	21.13	14.49
Traditional Paranormal Beliefs	11.55	7.35	14.18	7.38	9.00	6.41
Participant Expectation	-.52	.76	-.27	.65	-.76	.79

To assess the relation between the perceptual-personality variables and the occurrence of haunt experiences, a standard logistic regression analysis was performed

with Participant Expectation, New Age Philosophy, Traditional Paranormal Beliefs, Transliminality, Somaticism, Synesthesia, and Hyperesthesia as predictors of experient status (experient vs. non-experient). A logistic regression determines which variables serve differentially to predict group membership and is especially useful when one or more of the individual predictor variables is not normally distributed (Tabachnick & Fidell, 1996), as is the case here. In a standard logistic regression analysis all predictor variables are entered simultaneously. The analysis evidenced a significant multivariate result (-2 log likelihood = 152.9, goodness of fit = 128.0, $\chi^2[7, N = 134] = 32.88, p < .0001$). That is, the set of independent variables predicted group membership to a significantly better degree than a model in which the difference between groups was a simple constant. We found no problems with multicollinearity of the independent variables (Tabachnick & Fidell, 1996, p. 618). A summary of the analysis is given in Table 2; this shows the regression coefficients and their standard errors, the results of Wald's test with associated degrees of freedom and level of significance, and the multivariate correlations. According to the associated classification matrix, the logistic regression equation correctly identified 70% (46 of 66) experients in the sample and 69% (47 of 68) of non-experients. The only predictor variables that independently discriminated experients from non-experients were hyperesthesia ($R = .156$, $p = .012$), Traditional Paranormal Beliefs ($R = .126$, $p = .026$), and Participant Expectation ($R = .105$, $p = .045$). It can be seen that these predictor variables explain little of the variance independently, but the *collective* effect of the seven perceptual-personality variables was a robust predictor of whether a person did or did not have an experience.

Table 3. Standard logistic regression of Transliminality, Somaticism, Synesthesia, Hyperesthesia, New Age Philosophy, Traditional Paranormal Beliefs, and Participant Expectation on Haunt Experience (Experient vs Non-Experient) (N = 134).

Variable	*B*	*SE*	*Wald*	*df*	*p*	*R*
Transliminality	-.057	.007	.534	1	.465	.000
Somaticism	-.034	.088	.151	1	.694	.000
Synesthesia	.160	.125	1.628	1	.202	.000
Hyperesthesia	.560	.219	6.498	1	.011	.156
New Age Philosophy	-.000	.020	.000	1	.988	.000
Traditional Paranormal Beliefs	.086	.039	4.931	1	.026	.126
Participant Expectation	.638	.318	4.04	1	.045	.105

Associations Among the Perceptual-Personality Variables and Their Relation to the Reported Haunt Experiences

To better understand the relationships between the perceptual-personality variables and participants' reported number of experiences and reported number of different categories of experience, we calculated the Spearman rank-order correlations (two-tailed) among all of the measures (see Table 4).

Two multiple regression analyses (forward selection method) were conducted to assess which of the seven perceptual-personality characteristics were the best predictors of the number of reported experiences and the number of different categories of experience. Two of the seven variables entered into the regression equation to predict Total Number of Reported Experiences: New Age Philosophy (beta = .22) and Participant Expectation (beta = .20). The multiple regression coefficient R was .36 (R^2 = .13, i.e., 13% of the variance was accounted for by the linear combination of the two variables) and this was significant ($F(2, 131) = 9.58$, $p <$ .001). Likewise, only two measures entered into the regression equation to predict Total Number of Different Categories of Reported Experience: Hyperesthesia (beta = .28) and Participant Expectation (beta = .26). The multiple regression coefficient R was .41 (R^2 = .17, i.e., 17% of the variance was accounted for by the linear combination of the two variables) and this was significant ($F(2, 131) = 13.22$, $p <$ .001). Therefore, these findings suggest that the number of experiences the participants reported was in small part a function of paranormal beliefs (related to situational control) combined with the expectation of experiencing anomalous phenomena. By contrast, the number of different categories of experiences participants reported was in small part a function of their sensitivity to environmental stimuli combined with the expectation of experiencing anomalous phenomena.

Based on the previous studies linking transliminality to "entity encounter experiences" (Houran & Thalbourne, 2001a; Houran et al., in press; Thalbourne, 1998), we expected that transliminality would have played a greater role in predicting the patterns of reported experiences. Besides a restriction in range of scores, one possibility for the weak effects of transliminality is that the component of hyperesthesia played a more important role than did other core constituents of transliminality. Also, it is feasible that the physical environment to which the participants were exposed contained several sources of vivid external stimuli, such as light levels exterior to the test areas, floorspace, and the height of the vaulted ceilings, which Wiseman et al. (in press) found to positively correlate with the 'haunted order' of the Vaults (rho = .74, p = .03; .73, p = .03; and .65, p = .05, respectively) and with the mean number of participants' experiences (rho = .84, p = .01; .58, p = .08; and .64, p = .05, respectively). Furthermore, it is conceivable that various areas of the Vaults could be prone to infrasound effects which are hypothesized to elicit unusual sensory experiences as well (Tandy, 2000; Tandy & Lawrence, 1998). Thus, such conditions may have produced unusual sensory effects that even participants with low transliminality could have easily experienced and subsequently interpreted as being "ghostly."

Table 4. Spearman Rank-Order Correlations Between Age, Sex, Variables Related to Haunt Experience, and Research Measures for Complete Sample ($N = 134$).

	1 Sex (female)	2 Age	3 Temp	4 Visual	5 Aud	6 Phys Event	7 Emot	8 Sens Pres	9 Bod Sens	10 Olfac	11 Sum Types	12 Sum Exp	13 Expect	14 Somatic	15 Synes	16 Hypers	17 Trans	18 NAP	19 TPB
1	-	.02	.13	-.01	-.02	-.01	.03	.14	.18*	.07	.13	.13	.04	.19*	.17*	.09	.14	.20*	.18*
2		-	.04	.05	-.00	-.04	.06	.08	.03	.12	.03	.06	-.10	-.07	.04	.01	-.03	-.03	-.12
3			-	.16	.16	.20*	-.01	.26**	.29***	.11	.69***	.67***	.24**	.03	.04	.16	.08	.20*	.18*
4				-	-.04	.02	.26**	.12	.05	-.07	.34***	.35***	.13	-.02	-.04	.28***	.13	.15	.09
5					-	.26**	-.04	-.08	-.05	.07	.46***	.53***	.13	.03	.11	-.01	.07	.10	.11
6						-	-.08	.28***	.15	-.07	.41***	.39***	.15	.06	.01	-.02	.01	.10	.09
7							-	-.05	.16	-.07	.27***	.25**	.03	.03	.06	.17*	.12	.08	.01
8								-	.06	-.04	.27**	.23**	.08	.03	-.02	.09	.04	.06	.01
9									-	.09	.48***	.45***	.23**	.12	.20*	.25**	.23**	.24**	.21*
10										-	.28**	.28**	.20*	.09	.18*	.09	.13	.13	.16
11											-	.98***	.35***	.09	.17*	.27***	.21*	.31***	.30***
12												-	.37***	.11	.18*	.25**	.22**	.34***	.32***
13													-	-.06	.11	.14	.16	.50***	.46***
14														-	.13	.19*	.22*	.20*	.12
15															-	.21*	.61***	.34***	.17
16																-	.42***	.30***	.11
17																	-	.52***	.33***
18																		-	.69***
19																			

Note. Temp = Temperature Change; Aud = Auditory; Phys Event = Physical Manifestation; Emot = Emotion; Sens Pres = Sensed Presence; Bod Sens = Bodily Sensation; Olfac = Olfactory; Sum Types = Total Number of Different Categories of Experience; Sum Exp = Total Number of Experiences; Expect = Participant Expectation; Synes = Synesthesia; Hypers = Hyperesthesia; Trans = Transliminality; NAP = New Age Philosophy; TPB = Traditional Paranormal Beliefs.

* $p < .05$ ** $p < .01$ *** $p < .001$ (this minimum significance level, determined by SPSS software, is the only one to likely remain significant given multiple analyses)

However, it is clear that while transliminality was not a prerequisite for perceiving phenomena at the South Bridge Vaults, transliminality certainly facilitated experiences. In particular, post hoc analyses revealed that participants with high scores on transliminality (N = 21) reported significantly ($t(132)$ = -2.95, p = .004, 2-tailed) more experiences (M = 2.10, SD = 2.28) than those with low to average scores on transliminality (N = 113, M = .99, SD = 1.41). Likewise, participants with high scores on transliminality reported significantly ($t(132)$ = -2.91, p = .004, 2-tailed) more different categories of experience (M = 1.50, SD = 1.44) than those with low to average scores on transliminality (M = .75, SD = .96).

Two Distinct Classes of Experience?

Persinger and Cameron (1986) distinguished two classes of haunt and poltergeist phenomena: "These events... involve measured or inferred *physical changes* such as object movements, electrical failures, or strange sounds. Reports of *psychological experiences* include "odd feelings," intelligible phrases, and sometimes the perception of human forms (p. 49, emphasis added)."

Houran and Lange (1996) also argued for such a distinction, although haunt experiences may include both of these classes. We examined the idea of two classes of experience in more detail by dividing the eight categories of experience reported by our experients into two Classes of Experience (Psychological Experiences vs. Physical Changes). Using Persinger and Cameron's (1986) classification scheme, the Psychological Experiences class comprised the summed total of visual apparitions (and related visual imagery), bodily sensations, emotional responses, and sensed presences. The Physical Changes class consisted of the summed total of temperature changes, auditory experiences, physical manifestations, and olfactory experiences. Auditory and olfactory experiences were designated as Physical Changes due to the way participants described these experiences. In other words, these phenomena seemed to reflect actual environmental stimuli available to the participants, as opposed to hallucinatory-type stimuli. For instance, the auditory phenomena primarily consisted of ambiguous sounds rather than intelligible phrases. Likewise, the olfactory experiences corresponded to natural stimuli in the Vaults.

Table 5 gives the correlations between these two classes of experience and the perceptual-personality variables. The two classes significantly correlate (rho = .21, p = .007), but only share 4% of the variance in the rank orders. Taken together with their differential relations to the research measures, the two classes of experience can be differentiated and therefore may have different sources. Psychological Experiences showed significant correlations with six (perceptual-personality traits and belief in the paranormal) of the seven variables, but statistical tests of difference on these correlations indicated that Physical Changes did not correlate as well with the perceptual-personality variables. In particular, Physical Changes only correlated to a small degree with Participant Expectation and Belief in the Paranormal. Statistical tests of difference on the correlations between the two Classes of Experience and these three variables nevertheless were non-significant.

Table 5. Tests of Differences (two-tailed) in Spearman Rank-Order Correlations Between Class of Experience (Psychological Experience vs. Physical Changes) and Perceptual-Personality Variables for Complete Sample ($N = 134$).

Variable	Psychological Experiences	Physical Changes	$t(131)$
Transliminality	.42***	.11	4.37***
Somaticism	.09	.08	0.00
Synesthesia	.14*	.14	
Hyperesthesia	.38***	.10	4.01***
Participant Expectation	.25**	.32***	.69
New Age Philosophy	.28***	.24**	.39
Traditional Paranormal Beliefs	.19*	.25**	.84

Note. No analysis was computed for Synesthesia given that the correlation coefficients were identical.
***$p < .001$ and significant given a Bonferroni correction (.05) for multiple analyses

Therefore, the Psychological Experiences label appears reasonable in that these reports were consistently more related to the perceptual-personality variables. One interpretation of this finding is that some of these anomalous perceptual experiences were partly aroused via expectation and subsequently given credence due to a belief in the paranormal (Houran & Williams, 1998). Another interpretation is that only those individuals with a high capacity for imagery, ideation, and affect had sufficiently low thresholds for perceiving ghosts or psi (Haynes, 1986).

Physical Changes were consistently independent of the perceptual-personality factors that we measured, except for the small associations with Participant Expectation and Paranormal Beliefs. Of course, future research may find that the perception of physical changes correlates with perceptual-personality variables that we did not take into account. Still, it is possible that the physical manifestations perceived by the participants were objective events in the environment. Some may argue that the lack of consistent relations between Physical Changes and perceptual-personality variables argues for a psi component to some or all of these types of experiences. However, it is also plausible that the perceived physical changes were conventional stimuli that were consistent with the physical structure and location of the Vaults but were interpreted as being 'ghostly' in part due to the influence of expectation and belief in the paranormal (cf. Houran, 1997; Houran & Brugger, 2000).

Discussion

The Edinburgh Project contributes new information to our understanding of the psychological factors attending haunt experiences at "commercial" sites. We should also reiterate that the experiences at the South Bridge Vaults were of a pseudo-facilitated nature, that is, they were naturalistic but not entirely spontaneous. Rather, people participated in this study knowing that we aimed to collect perceptions of ghostly phenomena in a location with a well-known reputation for being haunted. Under these conditions, pressures from priming and expectation likely introduced significant demand characteristics that resulted in the unusually high number of experiences that people reported compared to other studies (Houran & Lange, 2001a; Lange & Houran, 1997). As a result, it is not clear how well our findings generalize to genuinely spontaneous experiences in which such immediate cognitive and motivational biases—although perhaps present (Houran, 2000)—are apparently minimized.

Other confounding variables exist as well. For example, Wiseman et al. (in press, Experiment Two) reported that the Spearman rank-order correlation between the 'haunted order' of the Vaults and the mean number of anomalous experiences reported in each Vault was .76 (p = .02). That correlation actually increased to .87 (p = .009) when individuals with conscious knowledge of the Vaults were excluded from analysis. On the face of it, this would seem to conceptually replicate the findings from field research by Schmeidler (Moss & Schmeidler, 1968; Schmeidler, 1966) and. Maher (Maher, 1999; Maher & Schmeidler, 1975) in that witness reports are not distributed evenly throughout the location of a haunt but rather, phenomena tend to be perceived only in certain areas. However, the possibility of unintentional cueing on the part of the tour guide in the South Bridge Vaults nullifies Wiseman et al.'s (in press, Experiment Two) correlations as reliable evidence for psi. We cannot rule out that some or all of the participants responded to extrasensory stimuli (including discarnate entities) in the Vaults; nevertheless, the potential for sensory leakage from the tour guide who served as an assistant experimenter combined with the significant associations between certain environmental variables and participants' reports suggest that the experiences studied here likely derived from conventional sources. Furthermore, the physical "atmosphere" of the Vaults is consistent with environmental conditions that Slade and Bentall (1988) described as being conducive to hallucinatory experiences.

Taken together with the fact that we again found that the haunt experiences reported here conform to a probabilistic hierarchy of events, the available empirical evidence strongly suggests that some haunts derive from a systematic interaction between certain individuals and select elements in the environment. Our findings elucidate what perceptual-personality characteristics facilitate this interaction. The combination of *psychological set* (Participant Expectation and Belief in the Paranormal) and *perceptual variables* (Somaticism, Synesthesia, Hyperesthesia, and Transliminality) reliably distinguished experients from non-experients. Interestingly, these seven variables differentially predicted participants' total number of experiences and their total number of different categories of experience. Lange and Houran (2001)

argued that priming effects and belief in the paranormal induce some people to notice and give credence to ambiguous (but otherwise conventional) stimuli which include physiological sensations, cognitions, and emotions (Houran & Williams, 1998; Lange & Houran, 1997). Consistent with this scenario is the fact that only New Age Philosophy and Participant Expectation weakly but significantly predicted the number of reported experiences. Remember that New Age Philosophy is hypothesized to reflect paranormal beliefs related to a need for interpersonal control or mastery over one's environment and is a consistent correlate of haunt-poltergeist experiences (Houran & Thalbourne, 2001a; Houran et al., in press). On the other hand, a person's degree of priming (Participant Expectation) and their sensitivity to environmentally-based visual and acoustic stimuli (Hyperesthesia) weakly but significantly predicted the number of different categories of experience.

This pattern of results corresponds to previous findings (Houran & Thalbourne, 2001a; Houran et al., in press; Lange & Houran, 2001) that were not based on data collected post hoc and suggests that two basic processes are operating within this case (and maybe other cases of a similar nature as well), akin to differences between a shifting of attention and a focusing of attention (Turatto, Benso, Facoetti, Galfano, Masetti, & Umiltà, 2000). Specifically, the initial perception or detection of haunt stimuli may follow from a shifting of attention, while the content of haunt experiences may derive from a focusing of attention. What may be a further indication of multiple processes operating within some haunts is the suggestive evidence for two distinct classes of phenomena, Psychological Experiences and Physical Changes. In particular, experiences classified as psychological in nature consistently showed small but significant correlations with the perceptual-personality variables, while experiences classified as involving objective and physical events were only weakly related to priming and belief in the paranormal.

Differences in outward appearance, of course, do not preclude Psychological Experiences and Physical Changes from sharing a common precipitating source (e.g., misinterpretation, electromagnetic effects, or psi). The fact that our Rasch analyses replicated previous evidence (Houran & Lange, 2001a) for a *unidimensional* model of haunt experiences is consistent with this idea. However, we propose that there can still be different sources for the two proposed Classes of Experience (cf. Houran & Lange, 1996). Specifically, Psychological Experiences are expected to derive in part from the experient's physiology, whereas Physical Changes are phenomena caused by external, non-personal forces and are detected and given credence in part due to cognitive and motivational biases. Believers in the paranormal (especially those with beliefs indicative of a need for control over the environment) might perceptually and cognitively link these unrelated classes of experience together in a synesthetic-like fashion due to an enhanced associative network (Brugger, 2001), reminiscent of Ember and Ember's (1988) anthropological view of ghosts. This could partly explain the positive intercorrelations among paranormal belief, the number of haunt experiences, the number of different categories (i.e., modalities) of haunt experience, transliminality, hyperesthesia, and synesthesia.

Demand characteristics and priming effects would be expected to intensify these relationships, and belief in the paranormal would provide a "...cognitive framework for effectively structuring many events and experiences...so that they appear

comprehensible and thereby able to be mastered, at least intellectually" (Irwin, 1999, p. 291). Therefore the underlying dimension to our Rasch hierarchies of haunt experiences could be a cognitive-labeling process. However, the order of the particular experiences that are reported may be idiosyncratic to specific cases. Follow-up work is needed to clarify this possibility.

Although this discussion has emphasized a traditional psychological interpretation of the results drawing on the cumulative work of Lange and Houran (2001), we acknowledge that other interpretations of the findings are possible. To be sure, Haynes' (1986) idea that people have different thresholds of perceiving psi phenomena may have merit. Nevertheless, such parapsychological theories must take into account at least the facilitating role of psychological factors. In particular, the accumulated evidence from psychological and parapsychological studies using the three basic approaches to this area of research suggests to us that haunts are not solely objective, physical forces that we can easily understand independently from ourselves. Rather, we agree with Tyrrell's (1943/1953) seminal idea that experients seem to be active participants in the construction of their experiences, much the same way that characters in fictional ghost stories are complex, emergent products of the interplay between narrative design and narrative processing (Herman, 2000).

We have identified a few salient perceptual-personality characteristics from our study that may relate to naturalistic haunt experiences, but the effects sizes found in this study are modest. This could be attributable to many factors. For instance, it could argued that the weak effects imply that perceptual-personality variables have little more than a mediating role in some haunt experiences, or alternatively that haunt experiences are more strongly related to perceptual-personality traits not considered here. By contrast, a statistical perspective might posit that the lack of Rasch scaled instruments in tandem with a restricted range of scores limit the power of our analyses. Consequently, there remains substantial scope for empirical investigation concerning these variables, particularly the validation of their role in haunt experiences of a more spontaneous nature. We also need a more stringent design that takes into account other sources of possible response bias on the part of participants.

We propose a methodology similar to the one used here, but with important modifications. First, future studies would be wise to minimize artifacts related to prior knowledge and cueing by investigating cases whose details are not publicly known and which have no "commercial" connotations associated with them. A large sample of participants then could be identified in advance and divided randomly into quarters. In this way a quarter of the psychological tests can be distributed long in advance of the sessions, a quarter immediately before the sessions, a quarter immediately following the sessions, and a quarter long after the sessions. The participants should not have any advance knowledge about the sites, and all on-site experimenters should be experimentally blind as well. The trends and ideas reported in this paper would have greater validity if they can be confirmed under these conditions and replicated across many haunt cases. This line of inquiry would also inform both psychological and parapsychological theories. Ultimately both perspectives seek to answer the really exciting question of what remains of haunt experiences once the psychological trappings are removed.

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